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# AIR FORCE - INDUSTRY TWO WHEEL MOTOR VEHICLE SAFETY SEMINAR

## REPORT

29 - 30 NOVEMBER 1966

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NOV 5 1967

**THE DIRECTORATE OF AEROSPACE SAFETY**  
**DEPUTY INSPECTOR GENERAL FOR INSPECTION AND SAFETY, USAF**  
**NORTON AIR FORCE BASE, CALIFORNIA**

DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON, D. C.



REPLY TO DEPUTY INSPECTOR GENERAL  
FOR INSPECTION AND SAFETY, USAF AFIAS-G  
ATTN OF: Norton Air Force Base, California 92409

14 27 Feb 67

6 SUBJECT: Air Force-Industry Two-Wheel Motor Vehicle Safety Seminar  
REPORT 29-30 NOVEMBER 1966.

12 298p.

TO: All Seminar Attendees

1. Inclosed is a transcript of the speeches presented at the Air Force-Industry Two-Wheel Motor Vehicle Safety Seminar held at Norton Air Force Base 29 and 30 November 1966. Also included is a report of the recommendations made by major command-Air Staff working panels which met for two days (1 and 2 December 1966) immediately following the seminar.

2. I was pleased with the spirit of cooperation evidenced by organizations and individuals who attended. The entire meeting offered an excellent opportunity to exchange ideas and establish a relationship that will be mutually beneficial.

3. The Air Force plans to have a preliminary base-level two-wheel motor vehicle safety program completed by 1 April 1967. This program will be tested, evaluated, and subsequently refined as we gain experience with it. We appreciated your participation in the seminar, and will welcome future exchanges of information with you.

*Frank K. Everest, Jr.*

FRANK K. EVEREST, JR., Brigadier General, USAF  
Director, Aerospace Safety

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WELCOME ADDRESS

"A Call for Action"

By

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**Brigadier General Frank K. Everest, Jr.  
Director of Aerospace Safety  
Headquarters U. S. Air Force  
Norton AFB, California 92409**

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WELCOME ADDRESS, "A CALL FOR ACTION"

AIR FORCE-INDUSTRY TWO-WHEEL MOTOR VEHICLE SAFETY SEMINAR  
NORTON AIR FORCE BASE, CALIFORNIA  
29-30 NOVEMBER 1966

PRESENTED BY BRIGADIER GENERAL FRANK K. EVEREST, JR.  
DIRECTOR OF AEROSPACE SAFETY, USAF

GENTLEMEN -

OPENING REMARKS

I AM GRATIFIED THAT SO MANY OF YOU HAVE BEEN ABLE TO ACCEPT THE AIR FORCE'S INVITATION TO BE HERE TODAY AND TO PARTICIPATE IN THIS SAFETY SEMINAR. IN ADDITION TO OUR OWN AIR FORCE ATTENDEES, THERE ARE REPRESENTATIVES FROM INDUSTRY, UNIVERSITIES, NATIONAL ASSOCIATIONS, STATE/LOCAL GOVERNMENTS, THE PUBLISHING INDUSTRY, PRIVATE GROUPS, AND FROM SEVERAL DEPARTMENTS AND AGENCIES OF THE FEDERAL GOVERNMENT. TO ALL OF YOU, I EXTEND A CORDIAL WELCOME. MY STAFF AND I WILL DO EVERYTHING POSSIBLE TO MAKE YOUR STAY AT NORTON AIR FORCE BASE BOTH PLEASANT AND PRODUCTIVE.

THE DIRECTORATE OF AEROSPACE SAFETY, UNITED STATES AIR FORCE, HAS A WORLDWIDE RESPONSIBILITY FOR THE PREVENTION OF AIRCRAFT, MISSILE, AND GROUND ACCIDENTS. OUR TASK, FIRST OF ALL, IS TO PREVENT ACCIDENTS, BUT, FAILING THIS, TO INVESTIGATE THOSE WHICH DO OCCUR SO THAT OTHERS MAY BE PREVENTED. WE COVER OUR MILITARY PEOPLE ON A 24-HOUR-PER-DAY 7-DAY-A-WEEK BASIS, BOTH ON AND OFF DUTY; AND NOW, UNDER THE PRESIDENT'S MISSION "SAFETY 70" PROGRAM, WE WILL ALSO BE COVERING OUR CIVILIAN EMPLOYEES ON A 24-HOUR-PER-DAY BASIS.

I WILL QUOTE A FEW STATISTICS TO PROVIDE YOU WITH REFERENCE POINTS CONCERNING WHAT CONSTITUTES OUR ACCIDENT POTENTIAL:

- THE AIR FORCE HAS 1,183,316 FULL-TIME PERSONNEL (893,066 MILITARY AND 290,250 CIVILIAN).
- THERE ARE 15,000 AIRCRAFT CURRENTLY IN THE INVENTORY FLOWN BY SOME 43,000 PILOTS.
- ADD TO THIS APPROXIMATELY 55,000 MISSILES OF AIR OR SURFACE LAUNCH VARIETY.
- INCLUDE 90 DIFFERENT TYPES OF MUNITIONS CURRENTLY IN THE AIR FORCE INVENTORY AND 20 MORE UNDER DEVELOPMENT.
- ADD 1,374,343 PRIVATE MOTOR VEHICLES CURRENTLY OWNED AND OPERATED BY AIR FORCE PERSONNEL.

WE HAVE A COMPREHENSIVE SAFETY PROGRAM IN THE AIR FORCE AND I AM PLEASED TO REPORT TO YOU THAT IT HAS PAID HANDSOME DIVIDENDS IN TERMS OF ACCIDENTS PREVENTED, LIVES SAVED, AND REDUCTION IN ACCIDENT RATES. ALTHOUGH OUR SAFETY PROGRAMS ON AIR FORCE BASES HAVE BEEN OUTSTANDINGLY SUCCESSFUL, I CANNOT SAY THE SAME FOR OUR EFFORTS IN THE "OUTSIDE WORLD" WHERE LARGE NUMBERS OF OUR AIR FORCE PEOPLE ARE BEING KILLED OR INJURED IN TRAFFIC ACCIDENTS ON THE STREETS, ROADS, AND HIGHWAYS OF THE NATION. THE PRIVATE MOTOR VEHICLE IS THE LARGEST NONCOMBAT KILLER OF AIR FORCE PERSONNEL. SO FAR IN 1966, 390 AIR FORCE PEOPLE HAVE DIED IN PRIVATE MOTOR VEHICLE ACCIDENTS.

### THE PROBLEM

AND NOW - SOMETHING NEW HAS BEEN ADDED - THE TWO-WHEELER. SINCE 1963, TWO-WHEEL MOTOR VEHICLE REGISTRATIONS IN THE UNITED STATES HAVE DOUBLED -- THERE ARE APPROXIMATELY 1,500,000 OF THEM ON THE ROADS TODAY. CALIFORNIA LEADS THE NATION WITH SOMEWHERE NEAR 300,000 REGISTERED. EVERY INDICATION POINTS TO FURTHER LARGE-SCALE INCREASES IN TWO-WHEEL REGISTRATIONS. ALTHOUGH I AM SURE THAT THIS CAUSES HAPPINESS AMONG MOTORCYCLE SALES MANAGERS, IT ALSO PRESENTS A SET OF ACCIDENT PREVENTION PROBLEMS WHICH ARE INCREASING BOTH IN FREQUENCY AND IN INTENSITY.

THIS GREATER USAGE OF THE TWO-WHEELER HAS RESULTED IN A RISING NATIONAL TOLL OF INJURIES AND DEATHS. WE, IN THE AIR FORCE, HAVE SHARED IN THIS RISING TREND. IN 1966 OUR FATAL TWO-WHEELER ACCIDENTS HAVE MORE THAN DOUBLED AS COMPARED TO LAST YEAR. SO FAR IN 1966 (AND MY STATISTICS WERE UPDATED JUST THIS MORNING!) 51 AIR FORCE PEOPLE HAVE BEEN KILLED IN TWO-WHEELER ACCIDENTS. AN ADDITIONAL 450 AIR FORCE PEOPLE HAVE BEEN INJURED SEVERELY ENOUGH TO REQUIRE EITHER HOSPITALIZATION OR CONVALESCENCE AT HOME. SO FAR IN 1966, WE HAVE LOST 11,000 MAN-DAYS DUE TO THESE INJURIES. THE DIRECT COST OF THESE DEATHS AND INJURIES TO THE AIR FORCE IS APPROXIMATELY 2 1/2 MILLION DOLLARS.

SIGNIFICANTLY, ONLY ONE OF THESE 1966 FATAL ACCIDENTS OCCURRED ON AN AIR FORCE BASE - THE REMAINDER HAPPENED IN THE "OUTSIDE WORLD." QUITE APPARENTLY, THEN, THIS IS A PROBLEM WHICH WE SHARE WITH YOU AND WHICH CAN BE SOLVED ONLY THROUGH MUTUAL COOPERATION. ACCORDINGLY, I ADDRESS THIS CALL FOR ACTION TO EVERY SEMINAR ATTENDEE AND TO THE ORGANIZATIONS WHICH YOU REPRESENT.

UNIQUENESS OF THE TWO-WHEELER

EVERYBODY THINKS HE CAN BECOME AN EXPERT OPERATOR OF A TWO-WHEEL MOTOR VEHICLE MERELY BY STARTING IT AND TAKING A SPIN ON ANY CONVENIENT STREET OR HIGHWAY. IN SOME STATES, AS YOU KNOW, THE ONLY REQUIREMENT FOR OPERATING A MOTORCYCLE IS THAT YOU POSSESS AN AUTOMOBILE DRIVER'S LICENSE, WITH NO EVIDENCE OF TWO-WHEELER EXPERIENCE CALLED FOR. TO THE BEST OF MY KNOWLEDGE ONLY ONE STATE (GEORGIA) HAS EVEN MADE IT MANDATORY FOR THE OPERATOR TO WEAR A HELMET!

I AM SURE THAT EVERYONE IN THIS ROOM KNOWS THAT THE TWO-WHEELER PRESENTS SEVERAL UNIQUE OPERATING PROBLEMS TOTALLY UNLIKE THOSE ASSOCIATED WITH THE FOUR-WHEEL VEHICLE. IT IS QUITE APPARENT, HOWEVER, THAT A GOOD MANY OF THE USERS OF THE TWO-WHEELER DO NOT RECOGNIZE THIS. INDEED, THE INEXPERIENCED TWO-WHEEL OPERATOR REGARDS IT AS MERELY AN EXTENSION OF THE BICYCLE -- AFTER ALL, HE OWNED A BICYCLE WHEN HE WAS A KID AND NEVER HAD ANY ACCIDENTS ON IT!! THE COLD, HARD FACTS OF THE CASE ARE THAT THE TWO-WHEELER IS UNIQUE BECAUSE OF ITS SIZE, HANDLING CHARACTERISTICS, POWER TO WEIGHT RATIO, SPEEDS AT WHICH IT CAN BE LEGALLY DRIVEN. THESE HANDLING CHARACTERISTICS INCLUDE PROBLEMS OF BALANCE, TRACTION, CENTRIFUGAL FORCE, WEIGHT DISTRIBUTION, CENTER OF GRAVITY, MASS, ACCELERATION, AND DECELERATION. ANY DEVIATION FROM STEERING A STRAIGHT-LINE PATH REQUIRES INSTANTANEOUS JUDGMENT ON THE PART OF THE OPERATOR WHICH TAKES INTO CONSIDERATION SOME OR ALL OF THESE HANDLING CHARACTERISTICS. AN INEXPERIENCED OR INSUFFICIENTLY TRAINED OPERATOR IS A HAZARD TO HIMSELF AND TO BOTH PEDESTRIAN AND OTHER VEHICLES. IF ALL TWO-WHEEL OPERATORS

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RECEIVED THE SAME RIGID TRAINING THAT HIGHWAY PATROLMEN RECEIVE, YOU AND I BOTH KNOW THAT THE ACCIDENT TOLL WOULD BE SUBSTANTIALLY REDUCED.

ABOUT THIS SEMINAR

WE HAVE CONVENED THIS SEMINAR IN ORDER TO FOCUS ATTENTION ON THIS PROBLEM AND TO SECURE SOME ACTION. WE PLAN TO REVIEW SAFETY ASPECTS OF THE DESIGN, TRAINING, QUALIFICATION, USE, REGULATION, AND ADMINISTRATIVE CONTROL OF THE TWO-WHEEL MOTOR VEHICLE AND ITS OPERATOR. MANY OUTSTANDING AUTHORITIES IN THEIR FIELD ARE ON THE AGENDA AS SPEAKERS. I ASK ALL OF YOU TO PARTICIPATE FULLY AND TO OFFER THE BENEFITS OF YOUR SPECIALIZED EXPERIENCE. QUESTION AND ANSWER PANELS HAVE BEEN SCHEDULED FOR EACH MORNING AND AFTERNOON OF THE SEMINAR IN ORDER TO ENCOURAGE YOUR PARTICIPATION. IN ADDITION, WE HAVE SCHEDULED A LUNCHEON THIS NOON AND A COCKTAIL PARTY THIS EVENING IN ORDER TO KEEP THE GROUP TOGETHER.

AT THIS SEMINAR'S CONCLUSION, WE AIR FORCE PEOPLE PLAN TO REVIEW THE INFORMATION WHICH HAS BEEN EXCHANGED AND TO USE IT AS BACKGROUND FOR THE DEVELOPMENT OF A MODEL AIR FORCE TWO-WHEEL MOTOR VEHICLE SAFETY PROGRAM. WE WILL IMPLEMENT THIS REVITALIZED PROGRAM AT ALL AIR FORCE BASES IN THE NEAR FUTURE, AND EXPECT THAT IT WILL PROMOTE TWO-WHEEL SAFETY NOT ONLY ON AIR FORCE BASES BUT ALSO IN THE LOCAL COMMUNITY WHERE THE BASE IS LOCATED.

MANY VALUABLE CONTACTS WILL RESULT FROM THIS TWO-DAY MEETING, AND I BELIEVE THAT THIS INTERCHANGE OF INFORMATION WILL WORK TO OUR MUTUAL BENEFIT. I WISH ALL OF YOU A MOST SUCCESSFUL AND PRODUCTIVE SEMINAR.

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KEYNOTE ADDRESS

"Two-Wheel Vehicle Accidents,  
A Growing National Challenge"

By

Mr. Douglas W. Toms  
Director  
Department of Motor Vehicles  
State of Washington  
Olympia, Washington 98501



Speech by Mr. Douglas Toms

Thanks Colonel. General, Woody, Charlie, Ed, my many good friends of the Traffic Safety Fraternity. Ladies and Gentlemen of the conference.

I think the first thing that I should say is a sincere token of appreciation to the United States Air Force for this timely conference. Certainly, it's needed. I am also much impressed by the fine calibre of speakers, panelists and other people who are attending.

I thought that probably I should entitle my comments to you this morning, "Clear Headedness Does Not Slay Dragons," and when I use such a title as "Clear Headedness Does Not Slay Dragons," I should ask us why are we here?

I will first relate to you the Chrysler Opinion Poll, funded through the University of Michigan, where a large amount of money was spent to determine what is on the minds of the American public at this moment. Well, nationally, the Chrysler Opinion Poll came back with crime as our number one concern. Second was traffic safety.

Within the realm of traffic safety, a lot of things were mentioned such as: better driver licensing, compulsory driver education and motorcycles.

And I think, when we review the fact that in our state of Washington, motorcycle injuries are up 58%, fatalities are up 67%, and registrations are up 50 to 68%, this gives us a little concept of what kind of growth and what kind of change we have been experiencing. Now these percentage changes are not this year compared to five years ago. This 67% increase in fatalities is this year over last year.

It is kind of amazing that in 1961 we had 9,000 motorcycles in the state of Washington; by 1965, we had but 43,000; and by the end of 1966, we expect 85,000. What this points out is that we are experiencing anywhere from a 50% on up increase each year.

Another thing that alarms me is the severity of occurrence ratio on motorcycles is now at 1 to 22 to 3, which indicates for every fatality, we have 22 personal injuries and only 3 property damage accidents or collisions. This is one of the highest severity of occurrence ratios that we have in the entire traffic scene.

In our state, we find that eight out of every ten cycle collisions results in a serious injury and, in comparison, only three out of ten automobile collisions result in an injury.

When we consider the tremendous increases in motorcycle registrations, I can't help but be reminded of the story of the Mo-Ped. Probably some of you have heard this because it has been told over and over again, but it is worth repeating because I think it points out what novices we are in regard to motorcycles. You may remember here some years ago a Mo-Ped was reported stolen. The stolen report went out, and a couple of days later, 6,800 returns came back in on this stolen motorcycle. All of a sudden from enforcement agencies all over the West, they had this motorcycle-- they had found it. Well, come to find out when that Mo-Ped was registered, they couldn't identify the vehicle identification number on it, so they used the Sears catalogue number; and every Mo-Ped sold in the West had the same VIN (Vehicle Identification Number). As a consequence, when the stolen report went out on it, every Mo-Ped that had been registered came back. Gives you an idea that this whole business is pretty new, and when we take a look at motorcycles and we look at something like the Bridgestone that has five different numbers on it, and you look at the Mo-Ped, and it has almost no number on it, and you've got to use the Sears catalogue number to register the thing, then it gives you a little concept of the workload that has to be done when you're in motorcycles.

Nationally, we expect that we will finish 1966 with about 1,400,000 motorcycles in the United States--1,400,000. . .

By 1970, we project that this will exceed 6,000,000 motorcycles--6,000,000. Well, here again, they are projecting very similar types of growth rates and perhaps even more so. I don't think I have to relate to you then that we have got a problem.

I think that what I have got to relate to you is what we can do about it. And one of the things that bothers me is that, unfortunately by the very nature of this conference, and by the traditional reaction of all of us, we are going to look to official action for the solutions. We are going to turn to legislation; we are going to turn to governmental agencies; we are going to turn to elected and appointed officials. And in that framework, you know there is a commonly held notion that if you really want to be healthy and prosperous, you should let the government take care of you. And up in my country, I can't help but take a good hard look at the American Indian and worrying quite a bit about the concept of letting the government take care of us. And when we look to official action or legislative programs for solutions, we look at the poor lonely American Indian. I'm not so sure we are turning the right way.

And yet, by the same token, what other ways do you turn? Do you turn to the motorcycle manufacturing industry? Do you turn to education as a profession? Where do you go in this whole business? Do you turn to the American motorcycle public? Certainly not. There is no place else to turn but to official action, and official action generally does not respond until public opinion is overwhelming on the subject.

I'm not sure yet that the American public truly understands the nature of this motorcycle problem. I'm not so sure you are not going to turn to your officials in your states, and you're going to get an enlightened response. Last year, you know, we spent about \$8,000,000 on traffic safety, but we have also spent \$26,000,000 on migratory birds. And so, as we take a look at official action and we try to rank things in priority, I think that this conference is very timely. I think that we really do have some problems.

Traditionally, how do we attack a problem in traffic safety? Well, the time-worn solution is take a look at the car, take a look at the road and then, of course, take a look at the drivers. Well, in motorcycles, what kind of a future is held by looking at the motorcycle, by looking at the

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road, by looking at the driver? Certainly, there are some things that can be done with the motorcycle. Certainly, there is some promise in working on the road in relationship to motorcycle collisions; and, of course, with the drivers, there's a great deal of hope.

Let me start right at the beginning and wrestle with motorcycles themselves and tell you what I think has to be done. Let me comment that I am fully aware that not all of the things I am going to say are going to be met with popular approval, but that doesn't mean that they shouldn't be said, and it doesn't mean that they're not right.

In regard to equipment, no doubt we have got to do something about "ape hangers." We have got to do something about these Harleys with the fenders bobbed, and little motorcycle seats, and the great big handlebars, and the riders who are burning off with "wheelies" at the red lights. They are very typical of the Hell's Angels and the other less savory types that ride motorcycles. We need legislation to prohibit handlebars in excess of 15 inches above the saddle.

Something needs to be done about brakes. We have got to require two-wheel brakes. I think that we should require that basically they should be foot-operated, except on trail machines, and have a supplementary brake device on the right handlebar. I think that we need some kind of progressive linkage on motorcycle brakes. I think it should be designed to apply greater braking friction to the rear wheel than the front and preclude the opposite condition which is possible when brakes are individually activated. I think this is important for stability, especially with beginning riders.

I think there is much to be done yet with lights, and I'm not so sure that all motorcycles are properly equipped with lights, especially the single rear tail light.

I think that we need to establish tire minimums. I have been involved in the motorcycle testing program, and there is a difference between these little, tiny, skinny tires that you get on some machines and the broader tires that you get on the more expensive machines.

I think that we should require legislatively that rear-view mirrors be installed on all machines used on the

street. One at least, hopefully, one on each side--and good mirrors. Mirrors with minimum standards--which don't vibrate off the handlebars in about 30 or 40 miles.

I think that we have got to require a seat for each person; foot pegs for each person. This business of letting a person sit on the back fender or the luggage carrier with their feet dangling out is very definitely a hazard.

I think that we have to require a windshield, a face mask or goggles for all riders or all drivers above the speeds of 35 miles per hour.

I think we should require fenders for street use.

Whereas I don't see a relationship with mufflers to traffic safety, certainly this is a factor in terms of public acceptance. I think that we must disallow any modification of mufflers. I realize the importance of taking the inserts out of mufflers and cleaning them; and yet, by so doing, you encourage the youth, and they are the greatest users of motorcycles, to take the guts out of the mufflers, and you can hear those babies for ten blocks under acceleration--especially the two-cycle jobs.



Whereas there is some question, constitutionally, about the use of helmets, I think we have to require crash helmets because, as we know, in excess of 60 to 70% of all injuries and fatalities on motorcycles are due to head injuries.

On machines above 700 cc, I think we need crash bars. I think when you get into this heavier equipment, it is pretty hard to hold them. I think crash bars will cut down on leg injuries.

Motorcycle manufacturers, I think the time is going to come, and I don't think it is very many years away, that you are going to have to standardize the equipment on motorcycles. Can you envision yourself going down to Hertz and renting a car with a left-foot accelerator, a right-foot clutch. You can't, can you? And I bet some of you old-timers that tried to find the friction point with your right foot on a right-foot activated clutch would really be in bad shape. It's not a bit different trying to teach a person the friction point on a motorcycle with a hand clutch on the left hand.

And I can say to you very sincerely, based upon the experiences of our own examiners in our motorcycle testing and training program, that our people have trouble when they go from a machine with a left shift . . . left foot

shift to a right foot shift and when the brake pedal is reversed from right to left foot. I think that the day has got to come very soon when all machines are either right foot shift or left foot shift, but they are all the same; and I think we are going to have to standardize the shift pattern. I know myself, every time I get on a machine that shifts up 1, 2, 3, 4, and then I change and get on a machine that shifts 1, 2, 3, 4, down, I am confused. My deputy here has commented many times when he has been in traffic and he goes to shift and how lucky he is sometimes to feel that transmission clunk because he has shifted the wrong way, and he has gotten into the lower gear rather than the higher gear. My own personal experience, in traffic, in trying to get the proper gear and having it then shift through three gears--I got high gear when I needed second gear and I got no acceleration, and I go chunking along through traffic trying to get the proper gear.

I think that we have to begin to reapproach these problems and make it easier for the novice to ride, and for operators to go from one machine to another without a complete readjustment factor.

I think it would be helpful if on a Nacelle, with the speedometer, we had a lighted, rotating counter, 1, 2, 3, 4, etc., indicating what gear you are in. When you are on these close ratio transmission machines, it is sometimes pretty tough to tell what gear you're in. You're fiddling around with the gears--you're preoccupied--and you're not watching traffic.

And, I think that perhaps we are going to have to provide minimum criteria for shifting because some of these machines are hard to shift.

There is a lot that can be done with the cycle, and I think we have got to address ourselves to this problem. I would hate to see the time when we would have to do as Congress is doing now with the automobile manufacturers, where we tell the motorcycle manufacturers, "You can't sell your bikes in our state if you don't shape up." So I would hope that conferences such as this would be just a little bit of an omen of what's to come; making people realize that when you are starting to talk about as many as five or six million motorcycles in use in this country, you have got to cater not to the cream of the crop, that are excellent riders, but to the broad spectrum, and create a bike that anybody can ride.

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How about the roads? Visibility is a factor in motorcycle collisions. We have to have better lights on these machines. We have to be more concerned about the color of clothing that motorcycle riders wear--especially at twilight hours.

There is the problem of lane position. To often, people in automobiles will see a motorcycle riding the right-hand side of the lane, and he will squeeze him. That has to be a violation. Now the motorcycle has as much right to that lane as the automobile.

We see motorcycle riders in heavy freeway traffic going right down the dash line between the flow of traffic. I have often wondered what would happen to one if somebody opened a door or decided he had to clear his throat with the tobacco. Any number of things like this can happen under those circumstances. Dash-line riding has to be a violation.

How about freeway use? Nothing is more appalling than to see a guy on a 50cc going 40 miles an hour down the freeway. I can't--I just can't forget one day out of Spokane, a rider on a little 50 cc machine--he was all hunched over the handlebars to be streamlined, roaring down, sparks

flying out the tailpipe, 40 miles an hour in a 70 mile zone. Traffic came up on this guy and by the time they saw him and recognized what it was, they were literally in his tailpipe. I don't think we can allow lower horsepower equipment on our freeways. We are going to have to set minimum performance standards and let me quote that-- "Performance standards, not cc standards." And, I think that probably a good starter is that they must be able to accelerate a 200-pound rider to the maximum speed limit in one mile and nothing less and maybe something more.

And I think we are going to need signs warning drivers of motorcycles, especially in areas where there is heavy motorcycle use, like around colleges.

And I think we are going to have to begin spot-collision analyses on our roadways where there are high frequencies of collisions with motorcycles.

Now, let's get to the driver before my time runs out and talk a little bit about the cycle and the road.

Number one, we are going to have to prohibit side saddle riding. Nothing appalls me more than to see these very chic, sophisticated ads in our major magazines--a very

handsome lad riding his motorcycle down the street with a luscious-looking passenger riding side-saddle behind him. Did you ever try to ride a motorcycle with a passenger behind you side-saddle? You ought to try it. It's a neat little trick--especially if you have never been on a motorcycle before; and when you lean to the right, she goes to the left. It's pretty hard to balance side-saddle on a motorcycle; and not only that, the foot pegs are not properly used.

And I saw a little girl about three months ago that was riding side-saddle on the back of a motorcycle. Her legs were swinging around on a corner turn and she got her right heel caught in the spokes of the rear wheel--slicing off the whole back of her leg. So, there's no question in my mind that side-saddle riding has got to be out.

We can talk about a lot of other good sense qualities in terms of loose dirt and gravel on the roadway, and in terms of how other people respond to motorcycle riders. And, I'm not going to go into a long treatise with you. But, what are good riding characteristics? Good sense riding characteristics are going to have to be taught and are going to have to be disseminated to the motorcycle public. How can it be done? I would list four ways to you.

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Number one is driver education. We have got to begin to teach motorcycle riding and motorcycle safety in driver education.

Number two is driver licensing. We are going to have to begin to test for motorcycle use before a person can get their motorcycle driver license properly validated.

Three, we are going to have to recognize the problem of motorcycle use, and we are going to have to accommodate this in our driver improvement programs.

And four, we are going to have to get busy with some research and find out really what the problem is and what the parameters are.

Now, let me go back in reverse and make a few comments. We just completed a very, I think, nice piece of research on motorcycle fatalities in the state of Washington.

We found that three out of every ten riders who were killed were riding a borrowed motorcycle. Partner, that's significant. Three out of every ten were on borrowed motorcycles. We found, too, that the median age of motorcycle fatalities was 19 years. We found that the median

of those who were on borrowed motorcycles was 17 years. So, we are talking about a pretty young group. However, I must add that the youngest fatality we had was age 10, with no license, riding a motorcycle. The eldest was 70. So there is the spectrum in age.

In our state, 64% of all the deaths occurred due to head injuries. In 70 percent of all the collisions, we found that the automobile driver was at fault, not the motorcycle riders. Seventy percent at fault were the automobile drivers; and upon interview, we found that the overwhelming response, "I didn't see the cyclist--I just didn't see him." And, as a consequence, they didn't yield the right-of-way. And, let's be honest, there's no contest between a car and a motorcycle.

There is a very high incidence of under-age riders driving motorcycles without an operator's license, and this raises a good question about parental supervision, and it raises a good question to me about the relationship of trail machines. And there are plenty of trail machines without registrations--without license plates on them--that Dad uses for trail riding. And he lets the kids ride the things at age 9, 10, 11, 12, 13; and when Dad's back is



turned, that kid has got that trail machine out on our streets and highways. And, we have to face up to it, this is a significant part of the problem.

Well, how about driver improvement? Can we use the traditional driver improvement techniques with motorcycle drivers and riders? I think we can, but I think we have got to go to diagnostic centers.

We have got to call these drivers in. We have got to strike a relationship between their automobile driving record and their cycle record. We have got to find the cause of their citations in relationship to motorcycles and the cause of their collisions; and then we have got to haul them in. And, we have got to do something with them.

And I think that we can develop multi-media approaches, such as we have right here in this auditorium, that are educational in nature. And I think we can use non-directive group therapy, and I think we can find effective interview techniques to cope with driver improvement with motorcycle riders.

How about driver licenses? Number one, and I must emphasize this: You can't give an effective road test on a motorcycle. We are going to have to require that no one may be licensed to drive a motorcycle until he first obtains a driver license in an automobile. And, we have got to stick by the concept that juveniles need to learn to cope with traffic with an adult at their side. And, this has got to begin with driver education, and it has got to continue with parental supervision. And, Dad is not going to ride on the back of that motorcycle while he gets that training.

So, he has to learn to cope with traffic and the traffic patterns in an automobile before he can drive that motorcycle, and we have got to cling to these concepts.

Number two. He has to take his road test in a car, and he has to get his supervision and his basic training in traffic in an automobile. Now, no license until this is done.

So, the lad takes Driver Ed; he learns something about motorcycles. He might ride on a multiple-car area on the range, but he goes down and he takes his initial driver

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license in a car. He passes his counter-exam for a car. He demonstrates his ability to cope with traffic in a car, and he gets a certain amount of traffic experience with his dad or his mother or another adult at his side. And, then he comes in for his motorcycle driver license, and perhaps his regular driver license will be validated for motorcycle use. And, at that point, he takes the motorcycle counter-test to show he understands the skills and the problems of motorcycle use. Then he goes out on a closed course, and he demonstrates his skill to handle that motorcycle to the examiner.

And maybe we want to differentiate between 50cc, 100cc, 300cc, 600cc, 900cc and 1200cc. Let's be honest; a 650 cc BSA or Triumph is a different machine than a 50cc Honda. It takes different skills, and maybe we ought to identify these things in a driver license.

Furthermore, I don't think you can give a good motorcycle test unless your examiners know something about motorcycles. And I think the counter-exam has got to be sophisticated; it can't be mickey mouse. And, I think your examiners must have some experience on a motorcycle so that they can sympathize with the problems. They have to be competent

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in this area. I think they have to be able to administer straight-line tests, weave patterns, sand, and all the other things that go into a good skill test on motorcycles.

I think we have to get going on simulators. I am pleased to announce that I will be going to Binghamton, New York, on January 20. We have money in our budget for the development of a simulator motorcycle testing driver licensing program. The Link people have promised they have money in their research budget to develop a motorcycle simulator for both driver education and driver examining.

I think we are going to have to get to the use of multiple-car areas for motorcycles. I think that when we talk about driver improvement in our communities, we have got to include motorcycles.

I think that the Junior Chamber of Commerce, and I have spoken to them in our state, have got to include motorcycle rodeos. I like to see programs similar to the one supported by E. M. Hahn, Walla Walla, Washington, where the Chamber of Commerce is embarking on a motorcycle driver improvement program. It is a voluntary thing where the people in the community could come out and participate in

a good quality motorcycle driver improvement program and where young people in that community can enroll and can learn a great deal about motorcycles--no cost, well-organized, supported by the service clubs in that community.

As we go into driver education--here again, we have got to begin to utilize simulators and multiple car areas, and they have got to include motorcycles. I think we need some skill exercises. I think gymkhanas and trail rides and other things that are of genuine interest to kids ought to be included.

I think we have to have community support and police interest. You know, police officers for a long time have said, "Show me a motorcycle officer, and I'll show you a dead officer." They consistently think, and they say, "That sooner or later you are going to rack up on a motorcycle if you are a motor officer." I'm not sure that is true; and if it is, I think it is a sad state of affairs when we consider that we are going to have 5,000,000 motorcycles by 1970. I think we have got to reverse that.

Let me close or start to summarize by commenting that youth is absolutely fascinated by motorcycles. This visual image concept fascinates me.

When I arrived at the airport, there was one of these Chevy 396 SS's sitting out in front with Kassler slicks on the back, mag wheels, head rests, you know, four on the floor, big bulge in the hood--the whole bit. I watched the people walking out of the airport. There wasn't a soul that didn't eyeball that automobile.

Youth walks around with Hotrod magazine, Road and Track, in their back pocket. There's not a kid that wouldn't cut off his right arm for a red-hot GTO or a Mustang Fastback. The day of the twelve-letter man in high school is becoming passé. The chic, beat thing to do now is to have a red-hot car or a red-hot cycle.

And, you can't pull into a high school parking lot any more without seeing the darnedest array of GTOs and Mustangs and 396s and 427 hemi-head Plymouths, you have ever seen in your life. And right next to them are some of the hottest looking bikes you have ever seen on two wheels. This is what kids like, and this is what Madison Avenue is playing up. This is what we see in our mass media.

Let's face it, ladies and gentlemen. This is a real thing nowadays. And the irony of it is, I bet half of the people

in this room would love to have the very same thing. And as I look at the smiles of many of the young people here in their twenties and thirties, they want the same darned things the kids want. And Grandpa, too, likes the bucket seats, and the console on the floor and the slick-looking automobile. So, let's not kid ourselves. It is here to stay. It is something we have got to cope with.

Add a red-hot car, a red-hot motorcycle, with the two things that are on the minds of every young man; namely, beer and women; and you got a fearsome threesome. And, you know, a young man gets out in a red-hot car, cruising around town with time on his hands, and he picks up a six-pack of beer, and he starts looking for a couple of dollies, and there's trouble. And the same thing is true with motorcycles.

What do they want to do? They want to pick up a couple of their friends, and they want to cruise on their machine, and you have got problems.

I think we are going to have to take another look at racing, and I think we are going to have to take another look at organizing some of these activities. And I think

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we have got to own up and face the needs of youth. I think we are going to have to have better programs to educate these people to the hazards. And I am firmly convinced that most kids absolutely do not understand the awesome damage that comes from a collision between a motorcycle and an automobile. And I think we have to make people hold driver licenses, and I think they have got to be tough driver licenses to get. And we have to get out of the mickey mouse day of charging three bucks for driver licenses when the same kid walks down and pays 15 bucks for a fishing license. I think we have to begin to reverse some of these things.

And I think we have to take a good hard look at the role of alcohol in regard to motorcycles. I think we have to teach people that their driving records live with them for life. For example, in our state, we are producing 35,000 abstracts of driving records a month to insurance companies.

You ought to see what some of these kids have to pay for insurance--not only for the motorcycles, but for the car. We set a new record last week. One young man paid \$3,700 for six months minimum PLPD, and he paid it. I think we have got to tell these kids that their driving record



stays with them for life; and if they have mandatory convictions on their record, it might keep them out of grad school, it might keep them out of law school, it might keep them out of OCS. I think we have got to begin to tell people the severity of the problem.

Well, clear-headedness doesn't slay dragons, but it does spare us the indignity of fighting paper dragons. Especially, while the real dragons are breathing down our necks. And I think until we know the problem, we can't possibly find the answer. And I hope that during this conference, you won't hesitate to ask dumb questions because dumb questions are much easier to handle than dumb mistakes. And I am very much afraid in this motorcycle business, we are on the threshold of some pretty dumb mistakes. So, whereas clear-headedness doesn't slay the dragons, clear-headedness will tell us what the problem is.

I am fascinated by a story about a large family with six young kids, and the mother became ill. Dad was prosperous and pretty busy, so he hired an old Scandinavian lady, Mrs. Halverson, to cook and keep house and wash. She was a smash hit with the kids--the kids loved her. She cooked all their favorite dishes. When Mama came home, she, too,

was fascinated with the fact that Mrs. Halverson knew exactly what to cook and be popular with all the kids. When asked to reveal her culinary secrets, Mrs. Halverson replied, "It was easy; I just opened the cookbook to the pages that were all grease spattered."

I hope that we will stay clear-headed, and that we will take a lesson out of Mrs. Halverson's book and will hang tough with some of those age-old recipes and not look for something magical and mysterious; that we can open the cupboard and find that mysterious ingredient and pull it out, and it solves all our problems. It is not there. There isn't anything new under the sun, and there isn't something magical that we can pick up and grab that is going to provide us with the solutions. We know what the solutions are; we have been over the road too many times. We know that it takes a lot of guts and a lot of hard work to solve these problems.

I hope that during this conference that you will establish the boundaries of your problem with motorcycles. I hope that you will define what you can now--not next year--now; some things that will provide some immediate results. I hope that you will outline what you need to know; that you will specify the kind of research that you need, and

that you will want it, that you will define, and know, and get the things that you want from your legislature, your driver licensing authorities, your driver improvement authorities, your driver educators and from your motorcycle manufacturers. Let's lay these things out, and let's say what we have to have, and let's indicate what we know will work.

Go get them, Dragons.

**CASES NOT FILLED ARE BLANK**

**"Two-Wheel Motor Vehicle  
Accident Experience in the U. S. Air Force"**

**By**

**Colonel Willis H. Wood  
Chief, Ground Safety Division  
Directorate of Aerospace Safety  
Norton AFB, California 92409**

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"TWO-WHEEL MOTOR VEHICLE ACCIDENT EXPERIENCE  
IN THE UNITED STATES AIR FORCE"

AIR FORCE-INDUSTRY TWO-WHEEL MOTOR VEHICLE SAFETY SEMINAR  
NORTON AIR FORCE BASE, CALIFORNIA  
29-30 NOVEMBER 1966

PRESENTED BY COLONEL WILLIS H. WOOD  
CHIEF, GROUND SAFETY DIVISION  
DIRECTORATE OF AEROSPACE SAFETY

Distinguished guests, ladies and gentlemen,

To all participants of this seminar I would like to add my personal appreciation for your response to our call for assistance in meeting a new and challenging problem in accident prevention. I feel confident that the efforts expended in the next few days will produce a program that will endure as Air Force guidance for many years and conceivably save many Air Force lives and painful injuries.

It will be my purpose during the next few minutes to outline the problem as it appears to us in the accident prevention business within the Air Force. The problem will be stated in both terms of accident losses and requirements for programmatic actions as it applies to the Air Force. However, I am certain these observations, facts and requirements for safety exist to some degree in the civilian community and other military services.

In this day of technological breakthroughs, population explosions, and like events, I don't know why we were caught off balance with the sudden growth in the popularity and use of the lightweight two-wheel powered cycle-- but we were!

Dr. Waltz, Chairman of the Trauma Committee of Cleveland's Academy of Medicine, has referred to this growth and the accompanying health hazards as a "national epidemic." I can assure you it's more than national--it's international. In a recent survey of registered private vehicles in the Air Force, for example, we found one of our overseas commands to have 18% of the 50,000 vehicles registered by our people in that organization to be the two-wheel type.

Across the board in the Air Force, however, the two-wheelers constitute about 3 1/2% of the private vehicle ownership--but they are producing about 13% of our traffic fatalities. Herein, gentlemen, is our problem. General Everest commented on the more than 50 Air Force personnel that had lost their lives on motorcycles so far this year. The average for the last three years was 25. Ironically, 15 of the 1966 fatalities occurred

in the Southeast Asia war zone. These are ignoble deaths when one considers the task with which the military man is charged in that area.

Let us look for a minute at some of the background factors to the problem. From 1963 to 1965, the registration doubled in the United States alone. The exposure in terms of miles driven has likewise increased. We are also aware of the increased utilization of this fun-economical machine for all kinds of activities. To cite a few examples: it provides transport for hunting, fishing; serves as the horse in cycle polo; it was the primary transportation for a group who motored from Chicago to the Rockies and back to Chicago (1,400 miles); it takes people to work, school and to the supermarket. One of the strangest employments of this device was its use in rounding up the buffalo at Custer State Park, South Dakota, where it was reported to be more efficient than the horse. Now, we have all heard that you can't roller skate in a buffalo herd, but here is evidence that you can cycle your way through.

I think it's logical to assume with all this potential we will see a vast increase in the two-wheelers' use in

the years to come. In the military service this is already evident. For, in Southeast Asia, where a man cannot have his personal four-wheel vehicle, he has quickly substituted the two-wheeler for walking. Further, since more than half of our military population is under 25 years of age, and paid a relatively low salary, he will more frequently turn to cheaper transportation. Those who can't afford a new vehicle will be picking up used vehicles at prices they can afford--or renting or borrowing from buddies.

With the advent of cheaper models--as has been reported--we may well expect the average American family to go to a 2 1/2-vehicle family, and the average airman to own one, too. The potential for this vast increase is here--as Dr. Bryan stated yesterday, "If we could be assured they were safe to operate, we would all have at least one."

At this point, I would like to make it clear that although we in the accident-prevention business are sometimes referred to as "purists"--we do not subscribe to the philosophy of prohibition of use. Indeed, quite the opposite is true. We authorize our people to participate



in many hazardous activities; i.e., hydroplaning, sky-diving, sport-parachuting, bobsled racing among them. What we do require is demonstrated skill, knowledge, and evaluation of the hazards concerned. We follow the Albert Whitney philosophy of calculated safety so that the participant may live to enjoy the same adventure tomorrow. Our goal will be to train and influence Air Force personnel to learn to live with the two-wheelers. On the other side of the coin, we have learned from our people who died by them.

The detailed analysis of over 73 fatal accidents that occurred to Air Force personnel in the 1964-1965 period and the first six months of 1966 revealed the following facts surrounding our problem.

As you would expect, 86% of those killed were in the capacity of the cycle operator at the time of the accident. Wherein only 10 died as passengers, only three accidents resulted in double deaths.

The victims were, without exception, staff sergeants or below in military grade. Ninety percent were in the airman status. This relates closely with the ages of the victims wherein almost 80% were 18-25 years of age,

inclusive. The 20% over 25 included one experienced operator 47 years of age.

It was found that 32 of the victims had a physical limitation that reportedly contributed to the accidents-- 26% had been drinking; another 15% were fatigued, and 2 known to be emotionally upset.

It is well established that head injuries are the primary cause of death to two-wheeler victims. In this study, 71% of the major causes of death were head injuries. Helmets, however, were used by over 50% of victims. As you probably know, the Air Force has required the helmet as a prerequisite to operating a cycle on our installations for many years. This requirement obviously does not assure us that the helmet will always be worn while operating off the base.

Many people assume that military personnel are most frequently injured while on leave or changing stations. This is not so for either the four-wheeler or the two-wheeler. In the case of the latter, 91% were injured in a non-leave or non-change of station status--rather, during normal off-duty time.

In considering operator responsibility for unsafe acts that led to these fatal accidents, we were able to judge 49 of the 70 accidents to be the fault of the airman; 11--that of other persons; and 8--divided responsibilities. Two were not reported in sufficient detail to make a determination.

The circumstances surrounding these fatal events demonstrated a complete reversal from our four-wheel fatal accident experience. In the four-wheel fatal accident, 60% are single-car accidents, while 40% involve two or more vehicles. In the two-wheeler, 60% were collisions with other vehicles--in one instance a train--while 40% were single-vehicle accidents.

There were twice as many fatal collisions with other vehicles between intersections as there were at the intersections--with head-on being the most frequent type, closely followed by rear-end collisions. At the intersection, the broadside accident was way out in front from a statistical frequency standpoint.

In the single-vehicle-accident category, as you would expect, "ran off road--upset" or "struck object" coupled with loss of control on curve, set the pace.

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Turning from the operators to environmental factors, we found that all but three were killed off the military base. Over 70% were killed within 15 miles of the base, and only two, more than 100 miles away. It was interesting to note that one of the victims killed on the base died as the result of injuries when he fell from his cycle in a parking lot--checking it out under the supervision of the owner, who was to make a sale if he mastered it.

Normally, May through August are higher-incidence months for vehicular accidents due to increased exposure. Fatals occurred in every month, however, with May through August sustaining 51% of the total.

Saturday proved to be the most popular day for fatal accidents--with 27%. Sundays produced 15%, with the rest evenly spread through non-weekend days.

More than 60% of the accidents occurred during daylight hours, primarily on rural or country roads (51%), while only 16% of the events happened on urban streets. Two of three accidents were on two-lane roadways, but another 23% were on four-lane roads. I should explain here that average distance from town is 7 miles.

Considering the popularity of the trail riding, one would expect some problems in this type environment; however, 98% of the accidents occurred on hard-surfaced roads of which 90% were of the black-top variety.

The contour of the road reflected that two of three fatals occurred on straight-flat roads; and 23% more on flat-curved roads; only four died on up- or down-grades.

The information extracted on the vehicles themselves did not provide all the data we would like to have. However, we did find that over 20 different makes were involved. Thirty percent of these were of one popular make. Only 20% of the accidents involved the "big" cycles.

The age of the vehicle followed an expected pattern, with 50% being one year or less old. Another 15%, one to two years of age. There were, however, some thirteen and fourteen-year-old cycles involved in these fatal accidents.

Only about 12% of the accidents were able to identify mechanical failures as a major contributor. Headlights and tire failures were the leading deficiencies; with clutch, brakes, ignition problems next. In one instance,

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a loose saddle bag played a predominant role as a contributor.

When one couples what has transpired in motorcycle accident losses during the past year with the predictable growth in exposure for the coming years, and compares the potential with our existing prevention controls, the challenge of this seminar becomes obvious.

I do not wish to imply that we have ignored the problem over the years, for this is not true. As early as 1949, one major overseas command tried the direct approach by outlawing the use of such vehicles. This action was ineffective and undesirable. In 1954, we were disallowing the passenger to ride on vehicle unless the manufacturer had provided a passenger seat. By 1959, we had adopted the mandatory wearing of the helmet. In 1965, we allowed for a color break in the helmet for better viewing against white backgrounds.

I think I can safely say that never have we really come to grips with the total problem. Although time does not permit a thorough review of our programmatic needs, I will attempt to highlight those I consider significant.

We do not have, nor do the majority of the states, any provision for demonstrated proficiency by operators or a method to measure their knowledge of hazards and responsibilities as operators of the two-wheel vehicle. On the other hand, we certainly have a moral responsibility for arming our personnel with the knowledge necessary to pass judgment upon and successfully cope with day-to-day hazards.

This spells out the requirement for a reasonable standard and procedure for determining qualification by administering self-study and testing, including demonstrated proficiency prior to authorization to operate on the installation.

In the consideration of the vehicle, there appears to be a requirement for providing guidance prior to purchase so that our personnel may know the required mechanical and essential safety features. After purchase, we must influence maintenance requirements and establish an inspection system to minimize failures. What is the proper role of the exchange system, the automotive hobby shop in this regard?

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And, what should be our requirements regarding personal protective equipment? We have always adhered to the approved standards in the helmet area. However, it has been reported that certain chin straps don't stay fastened under stressing conditions. Perhaps the new ASA standards have eliminated this problem. We have all seen the barefoot couples with the blonde riding side-saddle on the back . . . what should our standards be regarding shoes and night-readable helmets, protective clothing?

In my opinion, we are planning to manage a "new breed" of operators. The record indicates their youth--this category, gentlemen, as you know, constitutes about 60% of our population. We are well aware of their temperament, character, operating attitudes. We must quickly seize this opportunity to play down attitudes represented by "I checked out in minutes;" or "It's just an extension of bicycle riding." We must produce serious, self-disciplined operators that will gain public acceptance and mutual respect in road-sharing.

This brings us to the point of high incidence of collision with four-wheeled vehicles. Just what are we



going to teach the automobile driver so that he will recognize and deal successfully and compatibly with the two-wheeler? As you know, we already have this in our Standard Driver Improvement Course, but there appears to be a need for a mass-communication approach on this point.

To deal successfully with the non-conformist, I believe our law enforcement groups--both on-and off-base--will have to take a fresh look at their problems. How many people can be transported without violation? I have seen four. Is it legal to carry a 6-months-old infant strapped to the jump seat? How close is too close? What needs to be done in the point system?

Accident investigation personnel are in need of both training and procedures to do a good job. Accident prevention information must be identified and properly reported if we are to gain useful information and insight into our problems. Along this line, we need to learn the language of the two-wheeler--perhaps a new glossary is the answer.

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From the environment standpoint, we need to identify the "hot spots" at local level and inform our personnel as to what is relatively safe and where not to go.

In brief, what we face is the development of a total new approach employing the better features of the lessons learned with the automobile accident prevention program.

We must reformulate our policy standards and procedures to meet this problem head-on. We must extend the efforts of our Traffic Safety Coordinating Groups to emphasize needed management of the problem.

Although we have a start on our Driver Improvement training, we must find ways to maintain safety consciousness once the training is obtained. We have a new motion picture planned in this area, and have set aside quotas for six posters next year. In addition, I'm pleased to tell you that our new Traffic Safety magazine--The Air Force Driver--should have its first issue in April 1967.

I am also pleased to announce that our research project which will track all personnel in terms of all violations

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and accidents will get into full swing the first of the year.

In another area, base-community programs should give consideration to joint projects that will be mutually helpful.

All in all, I believe that we in the Air Force can make a significant contribution to our nation's traffic safety movement by doing a pioneering task--here and now. By establishing an effective model program, evaluating our results, and revamping our efforts as needed, we will get the job done.

Again, it is our objective--not to restrict but to teach and control our people to live with the hazards as well as the pleasures of this most compact transportation device.

**USAF TWO-WHEEL MOTOR  
VEHICLE ACCIDENT ANALYSIS  
FATALITIES**

**CY 1964 - 1965 - 1966 (6 Mos)**

**Prepared by:**

**Ground Safety Division  
Directorate of Aerospace Safety  
Deputy Insp Gen for Insp and Safety, USAF**

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	<u>64</u>	<u>65</u>	<u>66</u>		<u>64</u>	<u>65</u>	<u>66</u>
<u>RANK</u>				<u>DUTY STATUS</u>			
A3C	6	5	5	Off-Duty- Off-Base	28	17	19
A2C	10	4	13	On-Base	--	2	1
A1C	8	7	5	Leave	--	2	2
SSgt	<u>2</u>	<u>4</u>	<u>1</u>	PCS	<u>--</u>	<u>--</u>	<u>2</u>
	28	21	24		28	21	24
<u>AGE</u>				<u>DRIVERS</u>	26	16	21
18	--	1	2	<u>PASSENGERS</u>	<u>2</u>	<u>5</u>	<u>3</u>
19	1	3	3		28	21	24
20	3	1	4	<u>PHYSICAL LIMITATION</u>			
21	5	4	3	Had been drinking	7	4	8
22	8	1	2	Fatigued	5	1	5
23	3	1	2	Emotionally upset	<u>2</u>	<u>--</u>	<u>--</u>
24	--	1	2	<u>INJURIES</u>			
25	4	--	3	Head Injuries Involved	22	15	15
26 - 30	2	2	--	<u>PERSONAL PROTECTION</u>			
31 - 35	1	4	--	Helmets Used	14	10	11
35+	<u>1</u>	<u>3</u>	<u>3</u>	Not Used	12	11	9
	26	21	24	Not Stated In Report	<u>2</u>	<u>--</u>	<u>4</u>
					28	21	24

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	<u>64</u>	<u>65</u>	<u>66</u>		<u>64</u>	<u>65</u>	<u>66</u>
<u>RESPONSIBILITY</u>				<u>DAY OF OCCURRENCE</u>			
Fault of Airman	18	14	17	Monday	4	3	1
Other Person	6	1	4	Tuesday	5	3	2
Divided Resp.	<u>3</u>	<u>4</u>	<u>1</u>	Wednesday	3	2	2
	27	21	22	Thursday	4	2	2
<u>TYPE OF ACCIDENT</u>				Friday	1	1	4
Daylight Hours	20	9	13	Saturday	7	5	8
Darkness	<u>7</u>	<u>12</u>	<u>9</u>	Sunday	<u>3</u>	<u>5</u>	<u>3</u>
	27	21	22		27	21	22
<u>MONTH OF OCCURRENCE</u>				<u>TYPE OF ROAD</u>			
Jan	--	--	4	Rural or County	15	8	13
Feb	2	--	--	State	7	3	2
Mar	4	--	5	U.S. Highway	3	3	2
Apr	3	4	2	City Street	2	5	4
May	4	4	6	On-Base	--	<u>2</u>	<u>1</u>
Jun	2	3	5		27	21	22
Jul	4	1	--	<u>NUMBER OF LANES</u>			
Aug	3	4	--	One Lane	1	1	1
Sep	2	--	--	Two Lanes	17	12	14
Oct	1	4	--	Three Lanes	1	3	1
Nov	2	--	--	Four Lanes	7	3	6
Dec	<u>1</u>	<u>1</u>	--	On-Base	--	2	--
	28	21	22	Unknown	<u>1</u>	--	--
					27	21	22

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	<u>64</u>	<u>65</u>	<u>66</u>		<u>64</u>	<u>65</u>	<u>66</u>
<u>TYPE OF ROAD SURFACE</u>				<u>TYPE OF VEHICLE</u>			
Asphalt	23	19	21	Honda	8	4	9
Concrete	3	2	2	BSA	4	1	1
Other	1	--	--	Triumph	3	2	2
	<u>27</u>	<u>21</u>	<u>23</u>	Yamaha	2	2	2
<u>CONTOUR OF ROAD</u>				BMW	2	-	1
Straight	18	15	14	Indian	1	-	--
Flat	7	3	6	Harley-Davidson	1	5	4
Curve				Tohatsu	1	-	--
Flat "S"	1	--	--	Ducatti	1	1	--
Curve				Norton	1	1	-
Uphill	1	--	2	Jawa	1	-	-
Grade				Matchless	1	-	-
Downhill	--	1	--	Ariel	-	1	-
Grade				Toyomotor	-	1	-
Narrow	--	1	--	Velocette	-	1	--
Bridge				Suzuki	-	-	1
Parking	--	1	--	Bridgestone	-	-	1
Lot (On				Allstate Scooter	-	1	-
Base)	<u>27</u>	<u>21</u>	<u>22</u>	Vespa Scooter	-	1	-
<u>DISTANCE FROM BASE</u>				Solex Motorbike	-	-	1
0-5 Mi	14	9	9		<u>27</u>	<u>21</u>	<u>22</u>
6-10 Mi	3	5	4	<u>AGE OF VEHICLE</u>			
11-15 Mi	3	2	1	One Year or Less	12	9	14
16-20 Mi	--	--	1	Two Years	4	2	4
21-25 Mi	1	--	--	Three Years	1	2	1
26-50 Mi	1	--	3	Four	2	1	1
51-100 Mi	1	1	--	Five	3	1	--
100+ Mi	2	--	--	Six	1	2	--
On-Base	--	2	1	Seven	1	--	1
Unknown	2	2	3	Eight	1	1	--
	<u>27</u>	<u>21</u>	<u>22</u>	Nine	--	--	1
				Eleven	1	--	--
				Twelve	--	1	--
				Thirteen	1	1	--
				Fourteen	--	1	--
					<u>27</u>	<u>21</u>	<u>22</u>
				<u>DEFECTIVE EQUIPMENT</u>			
				Headlight	1	1	--
				Tires	1	1	--
				Brakes	--	1	--
				Clutch	--	1	--
				Ignition	--	--	1
				Loose Saddlebag	--	1	--

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ACCIDENT CIRCUMSTANCES

	<u>1964</u>	<u>1965</u>	<u>1966</u>
<u>COLLISION BETWEEN VEHICLES</u> <u>(INTERSECTION)</u>			
Head-on	--	--	--
Rear-end	2	--	1
Broadside	3	4	3
(Between Intersections)			
Head-on	6	3	5
Rear-end	5	4	1
Broadside	1	2	--
RAN OFF ROAD - UPSET	2	2	--
RAN OFF ROAD - STRUCK OBJECT	3	2	9
LOST CONTROL ON CURVE	2	3	3
MOTORCYCLE/TRAIN COLLISION	1	--	--
OTHER	<u>2</u>	<u>1</u>	<u>1</u>
	27	21	23

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**"Medical Aspects of Two-Wheel  
Motor Vehicle Accidents"**

**By**

**Colonel Richard S. Bryan  
Orthopedic Surgeon  
USAF Hospital (MSHCO)  
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Q

## MEDICAL ASPECTS OF MOTORCYCLE ACCIDENTS

Last year over 10,000 people lost their lives in climbing mountains which is a totally useless activity insofar as productivity is concerned. Why do people do this? For exercise? To commit suicide? To test themselves? For the thrills of it, whatever that means? We do not know and, indeed, even in individual cases where all facts are known, motivation is often obscure and the individuals themselves cannot give reasons for their eagerness to risk life and limb. Is this reckless, foolhardy behavior to be condemned and controlled in the interest of the common good? I think it unlikely that any in this room would call a Supreme Court Justice reckless nor could we condemn a certain ex-Air Force whiz kid who left Washington to climb in Yosemite two weeks after a cast was removed from his leg. Rather all of us look at them with awe and admiration for their demonstration of vigor and courage. In short, we admire them for being men.

Similarly, we all envy to some extent the motorcycle rider who enjoys the thrill of power at his fingertips with nothing to bear the brunt of the elements but his body. I can well imagine all of us cheering the Texan riding the bomb to its destination in Dr. Strangelove. The seductive force of this thrill is illustrated by one of my middle-aged patients who fractured his leg riding his son's new motorcycle around the block. He just had to try it out.

We are not, therefore, going to be able to eliminate the motorcycle even if we so desired, nor are we going to be able to control it except in such ways as do not detract from the image which it presently projects. Helmets, for example, are being widely accepted because they do not detract and have demonstrated their protective value. One of the popular magazines has called this the era of wheels and those of us who still walk on occasion can verify the obstacles placed in the path of the ambulant. Wheels, in the words of the magazine, set the motorcyclist apart and give him status and the care given the motorcycle certainly exceeds that given most cars. British experience has shown that helmets reduced the risk of death by 25% in built-up areas and 50% in open country. The Australians found that the risk of fatality to a motorcyclist in an

accident is reduced by wearing a helmet to about one-third of the risk without a helmet. California reported a reduction of 40% in head injuries as the result of the use of helmets.

In a recent hearing in the District of Columbia, the interesting thing to me was that after all of the facts and figures were given and the authorities heard from, the motorcyclists themselves testified in favor of the helmets. The helmet, you see, helps to set the motorcyclist apart as a distinct status symbol. Who else wears helmets? Football players, racing drivers, airplane pilots, astronauts and other daring men. Now, does this mean that everyone who rides a motorcycle is a jerk who hasn't grown up? Of course not, many practical aspects of transportation as well as the attractions of a sport lead to its popularity with people in older age groups as well as the predominant younger enthusiasts. It does mean however, that only those improvements, safety measures and apparatus that do not detract from the image will be utilized.

Let us consider a few facts about motorcycle accidents. The U. S. Public Health Service found that 90% of the drivers are male and nearly 70% are between the ages of 16 and 24, just at the time our hormones are most active and when we are most certain of our ability to do anything.

Studies in Europe indicate that motorcyclists have accidents more than twice as frequently during the first six months of riding experience than they do afterwards. In this country, one study found that 20% were riding for the first or second time while 70% had borrowed or rented the motorcycle. The complete lack of protection for the rider is borne out by a Wisconsin study of the motorcycle accidents during 1965 which showed that injury or death occurred in 89.6% of all the accidents involving this vehicle. In the same survey for all types of vehicles, only 9% of the accidents involved injury or death. New York State studies in 1962 and 1964 showed a very similar figure of 85.6% of motorcycle accidents resulting in injury or death.

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All studies show that the most serious and most frequent injury is to the head and of the 1,350 motorcyclists killed on U. S. roads in 1965, 2/3 to 3/4 died of head injuries, according to the National Safety Council. This contrasts markedly with skiing injuries where only 7.4% involved the head, arm and neck although these are also high velocity injuries with minimal protection. Snow is a softer cushion than cement, certainly, but also the skier wears special clothing and is very safety conscious.

One study found that 90% of the serious non-fatal injuries involved the lower extremities although multiple injuries are common. Collision with another vehicle was involved in 62% of the accidents in one report.

Let us consider the mechanism of these injuries and we may readily picture the injury. The motorcycle hits an obstruction and the rider goes over the handlebars. He lands on his head but the helmet protects this somewhat although the brain is often injured severely by striking against the skull which is not very soft. The force of the fall passes next to the neck which may be fractured or forced to one side in which case the shoulder is pushed down avulsing the nerve roots or damaging the brachial plexus. The arms and legs, if they haven't wrapped around the motorcycle itself or something en route, now come in for their share. In most cases, this is not the end on femoral fracture often seen in car wrecks but a fracture similar to hitting a lamp pole with a stick. Even without obstacles, the weight of the foot and leg produces enough torque to snap the femur if the momentum of the pelvis is suddenly stopped by impact while the leg is even with the trunk. Essentially, from a medical standpoint, we have a situation where a human body is projected against varying objects at various speeds and angles with the varied results expected. If the rider's knee strikes the headlamp of an oncoming car, for example, he may incur complete loss of half of the pelvis with the struck leg and two such cases have been reported, both of whom lived. Now, this could be prevented by a proper knee and leg guard, but how about the injuries to the leg when thrown off. We used to send our kids into football games with minimal protection, whereas now we would

not do so, yet here we have a more hazardous situation with no protective clothing worthy of the name. In fact, the proportion of head injuries and the fatalities therefrom makes me wonder what would happen if the posture of the motorcyclist were changed or a restraining strap or some other mechanism used to project him feet first rather than head first. Certainly we do not encourage parachutists to land on their heads and the amount of arthritis of the neck found in the divers of Acapulco argues against the efficiency of the head as a landing mechanism. Of the injuries to the lower extremity, certainly those below the knee are most apt to be open wounds and are the most troublesome in my experience. Many traumatic amputations have been reported and I will not attempt to shock you with gory pictures but I think one such is worth showing. This young man also had a fractured skull but will live and eventually walk again but most likely with an artificial leg. He refused amputation initially and the foot was put back on but I doubt it will live. What would have been the result if he had been wearing a protective high boot of some type? We already know the protection afforded by the working man's safety shoe, why not a high boot with flexible steel stays along the sides?

I would like now to present 20 cases which were picked at random from our files. I simply asked the Registrar to give me the first 20 they found.

Case I. This slide presents the details. Obviously what is needed here is a nonskid mechanism of some type. He is lucky in that his fracture could be simply nailed shortening his hospitalization.

Case II. Again the same problem of skidding, but look at the cost. This patient had a fractured leg, not thigh, and these can be extremely slow to heal.

Case III. Note again the lack of ability to stop in time. The cost is lower because he spent more time on convalescent leave. Again, it is the tibia which caused the problem and he may still have recurrence of the infection even 30 years later.

Case IV. This one illustrates the premise that the motorcycle is a poor steed in a jousting match. Perhaps we should institute a "be kind to motorcyclists week" to eliminate some of the hostility which some automobile drivers have for the motorcyclists. Some of this is brought on by the actions of the motorcyclists, some by the frustration of the motorist caused by traffic problems with more than a modicum of jealousy of the ability of the motorcyclist to thread his way through the traffic jungle, however dangerously.

Case V. A simple case which should be preventable with proper equipment and training.

Case VI. Some motorcyclists are also hostile or need better vision, but even here the car won.

Case VII. This is a simple case, again preventable and look at the cost.

Case VIII. Another case of the smaller guy losing, but lucky at that.

Case IX. Obviously an inexperienced driver. But, let me tell you that a radiologist friend of mine who was riding a bicycle put on brakes suddenly to miss a pedestrian and went over the handlebars sustaining an exactly similar injury. He had ridden daily for over a year for exercise so it was not inexperience. Mechanically, when the front wheel stops, the bike and rider are going to somersault over it if the momentum is great enough.

Case X. A responsible individual and the only on-base injury which was caused by the mechanical fault leading to the shimmy. This is of course much worse on a scooter because of the small wheel.

Case XI. Even in Thailand there are hostiles. I doubt we can educate all the Thai truck drivers to be kind to motorcyclists, so defensive driving is the only answer. You can't beat 'em so dodge 'em.

Case XII. Another casualty proving that cars are stronger than people.

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Case XIII. This one should wind up LD. No. but it still costs someone.

Case XIV. Another front wheel failure on a scooter, but I wonder how much the alcohol entered into it. Probably most of the people in this room have had a drink or two and are well aware of its effect on balance. I seem to remember a few occasions when the walls kept bumping into me unexpectedly. I also remember watching a Sgt trying to ride a motorcycle when he was in a similar state. Now, in a car, the judgement of distance is the problem and balance is not so important, but on a motorcycle or scooter, balance is all important. It is said that we cannot prevent all drinking and driving, but this is not necessarily true. If the penalties are steep enough, there is a strong deterrent present. In Oslo, Norway, where there are stringest rules, my host refused to serve me any drinks since I was driving and called a taxi to lead me back to my hotel because he had had a few. Perhaps we should make a blood alcohol a mandatory requirement for all motorcycle accidents, even if it requires a change in the law. Appropriate penalties for any level above normal should be applied.

Case XV. I don't know whether this was speed or what. It was on a curve.

Case XVI. This boy's life was saved by his helmet without question, but again, alcohol played a part. The absence of a helmet should also be an automatic LD: No.

Case XVII. This boy was unhappy that he wasn't medically retired like his buddy and we had a Congressional Inquiry as a result.

Case XVIII. Again the car came out best. In this case, the boy was clearly in the right, but his leg is still the delaying factor and he is mighty sick of the hospital. We keep telling him we want him to be the Easter Bunny.

Case XIX. Again, the motorcyclist is right but loses. What could he do besides drive defensively? Certainly many times car drivers just don't see the motorcyclist and that is probably what happened here. Even in L. A., most motorists would give the cyclist a sporting change,

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not hit him broadside. Should all motorcyclists wear luminous clothes? Why not? Here is a real opportunity for the use of color in clothing which is utilitarian and would add to the image, not detract. Look at the ski clothing industry. I'm not sure that half the girls don't go to ski lodges just to wear those beautiful clothes and I know some of the boys are there to look.

Case XX. The cheapest case of all to the Air Force and the most tragic. At 25, he wasn't a kid, but we know that alcohol entered the picture. He was wearing a helmet but it slipped forward exposing the back of his head.

Summary: In summary, the fatal injuries sustained in motorcycle accidents involve head injuries in 2/3 to 3/4. In those that survive lower extremity injuries occur in 90%.

These injuries are all a direct result of the lack of protection of the body during impact. The development of protective equipment and improvement of the safety capabilities of the motorcycle is very necessary, but the following rules should be put into effect in the Air Force now, even if they require the passage of special laws by Congress.

1. Blood alcohol on every motorcycle accident and LD: No., if elevated.
2. LD: No. if not wearing helmet on- or off-base.
3. LD: No. unless has passed a special motorcycle driver's course such as that given by the District of Columbia and many states.

These may be infringements of personal liberty but are justified by the costs in money and in suffering involved.



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CASE 1

AGE 23

A3C

ACTIVE DUTY

1 YEAR

SLID ON WET PAVEMENT AND RAN INTO BRIDGE

HOSPITALIZED JULY TO SEPTEMBER

COST: HOSP \$1620

PAY \$195

ONE OPERATION - KIJNTSCHER NAILING

CASE 2

AGE 20

A3C

ACTIVE DUTY

1 YEAR

SKIDDED AND STRUCK CAR

HOSPITALIZED 15 MONTHS

COST: HOSP \$10755

PAY \$1462.50

ONE OPERATION - BONE GRAFTING

CASE 3

AGE 23

A1C

ACTIVE DUTY

5 YEARS

PATIENT WAS PASSENGER ON MOTORCYCLE  
WHEN IT RAN INTO BACK OF STOPPED CAR

HOSPITALIZED 18 MONTHS

COST: HOSP \$8415

PAY \$4194

3 OPERATIONS - NAILING AND GRAFTING  
INCISION AND DRAINAGE  
SAUCERIZATION AND REMOVAL  
NAIL

RETIRED: 20%

CASE 4

AGE 18

DEP S RET MSGT

PASSENGER ON MOTORCYCLE STRUCK BY A CAR

HOSPITALIZED 10 DAYS

BRAIN CONCUSSION

COST: \$450

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CASE 5

AGE 16

Dep S

PASSENGER ON A MOTORCYCLE AND FELL OFF

HOSPITALIZED 1 DAY      BRAIN CONCUSSION

COST: \$45

CASE 6

AGE 21

A2C

ACTIVE DUTY

2 YEARS

WAS DRIVING MOTORCYCLE AND STRUCK A  
PARKED CAR

HOSPITALIZED 22 DAYS      WOUNDS OF THIGH AND LEG

COST: HOSP \$450

PAY      \$110

CASE 7

AGE 20

A2C

ACTIVE DUTY

1 YEAR

PASSENGER ON MOTORCYCLE AND FELL OFF

HOSPITALIZED 12 WEEKS

SPRAIN OF LIGAMENT OF KNEE

COST: HOSP \$3825

PAY \$351

CASE 8

AGE 17

DEP S LT COL

DRIVER OF MOTORCYCLE WHICH WAS CROWDED  
OFF ROAD

HOSPITALIZED 2 DAYS

FX PATELLA

COST: HOSP \$90

## CASE 9

AGE 21

A2C

ACTIVE DUTY

9/12 YEARS

WAS RIDING MOTORCYCLE, LOST CONTROL AND  
WAS THROWN OFF

HOSPITALIZED 2 DAYS

FX CLAVICLE

COST: HOSP \$90

PAY \$14

## CASE 10

AGE 33

SSGT

ACTIVE DUTY

15 YEARS

WAS RIDING MOTORSCOOTER WHEN FRONT WHEEL  
STARTED TO VIBRATE AND HE LOST CONTROL ON  
BASE

HOSPITALIZED 1 DAY

BRAIN CONCUSSION  
FX CLAVICLE

COST: HOSP \$45

PAY \$10

CASE 11

AGE 31

SSGT

ACTIVE DUTY

14 YEARS

WAS DRIVING MOTORCYCLE IN THAILAND AND  
WAS RUN OFF THE ROAD BY A TRUCK

HOSPITALIZED 6 MONTHS SO FAR

FX TIBIA AND FIBULA

COST: HOSP \$270

PAY \$1595

TRANSPORTATION FROM THAILAND: ?

CASE 12

AGE 21

DEP S LT COL

WAS RIDING MOTORCYCLE WHEN HE WAS STRUCK  
BY AN AUTO

HOSPITALIZED 26 DAYS

WOUND OF THIGH, TEAR OF CARTILAGE AND  
LIGAMENTS OF KNEE - 2 OPERATIONS

COST: HOSP \$1170

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CASE 13

AGE 20

LCPL MARINES

ACTIVE DUTY

1 YEAR

WAS A PASSENGER ON MOTORCYCLE THAT WAS STRUCK BY ANOTHER VEHICLE OFF BASE ALLEGEDLY ON DESERTION STATUS. LD: FORMAL INVESTIGATION

HOSPITALIZED: TRANSFERRED TO NAVAL HOSP AFTER 22 DAYS PROBABLY 6 - 12 WEEKS

FX ANKLE - WOUND OF KNEE

COST SO FAR: HOSP \$990      PAY      \$163

CASE 14

AGE 38

TSGT

ACTIVE DUTY

17 YEARS

WAS RIDING MOTORSCOOTER ON GUAM WHEN FRONT WHEEL LOCKED THROWING PATIENT OFF. ODO: OF ETHANOL ON ADMISSION.

HOSPITALIZED 5 MONTHS FX ANKLE TRIMALLEOLAR

COST: HOSP \$2970      PAY      \$1850

TRANSPORTATION FROM GUAM:      ?

20% PROBABLE DISABILITY ON RETIREMENT

CASE 15

AGE 20

A2C

ACTIVE DUTY

1 YEAR

LOST CONTROL OF MOTOR CYCLE

HOSPITALIZED 5 MONTHS SO FAR

FX FEMUR - ONE OPERATION, FX CLAVICLE  
FX LUMBAR TRANSVERSE PROCESSES, CONTUSION  
OF KIDNEY

COST: HOSP \$3650

PAY \$299.50

CASE 16

AGE 23

A1C

ACTIVE DUTY

5 YEARS

LOST CONTROL OF MOTOR CYCLE WHILE SPEEDING  
AND HIT WALL. ODOR OF ETHANOL ON BREATH.  
WAS WEARING HELMET.

HOSPITALIZED 6 MONTHS SO FAR. TO MEET PEB

BRAIN CONCUSSION, FX FEMUR, FX HUMERUS,  
FX CLAVICLE, PNEUMONIA, TWO OPERATIONS, NO  
SKULL FX. COMATOSE FOR OVER 2 WEEKS AND  
COULDN'T SPEAK FOR 7 WEEKS.

COST: HOSP \$5859 PAY \$1398 PRIVATE NURSES \$308  
PENSION \$116.50/MO



CASE 17

AGE 20

A3C

ACTIVE DUTY

6/12 YEARS

WAS PASSENGER ON MOTORSCOOTER THAT WAS  
HIT BY A CAR

HOSPITALIZED 7 1/2 MONTHS

FX FEMUR, FX TIBIA AND FIBULA OPEN , ONE  
OPERATION

COST: HOSP \$5945

PAY \$776

HIS BUDDY WAS RETIRED WITH OSTEOMYELITIS

CASE 18

AGE 23

A2C

ACTIVE DUTY

3 YEARS

WAS HIT BY CAR WHILE MAKING TURN, DRIVER  
OF CAR NOT HURT

HOSPITALIZED 6 MONTHS SO FAR

FX FEMUR, BRAIN CONCUSSION, FX TIBIA, HAS NON-  
UNION TIBIA AND NEEDS FURTHER SURGERY

COST: HOSP \$4140

PAY \$960

CASE 19

AGE 29

A1C

ACTIVE DUTY

11 YEARS

WAS RIDING MOTOR CYCLE WHEN HE WAS HIT  
BROADSIDE BY CAR TURNING ONTO STREET

HOSPITALIZED: 2 MONTHS

FX DISLOCATION WRIST, WOUND OF THIGH, TEAR  
OF LIGAMENTS OF KNEE, 2 OPERATIONS

COST: HOSP \$2655

PAY \$460

POSSIBLE DISABILITY 20% - \$5060

CASE 20

AGE 25

A1C

ACTIVE DUTY

UNKNOWN

LOST CONTROL OF HIS MOTORCYCLE OFF BASE OFF  
DUTY

HOSPITALIZED: DOA

FX OF SKULL, BRAIN CONCUSSION

COST: \$25 NEXT OF KIN FATHER SO NO BENEFITS

**"The Insurance Industry Looks  
at the Two-Wheel Motor Vehicle"**

**By**

**Mr. Laurence A. Landgraf  
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5858 Wilshire Blvd  
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## THE INSURANCE INDUSTRY LOOKS AT THE TWO WHEEL MOTOR VEHICLE

Presented to the Air Force/Industry Safety Seminar, Norton Air Force Base, November 29th, 1966, by Laurence A. Landgraf, Vice President, Financial Indemnity Company.

When the Insurance Industry looks at the two wheel motor vehicle, it does so with mixed emotions. Firstly, as individuals, we hear the same siren song as do individuals in any other line of endeavor. Motorcycling is good transportation; it is economical transportation. In addition, it is a fun way to get from here to there. Secondly, because our area of endeavor is insurance, we see a grim side to the fun and economy that is motorcycling. This second view might be better explained through a definition of the insurance industry's frame of reference or area of interest in the problem of motorcycle safety.

As an industry, our interest can be best described by examining the coverages we provide. For purposes of this seminar, let's consider two main fields of insurance: First and briefly, the Life and Hospitalization field of insurance; and secondly, in somewhat greater depth, the Fire and Casualty field of insurance.

Life Insurance Companies, providing payment to beneficiaries upon the death of their policyholder, are not unmindful that the motorcyclist is 120% more likely to pass to his eternal reward during any period of time than the average policyholder. Bear in mind, that average policyholder is a composite made up not only of the clerk who walks two blocks to his office, but also includes the high-working structural steel man who may drive many freeway miles daily to get to his jobs.

Those companies that write protection to reimburse their policyholders for the cost of hospital confinement and surgery, generally refuse outright to insure motorcyclists. Most of those who will insure motorcyclists, do so only at charges that are substantially in excess of those in their standard rate schedules. This is a measure of the higher costs to provide this protection to the motorcyclist.

Within the fire and casualty field of insurance, we are concerned with fire, theft, and collision protection for the motorcycle itself. In addition, there are coverages of a specialized nature for protection of the lender who finances motorcycle purchases.

We are also concerned with those coverages that protect the owner's legal liability that may grow out of the operation of the motorcycle. These are the coverages with which the various states' financial responsibility laws are concerned.

Looking first at the coverages for the protection of the motorcycle itself, fire insurance, as the name strongly suggests, is meant to reimburse the insured owner against damage caused by fire. In addition, it usually provides protection against damage caused by lightning, and what is referred to as transportation insurance: the sinking of ships or damage coming about while being transported on land.

The frequency with which one sees motorcycles being transported in pick-up trucks means that thru the transportation feature of the fire coverage, the insured can get a limited form of collision coverage at a very low rate and often without the protection being subject to a deductible.

Theft coverage will pay the insured owner for loss of the whole motorcycle through thievery or for loss only of parts that have been removed from it. Because of their size, portability, and the high level of interest in motorcycles the theft frequency of motorcycles is several times that of automobiles and the rate of recovery only a fraction of that of automobiles. Adding to the motorcycle problem, is the comparative ease with which hot parts and motorcycles can be converted to cash.

Collision coverage pays for damage caused by the motorcycle colliding with another object, and, of greater importance in the insuring of motorcycles as opposed to automobiles, by upset; damage that occurs, for example, by simply spinning out on a turn, followed by the inevitable slide down the highway.

Bodily Injury Liability coverage is that which pays for the insured's legal liability which might grow out of the injuring of others caused by the operation of his motorcycle. Property Damage Liability protection will pay for the insured's liability growing out of the damage to property of others. Under both of these coverages, liability of the insured need not arise only thru his own operation of the motorcycle, but also protects permissive users as well. The insured, in addition, is entitled to a vigorous effective defense of his interests. Substantial penalties under law await the insurance carrier that does not, in good faith, defend its policyholders.

In addition to the BI-PD coverages with which Financial Responsibility Laws are concerned, there has been developed in recent years what is called Protection Against Uninsured Motorists. In spite of vigorous enforcement of the Financial Responsibility Laws, not all drivers are financially responsible. From state to state the incidence of uninsured drivers varies from a low of 6% to a high of nearly 20%.

What happens to the motorcyclist who, through no fault of his own, is injured by one of these uninsured drivers? Until the insurance industry devised this coverage, he went his way, often disabled permanently and, more often than not, unable to recover any damages.

With U. M. coverage, the motorcyclist is paid by his own insurance carrier in a way that is similar to the recovery he would make if the other party had BI-PD coverage at the time of the accident.

The principal way, mechanically, in which U. M. differs is that by the terms of the protection, court action is not required. Both the company and the insured agree that in the event of a dispute between them, they will submit to arbitration, a much more simple, speedy, and economical way to reach accord.

To those who are familiar with auto insurance, the question might well occur: The same coverages are available to motorcyclists as to auto owners — nothing new here — so what's the problem? As to the problem of insuring the motorcycle itself, why isn't everything fine? Motorcycles are worth only a fraction of the value of most newer cars. As to the BI-PD coverages, aren't motorcycles likely to cause much less damage to other people's property than cars? Aren't they less likely to injure others? The answer to these questions is "yes". It is almost axiomatic that motorcyclists are a greater hazard to themselves than they are to others. Greater severity of loss is likely to occur from the involvement of an auto in an accident under all of the coverages except U. M., but the real problem comes from frequency.

Among automobile drivers, nationwide, one out of every twelve is involved in an accident every year. There is strong evidence indicating that each year one motorcyclist in six is in an accident that involves his insurance. This does not include countless spills out of which the rider and the motorcycle emerge relatively uninjured.

When looking at the U. M. coverage, the increased frequency problem is compounded by severity of injury caused by the absence of protection against injury when riding a motorcycle as compared to the protection afforded by being in a car.

The frequency-of-accident information mentioned thus far is in terms of overall figures; young drivers, old drivers, all drivers. Motorcycling is the sport, work, and means of transportation typically of the young. While great strides have, in recent years, been made to make motorcycle riding socially acceptable to the middle aged, still the vast majority are the young in fact, not just the young at heart.

Because of this, let's examine some fables about young drivers. These center heavily on auto drivers rather than motorcyclists, simply because there are more of them. This does not, however, destroy their validity as to any consideration of motorcycle safety.

Fable #1 — "Most teenage drivers are good drivers. It's only a few who cause the trouble." Each year 40% of young drivers are involved in motor

vehicle accidents; among all drivers, one out of twelve; among teenagers, four out of ten each year. Does this sound like a "few"?

Fable #2 — "Insurance companies pick on young drivers by setting higher rates for those under 25." In the State of New York, where drivers under 25 comprise 14% of the total, they cause 27% of all fatal accidents, 21% of personal injuries, and 22% of property damage accidents. The rate is higher because the risk is higher.

Fable #3 — "Young drivers are good drivers because they have fast reactions." Many fast reactions of young drivers are the wrong reactions. They act before they think. Quick reactions are often more dangerous than slower, rational reactions.

Fable #4 — "Young drivers handle motor vehicles well." This depends on what we mean by "handling them well". If one means zooming into a tight turn at 60 mph, this is not handling the vehicle well. It's handling it recklessly. Handling a vehicle well should mean handling it sensibly, handling it in the manner for which it was designed, and in accordance with laws that are meant to make our highways safe.

Fable #5 — "A drink won't affect driving ability." Some young people begin to drink alcoholic beverages while they are gaining experience in driving. The combination of inexperience in both driving and drinking is a fatal combination. A drink followed by a drive is dangerous enough for the adult experienced in both fields. The inexperience of the young driver makes it doubly dangerous.

These are a few of the fables and the plain facts. One must conclude that nothing can take the place of mature judgement and extensive experience. A very high proportion of motorcyclists need more of both.

Why must something be done now? Last year 1,580 United States Motorcyclists were killed riding approximately 1,300,000 motorcycles. It has been estimated that by 1970 there will be 5 million registered two-wheel motor vehicles in this country. A simple mechanical projection of the 1964-1965 deaths and registrations would mean that we will kill nearly 8 thousand riders in 1970. Serious, permanent injury, in addition, would be inflicted upon at least six times that number. Something more concrete must come from this two day safety seminar than the simple sheep-like resignation to allow this to happen. This is the challenge that faces us.

The possibility that we here can start a course of action that could save the lives of most of those 8,000 and prevent disabling injuries to most of the 50,000, is our great opportunity.

The accomplishment of this worthwhile end falls into three major areas of activity: the improvement of equipment, the enforcement of realistic laws, and the improvement of attitudes toward the operation of the two-wheel motor vehicle.

First, studies must be made into ways to improve on the motorcycle itself. The so-called Sissy Strap for the second rider to grasp must be better designed to take the load required of it. Perhaps better, safer, skid-bars could be engineered so as to make it more profitable to stay with the motorcycle at the time of crash, rather than abandon it in favor of the lessened likelihood of injury which now comes from rolling free.

Injury to riders could be substantially reduced and likelihood of death lessened by wearing suitable protective clothing. Many well-designed protective helmets are now available. They must, however, in order to do their job, be worn. Protective jackets of leather or heavy textile material should be worn. Shoes also are an important consideration. I recently saw a motorcyclist on a freeway wearing Japanese-type rubber slippers. He was more suitably shod for taking a shower than going 70 mph on a freeway! Improvements in the design and construction of protective clothing is another area where study could be profitably done.

Second, laws must be enforced that require the use of protective clothing. Kansas City, Missouri, recently enacted a Helmet Law. Similar, but broadened laws, should be incorporated into our States' Motor Vehicle Codes. It would be desirable to have the issuance of a license to operate a motorcycle contingent upon the demonstration of some minimal training and skill in their operation.

Lastly, through Law Enforcement we must take the profit out of stealing motorcycles and their parts.

The third area of activity and that which requires the greatest improvement — our attitudes — is sadly the most difficult to change.

We need a means of injecting instant maturity and judgement into the new operator. This requires an environment in which the "In Thing" is for each individual to demonstrate skill in the safe operation of motorcycles, rather than operate them for kicks and thrills. Riders need to realize how fragile their bodies are. Riders need to know how to "read" road conditions that affect what they should do: traffic speed and density, curves, visibility, warning signs, dampness or ice, to name a few.

The incorporation of driver safety training in schools is a step in the right direction — perhaps new techniques of programmed instruction can be helpful. The lion's share of the burden for establishing a sound set of values is an ethical problem falling most heavily upon the family and the church.



An old motorcyclist I know attributes both his age and his freedom from impairment to a simple device when riding. He pretends he's invisible. Put yourself in that frame of mind. Picture yourself on a motorcycle. You would do an excellent job of defensive riding, wouldn't you?

In summation, the job in which we all share is: first, to improve the attitudes of riders; second, to design and promote the use of safety equipment and clothing; and third, to enact and enforce laws to bring about safe, mature, responsible use of two-wheel motor vehicles. Toward this end the insurance industry will give its active support and participation.

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**"The Operator's Viewpoint"**

**By**

**1Lt Christopher Carpenter  
TSgt Ramon Becker  
SSgt Grant Sullivan  
A1C Gary Deutscher  
Norton AFB, California 92409**

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MOTORCYCLE SEMINAR

I am First Lieutenant Christopher L. Carpenter and am assigned as Assistant Staff Judge Advocate here at Norton AFB. I own a BMW 500CC motorcycle. Chief characteristics of this bike are that it is driven by a drive-shaft as opposed to a chain, has a horizontally-opposed engine and is a road bike as distinct from a scrambler or a hill climbing machine.

I purchased my motorcycle about three months ago, soon after I was married. Primarily, my reason at that time for buying a motorcycle was the economy factor. My wife has her own car so that we are not without an automobile in the family, but the cost of maintaining two automobiles was more of a burden than I wanted to assume at the time. In addition to the economy factor, the California climate was an important consideration. The climate in this area makes it possible to operate a motorcycle almost year round. And there is the appeal of motorcycling which is hard to measure in any sort of definable terms, but does provide a certain allure when you are considering the purchase of a motorcycle. I bought a large motorcycle primarily so that I will be able to carry my wife on the bike and still have enough power to operate it safely in most kinds of traffic.

The main advantage of owning a motorcycle I have already touched on, that is the economy factor. Where as I was operating an automobile which got about 15 miles to the gallon in city traffic, I now am able to get 45 to 50 miles per gallon on my motorcycle. Also, because of its size and relative simplicity of maintenance the cost of a motorcycle is less than that of an automobile. Another distinct advantage of a motorcycle is the ease of parking,

especially in crowded parking lots such as shopping centers or even the Base Exchange. A motorcycle is a prisoner of weather conditions, and this is its chief disadvantage. Even discounting the safety factor of driving on wet pavement, the discomfort of operating a bike in the rain should appear too obvious to have to explain. Slippery pavement and sandy road conditions are other disadvantages to operating a motorcycle. A further disadvantage inherent in the motorcycle is its lack of adequate carrier space. Even with a carrier rack and saddle bags the carrier capacity is very small.

BMW has certain qualities in its vehicle design which I found to be major factors in my choice of that bike over other makes. The BMW is an extremely quiet motorcycle and is very comfortable on the road. The absence of a chain replaced by a drive-shaft not only cuts down the noise, but also the maintenance and mechanical difficulties inherent in any chain driven vehicle. A horizontally-opposed engine provides a certain degree of safety in spills to either side. Finally, the size of the bike itself allows safe and comfortable operation with two people on the bike. Perhaps the only drawback I have found so far, is lack of an electric starter.

I have mentioned a few of the hazards of road operation, but it would do well to reiterate them. A motorcycle can be considered as an unsafe machine on slippery pavement. The sensation is somewhat akin to driving on ice. This same problem arises when there are sandy conditions or on unpaved roads where there is a great deal of loose dirt. Certainly, there are motorcycles designed to be operated in sandy or dirt conditions; however, the bike that I own being a road bike is not geared properly and is too heavy to operate safely in these conditions. Even assuming ideal road

conditions I have found safety hazards which are peculiar to motorcycles. In traffic sudden stops are often difficult to make because of the need to preserve balance while down shifting and applying the brakes. This condition may occur in the normal flow of traffic. It becomes especially critical at intersections where there are stop lights. I now make it a habit to slow down when approaching an intersection so that in the event the light changes I am able to make at least a reasonably safe stop. I have also noted that on occasion automobile drivers will treat me with less respect than they would treat other automobile drivers. I suspect this is because they feel my bike is underpowered. The fact is, however, my bike is not underpowered. The fact is however, my bike has more power than some of the smaller foreign cars on the road. I have encountered this situation mainly at cross-streets where automobiles will pull in front of me causing me to brake very rapidly.

In order to achieve greater accident prevention I feel that two additions to the laws are a necessity. First of all, all motorcycle operators and passengers should be required to wear helmets. This may work a hardship on some individuals who for one reason or another either don't have or can't afford a helmet for passengers. However, I feel the advantages of such a law would overrule these arguments. Secondly, I would require that all motorcycle operators be given a mandatory test such as that given to automobile operators and either a special operators permit be issued or the regular drivers license be stamped in such a way to indicate that the possessor may operate a motorcycle. As the law today requires no such training or license procedures, anyone possessing a drivers license may walk into a dealers

showroom and rent or buy a motorcycle with no evidence of any training whatsoever. In fact my first experience with a motorcycle happened in exactly that way. I have no complaints about the enforcement of the present laws concerning motorcycles. I have not had any problems with the police concerning my motorcycle or the manner in which I handle it. There is a certain amount of publicity to the effect that police pick on motorcycle operators. If this is the case, certainly no one can argue that the authorities are lax in their duties.

I have derived a great deal of satisfaction and enjoyment out of my motorcycle during the brief period in which I have owned it. I have had no problems with the image with which some people seem to associate motorcycle owners. I feel that the owners can avoid being tagged with a bad image or reputation mainly by avoiding the excesses which gave rise to such images in the first place.

Finally, I feel that if a motorcycle is handled with care and respect, and not considered as a play thing, it can give its operator a kind of driving pleasure which he is unable to obtain from any other kind of vehicle.

TSgt Ramon G. Becker  
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About four years ago I bought my first motorcycle--a Honda 150. At that time, I did not own a car and had been relying on the public transit system and the generosity of my friends to get around. I bought a motorcycle rather than a car because I liked the low operating cost and the fact I could maintain it myself. Also, I had heard about how much fun it is to ride one. After about a year and a half, I was ready for a bigger bike. I felt the 150 was too small for a man my size. I wanted something with more power. I liked my Honda so I turned the 150 in or the Honda 300 I am now riding. An added advantage I've come to appreciate only since owning a motorcycle is the lack of a parking problem. There always seems to be room somewhere to park a motorcycle.

Of course, there are disadvantages too, especially when you don't own a car. You get frozen when it's cold, sunburned when it's hot and wet when it rains. Also, the capacity for carrying things on a motorcycle is extremely limited. I solved the carrying problem to some extent with saddle bags, a carrier rack and some long rawhide shoe laces.

I've been completely satisfied with the performance of the Honda. Although my 300 is a highway model, I've gone hill-climbing on it and kept up with most sport models of the same size. The electric starter is great, especially if you stall in traffic. It has never failed to work for me.

There are two things I dislike, though. The first is the "bow wave" from the front tire when you hit a puddle or ride in the rain. It soaks your pant legs to the knees and fills your boots with water. If you raise your feet to avoid it, it soaks the back of your upper pant legs--a most disagreeable sensation. The second thing I dislike is the seat. It is fine for short rides but was never built for ease and comfort on long ones. I made one trip which was 140 miles, one way. When I got off the bike, it took me a half hour to straighten up and I felt as if someone had tried to split me in two. I enjoyed the ride but not the after-effects.

I consider the two greatest hazards of road operation to be the road conditions and other drivers. A cyclist must divide his attention between these two. He must watch for holes and dips in the road and rocks or other debris which, if hit, could cause him to lose control; cracks in the road surface which can trap him; and oil, gravel or water on the road surface which can be as dangerous as ice when accelerating, stopping, or turning. At the same time, he must be aware of the changing traffic situation around him. Some automobile drivers won't extend to a cyclist the courtesy that they extend to another automobile driver; many just don't see a motorcycle until it is on top of them; and a multitude do not understand the capabilities and limitations of a motorcycle. A cyclist must drive defensively if he is to survive.

One hazard I've encountered which I haven't mentioned is rocks kicked up by other vehicles. I've always had a windscreen on my bike and twice it has saved me from being injured by flying rocks. Both times I was passing another vehicle. Both times a large piece was broken out of the windscreen. Had it not been for the windscreen, the rocks would have hit me, probably in the face.

In the area of accident prevention, I feel that instructions should be required and a special test should be given before a person is licensed to operate a motorcycle. When I bought my first one, I had never ridden one before. The only instruction I had in operating the cycle was what the salesman told me before I rode the demonstrator around the block. I had three miles on my new bike when I took a corner too fast, hit the gravel at the side of the road and went in on my side. I spent the next two weeks on crutches.

Safety inspection of all motorcycles which are licensed for road operation should be required. I've seen many which should never have been allowed on the road.

The law enforcement agencies are doing a good job. I've never seen any harassment of motorcycle riders by them. I've been stopped only once in four years and I was in the wrong. I was speeding. The officer was very polite but firm. He gave me a lecture which hit home and let me go with a strong warning. I believe the police treat cyclists as individuals just as they do automobile drivers.



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There is one point which I feel should be stressed. A motorcycle is not a plaything. It is a powerful machine and, like any machine, it is only as safe as the operator makes it.

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1. Why I own a two-wheeler: Basically for pleasure and economy.

2. Advantages and disadvantages in operation are:

a. Advantages:

- (1) The cost of operation is less than half that of an automobile.
- (2) Repairs are inexpensive and seldom needed.
- (3) Motorcycles are priced reasonably low.
- (4) A motorcycle has many of the same uses of an automobile.
- (5) Motorcycles can be ridden in places where one would dare not drive an automobile.
- (6) Traffic jams and parking offer little or no problem.

b. Disadvantages:

- (1) Motorcycles can be spilled very easily.
  - (2) Controlled-sudden stopping is difficult and very dangerous.
  - (3) There is no covering over the operator.
  - (4) The cycle frequently winds up on top of the operator during a spill.
  - (5) Motorcycles are not balanced by four wheels.
  - (6) Leaning into a curve or turn requires skill.
  - (7) Motorcycles, properly muffled, operate so quietly that drivers of automobiles many times are not aware of their presence.
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(8) Motorcycles are hard to spot in traffic.

3. What I like and dislike about vehicle design: I feel that motorcycles are as safe as the operator makes them. Very few accidents occur as a result of vehicle design. Many two-wheelers can be classified as defective and unsafe, but this is a result of the owner letting their vehicles depreciate to unsafe standards. As in automobiles, engineers and designers of motorcycles are constantly working toward a safer two-wheeler. Since there is no outer shell to protect the operator and since it has only two-wheels, there isn't a great deal of room for design improvement. I feel that two-wheelers are a safe means of transportation and that accident prevention will be realized when a greater interest in proper training and education of the operators is given.

4. I consider the hazards of road operation to be:

- a. Other vehicle traffic.
- b. Loose sand or gravel.
- c. Obstacles on the roads and highways.
- d. Different types of roads and highways impose a danger when wet, icy or during extremely hot seasons. Unpaved roads constitute the same hazards.
- e. Stone showers from trucks and other fast-moving traffic.
- f. Grease slicks as a result of vehicles and road equipment.
- g. Animals can cause a spill, especially dogs and cats.
- h. Wind or sand storms can either blurr vision or blind the operator.
- i. Leaves are slippery when wet and can cause a sudden spill.

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5. What I think can and needs to be done to prevent accidents on two-wheelers:

a. Law:

(1) Protective helmets should be required at all times.

(2) Directional signals should be mandatory equipment for road operation.

(3) Two-wheelers should be inspected at least once a year, by official inspection stations, and bear a safety sticker issued by the Department of Motor Vehicles.

(4) A separate Vehicle Code should be written strictly for two-wheelers.

(5) Motorcycle safety should be given more publicity and on the same level as automobiles. Statistics, facts and figures should be made available to the operators as well as the public, using various communications systems. Posters and visual aids are fine examples of what is needed for publicity.

b. Enforcement: Once a Vehicle Code is adopted, the policies and procedures should be strictly enforced by appropriate officials of every community. Law and enforcement is of little use without proper training and education of two-wheel operators.

c. Training: I feel that this is the most important area concerning two-wheel safety and that present training programs, in effect for two-wheelers leave much to be desired.

(1) Each community and military installation should sponsor some form of motorcycle club in connection with the American Motorcycle Association.

(2) Obstacle courses should be constructed wherever possible and made available to motorcycle operators.

(3) Each operator of a two-wheeler should be required to complete a Motorcycle Safety Course.

d. License or Administration:

(1) A separate Motorcycle Operators License should be required for the two-wheel vehicle.

(2) Safety inspection stickers should be a requirement for registration.

(3) Road tests, as well as written tests, should be administered for the Motorcycle Operator's License.

(4) The legal age limit for operators should be raised to the age of 18 and above.

(5) Valid insurance policies with a minimum coverage of liability should be a requirement for registration of two-wheelers.

(6) A Motorcycle Safety Course should be a requirement for registration.

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Ten years ago, a very close friend and I spent many hours on bicycles. It was nothing for us to roll a couple of cans of beans and hot dogs in a sleeping bag and pedal into the hills ten and fifteen miles. We would find a cow-trail and follow it wherever it went. Our favorite place, though, was just south of town. A couple of times a year, motorcycle hill-climbing and scramble races were held in this area. The courses offered gullies, brush, loose dirt and shale, sharp curves and 60° to 80° inclines.

With a few modifications on our bicycles, like taking off the fenders to get rid of excess weight and at the same time enabling us to wedge our foot between the front fork and tire for an extra brake, we were ready for the worst. We had to push the bikes up the hills, but, coming down, look out!

A few years have gone by since then, I'm in the Air Force and am married. Since my wife works and my duty hours are not regular, the need for a second means of transportation arose. I wanted a motorcycle but wasn't sure how to sell the idea to my wife. She didn't have any experience with one so all she could think of was: motorcycle gangs, noisy machine or me getting hurt or killed.

I thought and planned and finally came up with a scheme. For about two months, everytime we passed one on the street, I pointed it out and brought to her attention how quiet it was, how sharp it looked and how easy it seemed to handle. I would drive out of my way just to go by a dealer that had a street display. After a while, she began to notice and started to compare the different models. I told her how economical it was on gas, oil and insurance rates. If repairs were needed, it would be less expensive than a second car. I reminded her that its main use was for me to go back and forth to work and that I just had to have one. I now own a Honda 250cc Scrambler. Before I purchased my motorcycle, I didn't test ride or even look at any of the other makes. Just from seeing them on the street and from what I heard, I decided I wanted a Honda.

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One of the advantages of owning a two-wheeler is economy. I can ride back and forth to work for two weeks with less than 70¢ worth of gas. It only requires two quarts of oil in the crankcase; however, I do have to change it about four times as often as I do in my car. It only takes a few minutes to lube because it only has five grease fittings. Everything on it is easy to get at if I want to make any adjustments or just wish to tinker. Since I started riding a motorcycle, I don't have to worry about parking anymore. It doesn't have a heater, so it does get rather chilly coming to work once in a while. As for rain, I know a person sure can get wet!

I don't know, but I imagine all controls are simple and easily accessible on all makes. Another good point is visibility. There are no corner posts or glaring glass to hide the road or any dangers. A motorcycle just doesn't have the blind spots you find in a car. I would recommend mirrors, but without them, it only requires a quick turn of the head to see behind. If your brakes are properly adjusted, you can stop in a shorter distance than a car.

I consider the most important road hazard to a cyclist is the driver himself. Often, he will drive a little too fast for the conditions and terrain of the road. He will overdrive his own ability and the limitation of the motorcycle. A motorcycle is very maneuverable, but, if you can't see the danger in time, you can't avoid it. When you drive on loose sand or gravel, you should always be more cautious. If you drive too fast, the motorcycle could slide out from under you, especially if you turn too sharply. I'm sure most of you have been in one of our freeway traffic jams. Have you ever noticed how many two-wheelers go down the white line between the traffic lanes? I think this is dangerous because some auto driver will change lanes without any warning and, if the cyclist doesn't see this, boom! he's sitting on someone's trunk.

Another danger to a cyclist is the other driver. Maybe it's because I only require a few square feet of road surface. I have been passed by other drivers and they didn't even get out of my lane. Or they started to pull back before they got their whole car around me.

Inclement weather is another real danger. Rain or snow, plus all the other hazards of the road, can sure take a toll. When the road surfaces are wet, you don't have the braking power, the control on turns or even normal acceleration. It should come natural to reduce your speed and following distance whenever the roads are wet.

A railroad track, crossing the road at an angle, plus a little water, can be very dangerous. Most crossings are rough anyway, so if you apply your brakes on a wet crossing, this makes it even more dangerous. From my own experience, I know that the front wheel will have a little sideways slipping when crossing wet tracks. I always try to be prepared in a case like this.

Extra care should be taken to protect your eyes from all sorts of flying objects. During certain times of the year, insects can be very bad in this area. Also, there is always the danger of blowing sand.

Some of the things I think that need to be done for accident prevention are more law enforcement. I think a cyclist should be ticketed for his own safety for riding the line in today's traffic. I think a committee of expert motorcyclists and lawmen could be set up to develop a qualifying road test and also a written test that pertains only to the two-wheelers. One or two days a month could be set aside for a member of the highway patrol on a motorcycle to give the road test. It should be mandatory to have protective helmets, eye or face shields and at least one mirror. My helmet may be a size too big or it might be the design, because it catches a lot of wind and it sounds like I'm in a blizzard. Helmets will cut out some of the traffic noise, so you can't hear other cars or sirens as soon.

It should be law that all riders are fully clothed. I have seen both men and women riding 40 and 50 mph with only the skimpiest swimming suit on. If they were to fall, by the time they came to a skidding stop, they wouldn't have much skin left. Driving with the headlight on during the day is a good practice, it makes you easier to be seen, but I don't think it should be required. No more than two people should be allowed on a motorcycle, and the minimum age for the passenger should be ten years old. I know of an incident where



a man had his two small sons on his cycle. One in front of him and the other behind. The boys couldn't have been more than five and seven years old. The little boy in back started to slide off, so when the man reached behind to catch him, he lost control and side-swiped a car and crashed. One small boy had a broken arm, the other a broken leg. All three were pretty skinned-up.

I think that owning and riding a two-wheeler can be a rewarding experience. I like to feel the wind blow around me. I like to feel the acceleration and power that I'm sitting on. The freedom and ease in handling can't be beat. Motorcycles are a lot of fun, economical, convenient and they are safe if you remember both yours and the motorcycle's limitations and always drive defensively.

Defensive driving is the key, no matter if you drive a tractor-trailer or a small motorcycle. Thank you.

**"Put Your Best Wheel Forward"**

**By**

**Mr. William T. Berry  
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Remarks of: William T. Berry, Jr.  
Executive Director  
American Motorcycle Association

At: Air Force - Industry  
Two-Wheeled Motor Vehicle Safety Seminar  
Norton Air Force Base, California  
November 29/30, 1966

Thank you Mr. Chairman, Ladies and Gentlemen.

It is certainly a pleasure for me to represent the American Motorcycle Association here at this most important - "Air Force Industry Two Wheeled Motor Vehicle Safety Seminar."

I am sure that AMA is a stranger to many of you.

So that we may become better acquainted I will briefly outline the history of our organization.

AMA was organized in its approximate present form in 1924, making 1966 our 42nd birthday. Organized to promote motorcycle competition, to encourage the formation of motorcycle clubs and to promote highway safety.

Thus our interest in accepting your kind invitation to meet here today.

You may be interested in knowing the AMA sanctions more than 4000 motorcycle events each year - both Amateur and Professional.

With over 90,000 members and 1350 chartered clubs located in all parts of the country AMA is interested in the safe use of motorcycles on our streets and highways

We appreciate the interest of the Air Force and we certainly hope that the outcome of this meeting will be a better understanding of one another's problems, and that we will eventually develop together a program that will lead to an improvement in the Traffic Safety record of Air Force Personnel that ride motorcycles. So much so, in fact, that we hope some day the Air Force will again allow motorcycles to be used on all of its bases.

I am going to get into the nuts and bolts of motorcycle safety because this will be covered in detail by other industry representatives on the program. But I do want you to know that AMA stands ready to assist the Air Force in anyway that we can. For years we have been distributing Traffic Safety Literature free of charge to Air Force bases throughout the world. Paul McCrillis will tell you more about this program.

Another way that AMA can help is through its club program. I know it is difficult to sustain any type of club program on a Military Base because of the frequent changes in personnel. However, on any base where you have a sufficient number of motorcycle riders to justify forming an AMA club for the purpose of promoting Traffic Safety, will do everything we can to help that club reach its objective.

The subject title assigned to me "Put Your Best Wheel Forward" is the theme of an American Motorcycle Association Public Relations and Traffic Safety Program. Its objective is to encourage AMA members to ride safely and set an example of conduct upon the highways that will bring credit to the sport and the community they represent.

I would like to suggest to you today that putting your Best Wheel Forward is not a one way street for use only by motorcycle operators.

Putting Your Best Wheel Forward is, in my opinion, the responsibility of all agencies and individuals concerned with Traffic Safety.

They say there is nothing new in Traffic Safety and I believe they are right. And to try and prove the point I want to read to you some excerpts from a speech I made almost two years ago when I was Director of Governmental Relations for the Motorcycle, Scooter and Allied Trades Association.

"As you are well aware, the number of motorcycle operators and passengers that are being injured and killed is considerably above that of five years ago. Some Traffic Safety experts across the country have viewed this with alarm. Newspaper headlines across the country for the past few months have cried out, "CYCLE CRASHES WORRY OFFICIALS" - "CURB THE MOTORCYCLE MENACE" - "MOTORCYCLES ADD TO HAZARDS" - "MOTORBIKE HAZARD NEEDS ATTENTION" - "MOTORCYCLE SAFETY DRIVE URGED". The members of this industry are deeply concerned with these grim facts because they represent injury and death to people who have bought our products. But we did not become alarmed yesterday - or last week - or last month. This increase in accidents, injuries and fatalities to motorcycle operators was predictable and was predicted five years ago. You need only to look at the increase in registration figures to have a vivid picture of the dramatic growth of this industry in the past five years. There were 574,080 motorcycles registered in 1960 - 984,760 in 1964. There will be over 1 1/4 million motorcycles in the U.S. by the end of 1965.

Yes, gentlemen, we are concerned. But we are even more concerned over the apathy of organizations, Governmental and Private, who make safety their business - who are specialists in safety education --who know how to communicate with the public, and yet, for the most part, have completely ignored that portion of the motoring public who have chosen to operate a

Two-Wheeled Motor Vehicle --that is, have ignored us except to refer to us as a "Menace" or "Bums". Motorcycle operators are people, the largest segment being the new riders who have taken up cycling in the past three or four years, and who truly represent John Q. Public. They're average American citizens from all walks of life, all levels of social standing, all levels of income, of both sexes.

Then there is the group we term "The Enthusiast". They're no different from the average rider other than their interest in motorcycling occupies a greater portion of their over-all interest. They love motorcycling. It is their No. 1 hobby. In many cases, it is their vocation.

Let me read you a few quotes from newspaper clippings that crossed my desk last week. "I guess everybody knows I hate Scooterbikes", said Harold F. Lillie of the Safety Council of Greater Lansing, Michigan. An editorial in the Lansing, Michigan State Journal quotes State Police Commissioner Frederick Davis as commenting that he "Wouldn't want any part of including teaching the riding of them (referring to motorcycles) as part of the Driver Education System in our Schools". The same article quoted Malcolm V. Hale of the State Education Department as saying that he would not like to see the present Driver Training courses diluted with instruction on motorbike operation. Let me ask you this question. Have you, personally, seen on TV or heard on radio a public service message from any organization or the station itself aimed at reducing motorcycle accidents? Have you seen anything included in a Driver Education Program anywhere across the country aimed specifically at the operator of a Two-Wheeled motor vehicle? Have you seen one, or heard one nationally recognized safety official stand up and say, "Motorcycles are here to stay. Let's see what we can do about including them in our Traffic Safety Program."

Captain Carl Hamm of the Milwaukee Police Department's Traffic Bureau recently was quoted by the Milwaukee journal as saying, "Believe it or not, in most auto-motorcycle accidents the motorist is at fault." Hamm said most of these types of accidents took place when the motorist failed to yield the right-of-way. He said some motorists indicated in case reviews that they didn't yield just because they didn't want to. "Some view motorcycles as monstrosities that should be banned from the streets", Hamm said. Motorcycle operators are human beings. When hit by an automobile, our bones break; we bleed; we hurt; and, in some cases, we die. But I don't believe that we should bleed and hurt and die because some automobile operators think they have an exclusive right to the use of our streets and highways. Educating the automobile operator about his responsibilities to other highway users appears to be no less important than educating cycle operators in the safe use of their vehicles."

Now almost two years later much the same attitude exists on the part of many. This is reflected by the frantic appeals for new legislation aimed specifically at motorcycle operators.

It is reflected by the charges that motorcycle accidents are "Reaching Epidemic Purportion". When the truth of the matter is that over the past few years the motorcycle accident rate per the number of vehicles registered has been declining. Not much but it has been declining in face of a general trend upward for all Motor Vehicles.

This is not to suggest that further improvement cannot be made. We are convinced that it can, but not with gadgets and gimmicks and one shot magic cure--alls. But only by realizing that motorcycle operators have a historical and legal right to use our streets and highways. And by seeking solutions to the problems in view of the overall traffic picture and based on competent research not emotional hysterical appeals.

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**"What Industry is Doing  
to Promote Safe Operations"**

By

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and

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WHAT THE MOTORCYCLE-MOTORSCOOTER INDUSTRY  
IS DOING TO PROMOTE SAFE OPERATION

ADDRESS BY: WALTER C. DAVIDSON  
CHAIRMAN, GOVERNMENTAL RELATIONS COMMITTEE  
MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION

AT: AIR FORCE-INDUSTRY TWO-WHEEL MOTOR VEHICLE SAFETY SEMINAR  
NORTON AIR FORCE BASE, CALIFORNIA  
NOVEMBER 29, 1966

GENTLEMEN:

I HAVE ALWAYS BELIEVED THAT HONESTY AND DIPLOMACY  
COULD BE COMPATIBLE AND TODAY I WOULD LIKE TO PROVE IT.  
IN THIS CASE IT WILL BE EASY BECAUSE THE SERIOUSNESS OF  
OUR SUBJECT LEAVES NO ROOM FOR ALTERNATIVES, SUBSTITUTES  
OR FLOWERY LANGUAGE IN GETTING TO THE HEART OF THE PROBLEM  
AND FINDING WORKABLE SOLUTIONS.

THE MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION  
IS VERY GRATEFUL TO THE AIR FORCE FOR CALLING THIS SEMINAR  
AND IMPRESSING SO MANY KNOWLEDGEABLE PEOPLE WITH THE  
IMPORTANCE OF ATTENDING. THERE WAS A REAL NEED FOR  
THIS CONFERENCE AND THE INDUSTRY ASSOCIATION IS ANXIOUS  
AND EAGER TO CONTRIBUTE EVERYTHING AT ITS DISPOSAL TO  
HELP PRODUCE MAXIMUM POSITIVE RESULTS.

MY SUBJECT TODAY IS "WHAT THE MOTORCYCLE-MOTORSCOOTER  
INDUSTRY IS DOING TO PROMOTE SAFE OPERATION." THE TITLE  
REQUIRES SOME CLARIFICATION. WHEN WE REFER TO THE  
INDUSTRY, WE WILL BE TALKING OF PROGRAMS AND OPINIONS (SLIDE #1)  
OF THE MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION.  
THE MS&ATA IS A TRADE ASSOCIATION WHICH CURRENTLY HAS  
APPROXIMATELY 40 MEMBERS. THE MEMBERSHIP IS COMPOSED OF  
MANUFACTURERS AND DISTRIBUTORS OF TWO-WHEEL MOTOR VEHICLES,



COMPONENT PARTS AND ACCESSORIES AND THE TRADE AND CONSUMER MAGAZINES WHICH REPORT ON MOTORCYCLE ACTIVITIES.

ALTHOUGH OUR MEMBERSHIP DOES NOT INCLUDE ALL COMPANIES IN THE FIELD, IT DOES INCLUDE THE VAST MAJORITY OF MOTORCYCLE AND SCOOTER BRANDS WITH WHICH YOU ARE FAMILIAR. WE ARE A NON-PROFIT CORPORATION WITH GENERAL OFFICES IN COLUMBUS, OHIO. THE ORIGIN OF THE MS&ATA IS TRACED BACK TO 1917.

SOMEBODY ONCE SAID THAT VISION ENABLES ONE TO SEE THINGS FROM ANOTHER'S VIEWPOINT. THOSE OF US IN THE MOTORCYCLE INDUSTRY HAVE HAD TO BEND OUR VISION IN A LOT OF DIFFERENT DIRECTIONS DURING THE PAST YEAR BECAUSE WE HAVE DISAGREED WITH THE VIEWPOINT OF SOME INDIVIDUALS AND GROUPS WHO, HOWEVER SINCERE, DO NOT PRESENT THE TOTAL PICTURE WHEN THEY MAKE PUBLIC DECLARATIONS ON MOTORCYCLE SAFETY. WE HAVE GOTTEN TO THE POINT WHERE WE ALMOST QUESTION THE VALIDITY OF THE SAYING: NAMELY THE ONE THAT STATES, QUOTE, "THE MAN WHO QUESTIONS OPINIONS IS WISE: THE MAN WHO QUARRELS WITH FACTS IS A FOOL."

TO ILLUSTRATE MY POINT, LET US STATE A FACT: THE MOTORCYCLE FATALITY RATE PER 100,000 REGISTERED VEHICLES (SLIDE #2) HAS GONE DOWN IN EACH OF THE PAST SIX YEARS. INTERPRETATION: MOTORCYCLE SAFETY IS STEADILY IMPROVING.

OBVIOUSLY, MORE DETAILS ARE NEEDED TO PAINT A COMPLETE PICTURE BUT THIS IS JUST AS CLOSE TO FACT AS

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THE STATEMENT ISSUED BY ONE OF THE FEDERAL GROUPS DEVOTED TO THE PUBLIC'S PROTECTION WHEN THEY STATED: "THE DEATH RATE FOR MOTORCYCLE ACCIDENTS, IN RELATION TO THE NUMBER OF MOTORCYCLES IN THIS COUNTRY, IS TWICE AS HIGH AS THE COMPARABLE RATE FOR AUTOMOBILES AND OTHER MOTOR VEHICLES." WHO IS THE WISE MAN AND WHO IS THE FOOL?

LET'S NOT DEBATE THAT ISSUE. INSTEAD, LET'S GET ON COMMON GROUND.

WE ALL AGREE THAT THE MOTORCYCLE HAS BECOME ENORMOUSLY POPULAR FOR TRANSPORTATION AND RECREATION IN THIS COUNTRY. THE GROWTH HAS BEEN RAPID. IN 1956 REGISTRATION IN THE UNITED STATES TOTALLED 425,000 AND BY 1960 IT HAD INCREASED ONLY TO 577,000. THEN SOMETHING HAPPENED. FROM 642,000 IN 1962, REGISTERED TWO-WHEEL MOTOR VEHICLES JUMPED TO ABOUT 950,000 THE NEXT YEAR AND, BY THE END OF 1965, OUR PUBLIC ROADS WERE BEING USED BY 1,311,000 MOTORCYCLES AND SCOOTERS. THE BUREAU OF PUBLIC ROADS HAS ESTIMATED THAT THE FIGURE HAS ALREADY PASSED THE 1,900,000 MARK THIS YEAR AND THIS INDICATES THAT THE OWNERS OF TWO-WHEELERS WILL NUMBER CLOSE TO 2-MILLION WHEN WE PASS INTO 1967.

(SLIDE #3)

THESE FIGURES DO NOT, OF COURSE, TELL US HOW MANY PEOPLE ARE ACTUALLY RIDING THE APPROXIMATELY 2-MILLION MACHINES. WE WILL NOT KNOW THIS DEFINITELY UNTIL ALL STATES HAVE SPECIAL MOTORCYCLE LICENSING LAWS. ESTIMATES

RANGE FROM 1 PER MACHINE TO 4 OR 5. AT ANY RATE, IT IS CERTAINLY A FEW MILLION AND THIS HAS MADE MOTORCYCLES AND SCOOTERS SERIOUS FACTORS IN ROAD TRAFFIC IN VIRTUALLY EVERY CITY AND TOWN IN THE COUNTRY.

ALL OF A SUDDEN EVERYBODY SEEMS TO HAVE BECOME "ALARMED" AT THE MOTORCYCLE ACCIDENT RATE. CERTAIN "SPOKESMEN" FOR THE MEDICAL PROFESSION HAVE ERUPTED WITH EMOTIONAL OUTBURSTS, USING SUCH CASUALLY SELECTED WORDS AS "EPIDEMIC" AND "MAYHEM."

SOME PUBLIC OFFICIALS HAVE CROWNED THEMSELVES EXPERTS OVERNIGHT AT EVERYTHING FROM MOTORCYCLE OPERATION TO HELMET STANDARDS.

CERTAIN POLITICIANS HAVE DECIDED TO CHAMPION WHAT THEY CALL LEGISLATIVE REFORM, WITHOUT REALLY BOTHERING TO MAKE THOROUGH INVESTIGATIONS OF ALL PERTINENT FACTS.

AND PUTTING ALL THESE PUBLIC UTTERANCES TOGETHER, SOME OF OUR WIDELY-READ NATIONAL PUBLICATIONS HAVE PRINTED APPRAISALS OF THE MOTORCYCLE ACCIDENT SITUATION THAT, WHILE NOT LITERALLY FALSE, ARE SHALLOW IN FACTUAL CONTENT AND ACTUALLY CONTAIN ONLY A PART OF THE TRUE PICTURE.

ONE OF OUR CONCERNS IS THAT MANY ACCIDENT STORIES EMPHASIZE THE INCREASED ACCIDENT RATE BUT PLACE LITTLE OR NO EMPHASIS ON THE TREMENDOUS REGISTRATION INCREASE OVER A VERY SHORT PERIOD OF TIME.

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BUT THE MAIN CONCERN IS THAT THESE "SCARE"  
ANNOUNCEMENTS ADD PRECISELY NOTHING TO THE EFFORT --  
COMPOSED OF TANGIBLE PROGRAMS -- BEING VIGOROUSLY  
PURSUED BY THE INDUSTRY ASSOCIATION TO BRING ABOUT  
FAST SIGNIFICANT IMPROVEMENT IN THE MOTORCYCLE SAFETY  
RECORD.

IF YOU ASKED US RIGHT NOW WHAT IS AT THE CORE  
OF THE MOTORCYCLE SAFETY PROBLEM WE WOULD HAVE TO  
SAY OUR EDUCATED GUESS IS THE LAG IN LICENSING AND  
TRAINING.

CURRENTLY THERE ARE ONLY FIVE STATES WHICH  
HAVE A SEPARATE MOTORCYCLE LICENSE. HOW CAN WE  
EXPECT ANY IMPRESSIVE DEGREE OF SAFETY WHERE WE  
FAIL TO PROVIDE LICENSE TESTING IN 45 OF 50 STATES?  
THE INDUSTRY ASSOCIATION FORMALLY ADOPTED A RESOLU-  
TION ALMOST A YEAR AGO, URGING ALL STATES TO  
IMMEDIATELY PASS LAWS CALLING FOR SEPARATE MOTOR-  
CYCLE LICENSES, BASED ON APPROPRIATE TESTING METHODS.  
WE EXPECT MANY MORE STATES TO INSTITUTE SOME FORM OF  
CYCLE AND SCOOTER LICENSING SYSTEM DURING THE COMING  
YEAR. THIS WILL CERTAINLY HELP TO ELIMINATE A LARGE  
PERCENTAGE OF THE ACCIDENTS WHICH OCCUR TO MOTORCYCLISTS  
DURING THEIR FIRST HOURS AND DAYS ON PUBLIC ROADS.

WHEREAS LICENSING IS INDISPUTABLY THE JURIS-  
DICTION OF STATE LEGISLATORS, TRAINING IS, UNFORTUNATELY,

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NOT AS CLEAR-CUT AN ISSUE AND CANNOT BE SO BLITHELY ASSIGNED TO ONE GROUP. MOST OF THE CONFERENCES ON THIS PROBLEM HAVE LED TO RESOLUTIONS URGING INDIVIDUAL COMMUNITIES TO BEAR THE BURDEN. THUSFAR THERE HAS BEEN LITTLE ACTION AND NO SIGN OF A CONCERTED CAMPAIGN BY ANY INFLUENTIAL ORGANIZATION.

THIS IS ANOTHER AREA WHERE THE MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION HAS STEPPED IN TO OFFER HELP. IN VIEW OF THE ALMOST COMPLETE ABSENCE OF MOTORCYCLE TRAINING IN SCHOOLS, COLLEGE OR PROFESSIONAL DRIVER EDUCATION COURSES, THE INDUSTRY HAS UNDERTAKEN THE TASK OF DEVELOPING A COMPREHENSIVE TRAINING MANUAL FOR RIDERS. THIS MANUAL IS NEARING COMPLETION AND WILL BE OFFERED TO ALL INTERESTED GROUPS. THE MANUAL COVERS THESE

BASIC SUBJECTS: HISTORY OF MOTORCYCLES; THE MACHINE  
TWO WHEELED DYNAMICS; THE RIDING ENVIRONMENT; TRAFFIC  
AWARENESS; WHAT THE FOUR WHEEL OPERATOR SHOULD KNOW;  
PERSONAL DRESS AND EQUIPMENT; SAFE MAINTENANCE; AND  
MENTAL ATTITUDE.

(SLIDE #4)  
(SLIDE #5)  
(SLIDE #6)  
(SLIDE #7)  
(SLIDE #8)  
(SLIDE #9)  
(SLIDE #10)  
(SLIDE #11)  
(SLIDE #12)

AS VITAL AS RIDER TRAINING AND LICENSING MIGHT BE, THEY WILL NOT REACH MAXIMUM POSSIBLE EFFECTIVENESS UNLESS THERE IS AN ACCOMPANYING SYSTEM OF MOTORCYCLE INSTRUCTION FOR MOTOR VEHICLE TEST EXAMINERS.

RECOGNIZING THE URGENCY OF SUCH A PROGRAM, THE INDUSTRY ASSOCIATION CONCEIVED AND PRODUCED A FILM FOR THE AMERICAN ASSOCIATION OF MOTOR VEHICLE ADMINISTRATORS THIS YEAR.

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THIS PROJECT HAS RESULTED IN DEVELOPMENT OF A MOTION PICTURE WHICH WILL BE USED TO FAMILIARIZE DRIVER LICENSE EXAMINERS WITH THE OPERATING CHARACTERISTICS OF TWO-WHEEL MOTOR VEHICLES. IN ADDITION, THE FILM PORTRAYS A SUGGESTED UNIFORM STANDARD EXAMINING PROGRAM. THE AMERICAN ASSOCIATION OF MOTOR VEHICLE ADMINISTRATORS WILL ANNOUNCE DETAILS OF THIS PROJECT LATER THIS YEAR.

THE AFOREMENTIONED UNDERTAKINGS ARE PART OF THE TWO BASIC PROGRAMS WHICH THE MS&ATA IS NOW PERFORMING. FIRST, GOVERNMENTAL RELATIONS. THIS PROGRAM FUNCTIONS AS AN AID TO FEDERAL, STATE AND LOCAL AGENCIES TO ASSIST IN DEVELOPING REALISTIC, EQUITABLE LAWS AND RULES OF THE ROAD AS THEY AFFECT MOTORCYCLES AND SCOOTERS. OUR GOVERNMENTAL RELATIONS PEOPLE WORK PRIMARILY WITH LEGISLATIVE BODIES, SAFETY COUNCILS AND MOTOR VEHICLE ADMINISTRATORS, PROVIDING INFORMATION AND COUNSEL WHENEVER REQUESTED.

A TECHNICAL COMMITTEE OPERATES AS A UNIT OF THE GOVERNMENTAL RELATIONS COMMITTEE, WORKING TO ESTABLISH TECHNICAL STANDARDS WHICH WILL ASSIST REGULATORY AGENCIES IN FINDING PRACTICABLE SOLUTIONS TO TECHNICAL PROBLEMS INVOLVING MOTORCYCLES AND SCOOTERS.

A SECOND COMMITTEE, PUBLIC RELATIONS, PROVIDES INFORMATION AND ASSISTANCE TO THE NATION'S NEWS MEDIA, WITH SPECIAL EMPHASIS ON PROGRAMS THAT WILL FOSTER SAFETY AND RESPONSIBILITY ON THE PART OF THE OWNERS AND OPERATORS OF TWO-WHEEL MOTOR VEHICLES.  
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WE WILL SHOW YOU SOME OF THE RESULTS ACHIEVED BY BOTH COMMITTEES IN A MINUTE.

IN ADDITION TO ITS BASIC COMMITTEES, THE MOTORCYCLE, SCOOTER AND ALLIED TRADE ASSOCIATION WORKS IN CLOSE COOPERATION WITH THE AMERICAN MOTORCYCLE ASSOCIATION, WHOSE RESPONSIBILITIES FALL INTO THE AREAS OF MOTORCYCLE SPORTING EVENTS AND CLUB ACTIVITIES. I SHOULD MENTION THAT MOST OF THE AMERICAN MOTORCYCLE ASSOCIATION CLUBS HAVE REGULAR PROGRAMS OF SAFETY EDUCATION FOR THEIR MEMBERS AND SOME OFFER THEIR EXPERIENCE TO SCHOOL AND POLICE OFFICIALS TOWARD THE FORMULATION OF TRAINING COURSES FOR NEW RIDERS.

AS YOU CAN SEE, THE PROMOTION OF MOTORCYCLE SAFETY IS ONE OF THE MOST IMPORTANT REASONS FOR THE EXISTENCE OF THE MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION. TO ELABORATE A LITTLE FURTHER, MEMBERSHIP IN THE ASSOCIATION PROVIDES US WITH COMMON GROUND ON WHICH TO EXPRESS OUR IDEAS, HEAR THE OPINIONS OF OTHER INDUSTRY EXECUTIVES AND PROFESSIONAL SAFETY EXPERTS, AND TO INITIATE ACTION WHICH WILL UPHOLD THE RESPONSIBILITIES WE HAVE TO THE PUBLIC IN GENERAL, AND ESPECIALLY THOSE WHO USE OUR PRODUCTS ON PUBLIC ROADS.

MUCH TIME AND MONEY HAS BEEN SPENT BY THE ASSOCIATION ON CREATING AND DISTRIBUTING SAFETY MATERIAL DURING RECENT YEARS. INCLUDED ARE BROCHURES AND PAMPHLETS, MOTION PICTURES FOR PUBLIC SHOWING, TELEVISION FILMS, RADIO SCRIPTS, AND SAFETY-ORIENTED MATERIAL FOR NEWSPAPER AND MAGAZINE USE.

(SLIDE #13)

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TWO MOTION PICTURES HAVE RECEIVED WIDE DISTRIBUTION. THEY ARE "STONE AGE RULES OF THE ROAD" AND "TWO-WHEEL WISDOM". OUR "STONE AGE" FILM HAS BEEN SHOWN HUNDREDS OF TIMES DURING SCHOOL AND CLUB PROGRAMS AND IT IS USED REGULARLY BY POLICE AND OTHER SAFETY GROUPS. WE THINK IT WILL BE HELPFUL TO MOTORCYCLE TRAINING SCHOOLS ALSO. "TWO WHEEL WISDOM" IS A PRODUCTION OF THE AMERICAN MOTORCYCLE ASSOCIATION AND IT HAS BEEN IN CIRCULATION THROUGH CLUBS AND OTHER GROUPS FOR SEVERAL YEARS. (SLIDE #14)

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THIS YEAR THE MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION PRODUCED A TELEVISION PUBLIC SERVICE SPOT ANNOUNCEMENT AND RECEIVED ENDORSEMENT OF THE FILM FROM THE U. S. PUBLIC HEALTH SERVICE, ACCIDENT PREVENTION DIVISION. ENTITLED, "SAFETY IS A SNAP," THE FILM URGES RIDERS TO WEAR SAFETY HELMETS AND EYE PROTECTION. IT WAS PROVIDED TO 400 TV STATIONS IN ALL PARTS OF THE COUNTRY AND WAS USED ON A REGULAR BASIS FOR SEVERAL MONTHS IN PUBLIC SERVICE TIME. (SLIDE #15)

(SLIDE #16)

DURING THE YEAR WE SENT SAFETY STORIES AND OTHER NARRATION TO RADIO COMMENTATORS ACROSS THE COUNTRY. THIS HAS DEVELOPED INTO A SERIES WHICH LOCAL COMMENTATORS READ TO THEIR LISTENERS ON A REGULAR BASIS. (SLIDE #17)

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WE HAVE ALSO BEEN ACTIVE IN CREATING TRAFFIC SAFETY EDUCATIONAL AIDS IN THE AREA OF BROCHURES AND NEWSPAPER MATERIAL.



THE PAMPHLET "NOW YOU'RE A CYCLE SPORT ENTHUSIAST" IS GIVEN WITH EACH NEW MOTORCYCLE AND SCOOTER PURCHASED. IT STRESSES THE IMPORTANCE OF RIDERS WEARING SAFETY HELMETS AND OF RETAINING IN ORIGINAL FORM THE MUFFLER SYSTEM DESIGNED FOR THEIR MACHINES. MORE THAN 200,000 OF THESE PAMPHLETS HAVE ALREADY BEEN DISTRIBUTED THIS YEAR. INCIDENTALLY, YOU'LL NOTICE THAT THE INDUSTRY HAS CONSISTENTLY PROMOTED THE VOLUNTARY USE OF SAFETY HELMETS AND HAS TAKEN A NUMBER OF STEPS TO COMBAT THE NOISE PROBLEM. (SLIDE #18)

ANOTHER BOOKLET ON THE SUBJECT OF HEAD PROTECTION CALLED THE "HEY! DON'T FORGET ME!" EMPLOYS THE HISTORICAL CARTOON APPROACH IN AN ATTEMPT TO CONVINCING RIDERS OF THE IMPORTANCE OF ALWAYS WEARING HELMETS. THOUSANDS OF COPIES OF THIS EDUCATIONAL SAFETY AID HAVE BEEN PROVIDED TO THE PUBLIC IN RECENT YEARS. (SLIDE #19)

GENERAL TRAFFIC SAFETY HINTS BY MOTORCYCLISTS ARE OFFERED IN THE PAMPHLET "TWO-WHEELED WISDOM," DISTRIBUTED IN CONJUNCTION WITH THE FILM OF THE SAME TITLE. (SLIDE #20)

THE LATEST OF OUR PUBLICATIONS IS A BROCHURE ON THE ASSOCIATION ITSELF. THE PURPOSE OF THIS BOOK IS TO EXPLAIN THE AIMS, ACTIVITIES AND VIEWS OF THE MOTORCYCLE, SCOOTER AND ALLIED TRADES ASSOCIATION TO GUIDE OFFICIAL AGENCIES, SAFETY GROUPS AND MEMBERS OF THE PRESS IN REACHING WELL INFORMED SOURCES OF INFORMATION ON SPECIFIC SUBJECTS RELATED TO MOTORCYCLING. (SLIDE #21)

I THINK IT IS IMPORTANT TO MENTION CERTAIN SPECIFIC SAFETY MATERIAL WHICH HAS BEEN PROMINENT IN THE ASSOCIATION'S PROGRAM OF NEWS DISSEMINATION. A SERIES OF FOUR CARTOONS, EACH MAKING A MAJOR POINT ON MOTORCYCLE SAFETY, WAS CREATED AND PROVIDED TO NEWSPAPERS AROUND THE COUNTRY. OVERWHELMING ACCEPTANCE OF THE FIRST SET HAS PROMPTED US TO BEGIN PREPARATION OF A SECOND SERIES. (SLIDE #22)

MANY OF THE NEWS ANNOUNCEMENTS MADE BY THE INDUSTRY ASSOCIATION HAVE SAFETY AS THEIR CENTRAL THEME. THIS YEAR, WITH THE ENDORSEMENT OF ONE OF THE NATION'S LEADING AUTHORITIES ON VEHICLE IDENTIFICATION, THE MS&ATA INAUGURATED A "LIGHTS ON FOR SAFETY" CAMPAIGN, URGING MOTORCYCLE AND SCOOTER RIDERS TO TURN THEIR HEADLIGHTS ON IN THE DAYTIME AS WELL AS AT NIGHT. THE SUCCESS OF THIS PROGRAM, IN TERMS OF PUBLIC REACTION, HAS LED OUR PUBLIC RELATIONS COMMITTEE TO SUGGEST EXPANDING IT DURING 1967. (SLIDE #23)

ONE OF THE MOST HEARTENING DEVELOPMENTS IN THE INDUSTRY'S EFFORTS TO BRING ABOUT IMPROVED MOTORCYCLE SAFETY WAS THE RESPONSE RECEIVED WHEN WE ASKED PROMINENT SAFETY EXPERTS TO SERVE ON THE MOTORCYCLE SCOOTER AND ALLIED TRADES ASSOCIATION TRAFFIC SAFETY ADVISORY COMMITTEE. AMONG THOSE NOW ADVISING US ARE WILLIAM FOULIS, DIRECTOR OF THE PRESIDENT'S COMMITTEE ON TRAFFIC SAFETY; JOHN KERRICK, DIRECTOR OF DRIVER LICENSING FOR THE AMERICAN ASSOCIATION OF MOTOR VEHICLE ADMINISTRATORS; GLENN CARMICHAEL, ALSO OF THE AAMVA; HUDSON HAMM, DIRECTOR OF (SLIDE #24)

SPECIAL PROGRAMS FOR NORTHWESTERN UNIVERSITY TRAFFIC INSTITUTE; LOUIS SPITZ, DIRECTOR OF THE NEVADA MOTOR VEHICLE DEPARTMENT; TOM SEALS OF THE NATIONAL EDUCATION ASSOCIATION; WILLIAM FRANEY, DIRECTOR OF THE HIGHWAY SAFETY DIVISION OF THE INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE; PLUS REPRESENTATIVES OF THE U. S. PUBLIC HEALTH SERVICE, INSURANCE INSTITUTE FOR HIGHWAY SAFETY, NATIONAL HIGHWAY USERS CONFERENCE, NATIONAL SAFETY COUNCIL, AND THE NORTH CAROLINA UNIVERSITY SCHOOL OF PUBLIC HEALTH.

MR. SPITZ IS NOW SERVING AS CHAIRMAN OF THE ADVISORY COMMITTEE AND PROGRESS HAS BEEN MADE IN FORMULATING SOME NEW PROGRAMS THAT SHOW GREAT PROMISE OF EXERTING FAVORABLE INFLUENCE ON THE FUTURE MOTORCYCLE SAFETY RECORD.

TWO WEEKS AGO MR. SPITZ MET WITH MOTORCYCLE, SCOOTER AND ALLIED TRADE ASSOCIATION TECHNICAL COMMITTEE IN LAS VEGAS, NEVADA. ALSO IN ATTENDANCE WERE THE MANUFACTURERS OF PROTECTIVE HEAD GEAR. THIS GROUP CAME UP WITH MINIMUM STANDARDS FOR PROTECTIVE HEAD GEAR FOR RIDER USAGE IN EVERYDAY RIDING. AS SOON AS AN INDEPENDENT TESTING LABORATORY CAN BE APPOINTED TO DO THE TESTING, THE AMERICAN MOTORCYCLE ASSOCIATION WILL HAVE A LIST OF APPROVED HELMETS FOR MOTOR VEHICLE ADMINISTRATORS.

AS YOU KNOW, ONE OF THE PRE-REQUISITIES OF WORK IN THE TRAFFIC SAFETY FIELD IS THE ABILITY TO BE ETERNALLY OPTIMISTIC. WE WOULD LIKE TO SAVE EVERY SINGLE LIFE THROUGH OUR EFFORTS, BUT WE MUST FACE THE FACT THAT

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THIS IS NOT POSSIBLE, FOR ANY TYPE OF MOTOR VEHICLE.

SO, THE ALTERNATIVE IS TO ACCEPT WHAT IS POSSIBLE UNDER REALISTIC CONDITIONS AND, CONSIDERING THOSE GUIDELINES, WE ARE HOPEFUL THAT YOU WILL APPROVE OF THE MOTORCYCLE INDUSTRY'S CURRENT EFFORTS AND PLANS.

IN THE TIME YOU HAVE SO GENEROUSLY ALLOTTED TO ME TODAY I HAVE GIVEN YOU A REVIEW OF WHAT OUR ASSOCIATION IS DOING. I HAVE NOT BEEN ABLE TO TELL YOU WHAT HARLEY-DAVIDSON HAS DONE AND IS DOING. PLEASE BELIEVE ME WHEN I SAY THAT WE ARE VERY ACTIVE IN RESEARCH TO MAKE OUR PRODUCTS THE SAFEST ON THE HIGHWAYS.

PERHAPS DURING THE OPEN FORUM I WILL BE ABLE TO ANSWER QUESTIONS AS TO WHAT HARLEY-DAVIDSON IS DOING IN THE AREA OF SAFETY.

I THANK YOU FOR LISTENING.  
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**"What Individual Companies are  
Doing to Promote Safe Operation"**

By

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# NEWS RELEASE

**YAMAHA INTERNATIONAL CORPORATION**

7733 TELEGRAPH ROAD  
MONTEBELLO, CALIFORNIA

PUBLIC RELATIONS DEPT., JIM JINGU, DIRECTOR

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## TEXT OF ADDRESS

James E. Jingu, Director of Public Relations  
Yamaha International Corporation, Montebello, California

AIR FORCE INDUSTRY  
TWO WHEEL MOTOR VEHICLE SAFETY SEMINAR  
Norton Air Force Base, California  
30 November, 1966

## WHAT YAMAHA IS DOING TO PROMOTE SAFE OPERATION

We at Yamaha are not missionaries or teachers. We recognize the serious responsibilities involved in training all operators to operate their vehicle in a safe and sane way. We must never use safety as the basis for cheap and gaudy publicity, but instead we must seek publicity only to encourage our inexperienced riders to recognize the consequences of reckless and unprotected riding on these machines. It has been our experience that in the course of selling our machines through our dealer network across the United States, amounting to some 1,200 franchised retail shops, that dealers who have maintained the practice of thoroughly instructing inexperienced riders are unanimous in their belief that accidents and injuries are for all practical purposes minimized. From a distributor's standpoint, we have consistently recommended to our dealers that the prospective

*P. J. Johnson*

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be fully tested and trained before releasing the machine to insure his safety and understanding of the rules of the road. We recommend to the dealer that instructions should be based primarily on classroom procedure as well as actual riding on a practice course. We, in turn, endorse "The Guide for Motor-Bike Driver Education" by Universal Underwriter Insurance Company, Safety Division. We have also arranged with our factory in Japan to include our newly published 35 page defensive riding instruction book in every crate of motorcycles shipped to this country.

Yamaha feels a grave sense of responsibility for the safety of its customers and is attacking the problem of motorcycle safety in a 4-fold manner.

1. Continuing to develop and build into our product every possible safety feature;
2. Developing an educational program for new riders.
3. Promoting and promulgating the concept of defensive riding.
4. Encouraging our dealers to recognize that they have a moral responsibility for training customers who are beginning riders.

All Yamahas are now built with patented waterproof dust-proof brakes. All Yamahas are built with superb road handling characteristics developed and proven in international racing competition. All Yamahas have the finest lighting systems available - tested and approved by independent laboratories as well as many state agencies. All Yamahas are equipped with rear view mirrors, audible horns, quiet muffling systems and are designed for simplicity of operation.

Although there are driver education programs for automobiles in most of the country's high schools, and although special licenses are required to operate vehicles other than passenger cars (i.e., trucks, busses, airplanes, etc.), no special licenses are required of motorcycle operators, nor is any provision made by governmental agencies or boards of education for motorcycle operator training. We believe that a model motorcycle act should be passed by one of the states, which could be used as an example by other states. Under this model legislation would be a provision requiring special drivers licenses for motorcycle operators. In this way we could be reasonably sure that anyone operating a motorcycle has at least a minimal degree of proficiency. We also want to encourage all educational bodies to consider establishing some sort of course in motorcycle training.

Yamaha is now planning a motorcycle riding clinic to be held in the near future in the Los Angeles area. This will be a pilot clinic which will serve as a model, which we hope will be followed by dealers, clubs and civic organizations throughout the country.

In the past two years we have held Safety A-Go-Go's at our Los Angeles headquarters promoting safety in several ways. We had law enforcement officers address the participants of these rallies, we provided them with safety brochures, we offered them free flares, etc.

On the national level what we are doing to promote safe operation lies primarily in supporting and cooperating with our national association. Specifically, we participated and supported the formulation of 4 or 5 basic resolutions in the Spring of this



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year.

Resolution No. 1: Driver training and driver improvement program. - We advocated the broadening and expansion of driver education and driver improvement programs to include motorcycle and motor-scooter operators.

Resolution No. 2: Regulation of motorcycles to limited access roads. - In the interest of public safety, we believe it may be necessary to prohibit certain size motorcycles from the use of limited access roadways, such as freeways, turnpikes, etc. And further, we believe that such prohibitions, when necessary, should be based upon a pre-determined minimum level of performance. This level of minimum performance would be the ability of the vehicle to attain a speed of 60 miles per hour.

Resolution No. 3: Operator licensing. - I believe it is worth mentioning at this point that in advocating and supporting some of these resolutions, and to be perfectly frank about it, many of our dealers are antagonized simply because they feel they are going to lose money if they supported it too. For example: regarding this resolution of operator licensing, we voted for, and support, special driver licensing that will permit the holder to operate only the type, or types, of motor vehicles for which he has demonstrated the ability to do so safely.

Resolution No. 4: Protective headgear. - We do not want to belabor this point, as it has been and will continue to be well covered in this seminar. We are on record as supporting proper legislation to make protective headgear mandatory in the

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operation of motorcycles.

Resolution No. 5: Excessive noise and public nuisance. - We advocate and support the association's position to initiate exhaust noise research programs that will lead to the development of exhaust systems that would eliminate unnecessary disturbances.

Resolution No.6: Motor vehicle safety inspection. - We are on record as supporting a motor vehicle inspection program and urge all states to broaden their programs to include all two-wheel motor vehicles.

In other words, gentlemen, we support these resolutions even at the risk of loss of sales.

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It must be remembered, though, we count ourselves as a major distributor with, as we mentioned before, a national dealer network of 1,200 or more independent franchised dealers. It is at this retail level that we place our main safety emphasis. To support the dealer at this level we are completing negotiations with a national social service organization similar to the Chamber of Commerce, Rotary or Kiwanis, to back up this safety program. We realize this is a very complex problem and requires special knowledge and understanding of the interrelationship of many elements. On the positive side of promoting motorcycle legislation, foreexample, we urge all our dealers to take a firm stand, just as we have done on the aforementioned resolutions. Here, again, we recognize our responsibility to assert leadership and encourage our dealers to be quite positive in matters such as special licensing, mandatory helmets, noise, etc.

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This, in essence, gentlemen, is what Yamaha is doing to promote safe operation.

Thank you very much.

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"WHAT U. S. SUZUKI IS DOING TO PROMOTE SAFETY"

An Address by Jack C. McCormack, Vice President and General Manager of U. S. Suzuki Motor Corporation, before attendees of the Air Force/Industry Two-Wheel Motor Vehicle Safety Seminar, Norton Air Force Base, California, November 29, 1966

The motorcycle in America isn't really new. In fact, it all started in 1901. But, the increasing problems of safety with the motorcycle is relatively young. The roots of the problems are very similar to the automobile-- the ever-increasing number, increased speeds and road congestion, and most importantly--the lack of training on the part of the rider.

To give you some idea of the tremendous growth pattern of sportcycles--until six years ago, the total number of motorcycles sold in a single year in the United States was 45,000 units. Today there are over 1,050,000 machines sold and in 1970, we expect over 2.5 million to be sold.

Mechanically, the majority of motorcycles on the road today are pretty sophisticated and whatever refinements are needed are being made by most major manufacturers as quickly as this need is determined. But, unlike the automobile--which could be made into a protective tank-- the perfect motorcycle will still depend on the rider

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and the ability to maneuver for ultimate safety. It is really that simple. The entire matter of motorcycle safety depends almost entirely on the training of the rider and to a much lesser degree on educating the motorist on a safe association--on the road--with the cyclist.

Even a spot check of accident data, which is now available, will quickly point up the fact that, in the majority of accidents in which a sportcycle and auto are involved, the car hit the cycle. Almost invariably these types of accidents take place at stop-light controlled intersections where the faster accelerating cycle--which had the supposed protection of a green light--moved into the intersection and was struck by a car.

There is little the designer could add mechanically or equipment-wise to the existing motorcycle to overcome this very prevalent type of accident. It has nothing to do with brakes, tires or engine. It is strictly driver training--both auto and cycle. The machine's mechanical design has nothing to do with the accident. The fact that the rider is not enclosed in a steel case only causes the accident to be more severe for the cyclist and not fatal for the motorist.

To delve a little deeper into the refinements we are adding to the present lightweight motorcycle, I would like to brief you on innovations that Suzuki is working on to even further improve the safety of the sportcycle.

The first of these mechanical additions is turn signals. This is primarily for the cyclist-motorist relationship-- allowing the motorist to be alerted to the movement of the motorcycle without the rider being required to move his hands from the controls to give hand signals. The problem in adding these turn signals to the motorcycle isn't really a mechanical one. The problem is that the laws governing turn signals vary from State to State, and in some States the requirement that the lights be 30 inches from center to center preclude putting them on motorcycles.

We are hoping that we shall be able to follow a pattern established here in California where the law has been amended from requiring some 12 inches between turn indicators to 9 inches. Other problems which must be overcome are relatively simple. They include making the photometric intensity of the turn signals the same as

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the brakelight, which involves some revisions in the electrical system of the smaller cc units. Plans are presently for the turn signals to be offered as an accessory by the first of 1967 in those states where it is possible.

Still talking about lights--the Motorcycle, Scooter and Allied Trades Association's program of "Lights for Life," which promotes the use of the headlight of the sportcycle during daylight hours to make the motorist more aware of the two wheeled vehicle, requires some changes in the switch system. Experience with leaving the headlights on in automobiles, as a safety feature, brought out that this increased the number of rear end collisions because of the lack of apparent difference between the tail light and brakelight. By changing the switch complex of the motorcycle, the rider will be able to have the headlight burning without the tail light.

We are also experimenting with dual disc brakes for all our models. Many racing units are already equipped with disc brakes, and as quickly as they are perfected--they will appear on the standard models.

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Undoubtedly, the biggest improvement in the safety of the modern sportcycle has been in tire design and manufacture. The tire of today is not only improved in durability, but also in adhesion to the road.

Add to tires, adjustable shocks and highly refined suspension systems which enable the balancing of load factors, and you have an extremely safe piece of machinery.

Yes, a very safe machine--until it is turned over to the untrained, unskilled rider.

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The proper training and education of the sportcycle rider is the largest single factor in the safety of the two wheeled vehicle. The motorcycle industry cannot build a tank for the protection of the rider, and while there is some consolation in the fact that cyclists are the only ones hurt in a cycle accident, to make motorcycling safe is going to require an all-out effort on training and education.

We, at Suzuki, began this rider training and education with a basic book on the sportcycle--"Freedom of the Road." With the help of experts in the fields of education, law enforcement and motorcycling--the book was produced as a



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primer for the novice sportcycle rider. We do not feel that it is the total requirement of our obligation to the general public, but it is a start, when a beginning was needed.

One of the major accomplishments, we feel, of "Freedom of the Road," is that if nothing else it does impress the new rider with the facts that there are many things he must learn and learn properly if he is to become proficient and safe in the operation of the machine. The book has acted as a guide for both the mechanical knowledge requirements of the novice as well as offering safety hints, rules and suggestions.

We feel so strongly about the need for proper training that we are now working hard to get a regular public sport-cycle training school started here in Southern California. It is certainly notable that with the hundreds of automobile driver schools now operating commercially in this state that there is not one motorcycle school available for the rider who is willing to pay for it and who wants instruction.

We sincerely hope that this rider training school, when it becomes operative, will be the pilot for many, many such

schools throughout the country. It certainly answers a need, and unlike placing the burden for proper training on governmental agencies--this commercial venture assumes the necessary role for such training in our economy.

In association with many experts in the related fields, we are also working hard at producing rider training and educational requirement materials which can be used, hopefully, as guidelines in qualifying tests for various states now contemplating examinations and the endorsement of regular driver's licenses for motorcycles. We feel that proper qualifications are certainly of utmost importance, and that certain minimum requirements and control ability must be established for the sportcycle. Past assumptions that there is no difference between one's ability to drive a car and ride a motorcycle have to be dispelled.

In our search for the right answers to this training and educational dilemma, we are certainly keeping an open mind. Any techniques which have merit are being investigated. At the present time we are working with members of the Department of Instructional Technology of the University of Southern California. They have developed a training simulator for motorcycles. When perfected, we

envision this equipment being used by dealers, schools and civic groups to further increase the proficiency of the motorcycle rider. It will also enable proper training to be brought into many areas where larger, more involved training techniques would not be economically feasible.

Not all of the training efforts we are now involved in are at such arms-length as the proposed training simulator. Our personnel are being made available to colleges and high schools for safety clinics and rider indoctrination. We are constantly searching for the ways in which we can participate with the educators in this country in bringing proper training to the thousands of new sportcycle riders.

In our efforts to drive home this need for training and education, we have developed what we feel is a natural publicity vehicle--the "Suzuki Heavenly Angels."

In addition to creating an awareness of sportcycle safety, this group of young ladies goes a long way toward dispelling the old image of motorcycling that pictured the unkempt, black-jacketed rowdy, and puts the emphasis on the 99 percent of sportcyclists who are good citizens.

The job of the "Heavenly Angels" has many facets. Their primary objective is to teach safety and to act as mirrors for the general public. Through their efforts in demonstration riding, use of helmets, and the wearing of clothes which match the sport--we feel the public is going to become more aware that safety is the "in" thing. A large share of the sportcycle public are younger people, and their tendency to imitate has certainly been taken into consideration in the development of the "Heavenly Angels" format. By assembling a group that can portray all areas of safe sportcycling, and have the extra advantage of showmanship, we feel that the general public as well as the sportcycling public can be served best.

In addition to their appearances in parades, on television and in general circulation magazines, the "Heavenly Angels" are being made available for any and all types of safety and rider educational gatherings. We propose to make the "Heavenly Angels" available for schools, in parks--every conceivable place where people who are interested in safe operation of the motorcycle can be reached.

There is a residual benefit, we feel, to the "Heavenly Angels." They, more than any other program now operating, can bring the safety story to the motorist. The antagonism

now apparent between the motorist and the cyclist can certainly be modified, if not totally removed, if the motorist begins seeing the two-wheeled rider as an "Angel" rather than a "devil."

We are well aware of most of the problems of two wheeled safety, and are working diligently toward solutions to each and every phase of these problems. We are not deluding ourselves into thinking that "someone else will do it," nor do we believe that if we ignore these problems they will resolve themselves. We are aware, too, that we have barely scratched the surface of what will be required of us as the popularity of the two wheeled machine increases, but we are also certain that none of the problems presented to date are so complicated as to defy solution. We cannot do it alone--any more than we can expect the public to do it alone--or the government to do it alone. We feel that industry must lead the way, and we offer unlimited cooperation and assistance to all of the groups dedicated to safety under rational conditions. Each area of our society must assume their individual responsibility in this safety problem. The public must be made aware of their obligations, the legislators and educators must bring their best efforts to bear and we as an industry must meet our responsibilities.

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It is our firm belief that the majority of the problems involved in two wheeled safety can and will be solved through training and education. The final techniques of how this training is to be administered, and in what form this education is to be transmitted, are really the crux of the matter.

This gathering here today certainly leads me to feel that many of these needed solutions are not too far away.

Thank you.

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'WHAT INDUSTRY IS DOING TO PROMOTE  
SAFE TWO-WHEEL OPERATION'

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WITH THE INCREASED USE OF MOTORCYCLES FOR BOTH SPORT AND TRANSPORTATION HAVE COME NEW RIDERS REPRESENTING A YOUNG AMERICA ON WHEELS.

A MOTORCYCLE IS A VERSATILE AND HIGHLY RESPONSIVE MACHINE. IT IS NOT INHERENTLY DANGEROUS BUT LIKE AIRCRAFT, CANNOT WITHOUT RISK BE HANDLED CASUALLY AS AN AUTOMOBILE. TWO THINGS MAKE HIGHER LEVEL OF PERFORMANCE NECESSARY FOR SAFETY IN MOTORCYCLING THAN IN CAR DRIVING: FIRST, THE STABILITY OF THE MACHINE IS NOT BUILT IN, IT IS PROVIDED BY THE RIDER; AND SECOND, THE RIDER IS EXPOSED RATHER THAN PROTECTED.

SAFETY IS ALWAYS ONE OF THE BASIC FACTORS IN DESIGNING A MOTOR VEHICLE AND HONDA'S RESEARCH AND DEVELOPMENT COMPANY CONSIDERS THIS A VERY BASIC FACTOR. GREAT EFFORTS ARE MADE TO INSURE STRENGTH AND DURABILITY AND DETAILED TESTING BY OUR RESEARCH AND DEVELOPMENT IS MADE PRIOR TO PRODUCING A PRODUCT.

MANY STANDARDS ARE USED IN THE MANUFACTURING OF A MOTORCYCLE. WE WISH TO POINT OUT THOSE WHICH ARE SPECIFICALLY DESIGNED TO INCREASE THE SAFETY FACTORS IN MOTORCYCLE RIDING.

FIRST, MOTORCYCLES ARE DESIGNED SO THAT THEY ARE EASY TO OPERATE AND CONTROL. ONE OF THE FEATURES IS THE AUTOMATIC CLUTCH WHICH MAKES IT EASY FOR NOVICE RIDERS WHO DO NOT HAVE TO SHIFT GEARS WITH THE USE OF A HAND CLUTCH. ALSO, EXTENSIVE RESEARCH IS BEING MADE FOR TURN INDICATORS SO THAT RIDERS WILL NOT HAVE TO TAKE THEIR HANDS OFF THE HANDLEBARS.



SECOND, MOTORCYCLES ARE BEING MANUFACTURED TO REDUCE THE POSSIBILITY OF MECHANICAL FAILURE. ALL METALS USED IN THE CONSTRUCTION OF A BIKE ARE THOROUGHLY INSPECTED FOR STRESS AND METAL FATIGUE BECAUSE BIKES ARE SUBJECT TO MUCH STRAIN. AS WE LEARNED IN OUR RACING EXPERIENCE, MOTORCYCLES REQUIRE CONSTANT INSPECTION AND TIGHTENING DUE TO ROAD VIBRATION. IN OUR PRODUCTION LINE MACHINES, LOCKING DEVICES ARE USED IN EVERY MAJOR NUT AND BOLT.

THIRD, A GOOD DEAL OF CONSIDERATION IS GIVEN TO THE PROTECTION OF THE RIDERS AND PASSENGERS. VERY EXTENSIVE TESTING IS DONE IN THE AREA OF RIDER AND PASSENGER SAFETY. THE MOST BASIC PARTS ARE IN THE DESIGN OF SEATS, FOOTRESTS, FUEL TANK AND HANDLEBARS. FOR PASSENGER SAFETY, DUAL SEATS, HAND STRAPS AND FOOTRESTS ARE INSTALLED AS STANDARD EQUIPMENT.

FOURTH, MOTORCYCLES ARE DESIGNED TO SATISFY ALL SAFETY AND EQUIPMENT REGULATIONS AS WELL AS QUALITY CONTROL REQUIREMENTS. APPROVED LIGHTING EQUIPMENT IS USED AND WE INSIST THAT OUR PRODUCT HAVE RELIABLE AND SUFFICIENT BRAKES, HORN, FENDERS AND TIRES TO OFFER MAXIMUM SAFETY FOR RIDERS.

FIFTH, THE MACHINES ARE DESIGNED SO THAT THEY ARE VISIBLE AND SAFE IN TRAFFIC. A RIDER MUST CONSTANTLY BE ON GUARD TO SEE THAT ALL DRIVERS ARE AWARE OF HIS PRESENCE. PROPERLY POSITIONED LIGHTING EQUIPMENT, DIRECTIONAL INDICATORS AND REFLECTORS ALL HELP TO MAKE A BIKE MORE VISIBLE.

WITH GREAT EMPHASIS BEING PLACED ON MOTOR VEHICLE SAFETY IN THIS COUNTRY, WE ARE MAKING EVERY EFFORT THROUGH OUR RESEARCH AND DEVELOPMENT COMPANY TO MAKE SAFER MOTORCYCLES.

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WE BELIEVE THAT THE BEST APPROACH TO MOTORCYCLE SAFETY IS THROUGH EDUCATION.

CONCERN WITH MOTORCYCLE SAFETY IS COMPARATIVELY NEW. WITH THE SUDDEN SURGE OF MOTORCYCLE SALES IN THE PAST FEW YEARS, THE PROBLEM OF MOTORCYCLE SAFETY HAS BECOME VERY NOTICEABLE IN OUR DAILY TRAFFIC SCENE.

WE ARE PROMOTING MOTORCYCLE SAFETY IN THE HOME TOWN BECAUSE THIS IS WHERE ALL THE SAFETY EDUCATION TAKES PLACE. FACTS REVEAL THAT TRAFFIC SAFETY IS A LOCAL PROBLEM.

THROUGH OUR NETWORK OF MORE THAN 1700 DEALERS IN THIS COUNTRY, WE HAVE CHALLENGED THEM TO ACCEPT THE LEADERSHIP THAT WILL IMPROVE MOTORCYCLE SAFETY IN THEIR HOME TOWNS.

TO HELP PROMOTE THE SAFETY PROGRAM IN THE HOME TOWNS, WE HAVE PROVIDED THE DEALERS WITH A SAFETY FILM, SAFETY BROCHURES AND HAVE RECOMMENDED THAT THEY CONTACT THE POLICE DEPARTMENTS AND SCHOOLS TO START PROGRAMS WITHIN THEIR OWN COMMUNITY.

MANY OF YOU PROBABLY HAVE ALREADY SEEN THE MOTORCYCLE SAFETY FILM, "THE INVISIBLE CIRCLE". A LITTLE LESS THAN TWO YEARS AGO, THE GENERAL MANAGER OF AMERICAN HONDA MENTIONED THAT WE ARE THE LEADERS IN MOTORCYCLE SALES; WE SHOULD TAKE LEADERSHIP IN MOTORCYCLE SAFETY. WE SHOULD THINK ABOUT IT AND SEE WHAT IDEAS WE CAN COME UP WITH.

NO BRILLIANT IDEAS CAME ABOUT UNTIL WE VISITED THE LONG BEACH POLICE DEPARTMENT. THEY WERE HAVING PROBLEMS WITH THE YOUNG SAILORS

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WHO WOULD COME OFF THE SHIPS AND GO TO MOTORCYCLE RENTAL AGENCIES. BECAUSE OF LACK OF PROPER TRAINING, THE MOTORCYCLE ACCIDENT RATE IN LONG BEACH WAS VERY HIGH.

DURING THE COURSE OF OUR CONVERSATION, THE PUBLIC RELATIONS OFFICER THERE MENTIONED THAT SOMEONE OUGHT TO MAKE A GOOD MOVIE ON MOTORCYCLE SAFETY. THIS SEEMED TO BE AN EXCELLENT IDEA. IT WAS ACCEPTED BY THE DIRECTORS OF AMERICAN HONDA AS OUR BIG PROJECT FOR THE PROMOTION OF SAFETY.

THE FILM WAS MADE IN COOPERATION WITH THE NATIONAL SAFETY COUNCIL, CALIFORNIA HIGHWAY PATROL, LONG BEACH POLICE DEPARTMENT AND THE LOS ANGELES BOARD OF EDUCATION. MANY MEETINGS WERE HELD WITH THESE PEOPLE BEFORE THE COMPLETION OF THE FILM. THE PRODUCTION TOOK OVER A YEAR, AT A COST OF OVER \$50,000.

ALL POINTS OF MOTORCYCLE SAFETY AND COURTESY WERE LISTED ON A SHEET OF PAPER AND INCORPORATED SOMEWHERE IN THE FILM. SCENES WERE FILMED ON LOCATION IN LAS VEGAS; HOUSTON; MIAMI BEACH; NEW YORK; BOSTON; CHICAGO; SAN FRANCISCO AND YOSEMITE NATIONAL PARK.

THIS FILM WAS MADE FROM THE STANDPOINT OF INTEREST, BECAUSE WE KNOW THAT YOUNG PEOPLE NOWADAYS WILL NOT WATCH A FILM UNLESS IT IS INTERESTING. OUR OBJECTIVE IN PRODUCING THIS MOVIE WAS TO CAPTIVATE THE YOUNG VIEWING AUDIENCE WITH POINTS OF INTEREST AND THEN RELAY THE MESSAGE OF SAFETY TO THEM.

MANY OF THE GOVERNMENTAL AGENCIES, ARMED FORCES, POLICE DEPARTMENTS AND SCHOOLS ARE USING THIS FILM TODAY. IT HAS BEEN SHOWN ON TV IN MANY

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CITIES. THIS FILM IS MADE AVAILABLE TO ANYONE FOR SHOWING THROUGH OUR DEALERS OR THROUGH OUR OFFICE. 800 PRINTS ALREADY HAVE BEEN DISTRIBUTED SINCE FEBRUARY OF THIS YEAR. IT MAY BE PURCHASED BY ANYONE FOR THE COST OF THE PRINT, WHICH IS \$90.00.

SAFETY BROCHURES HAVE BEEN MADE AVAILABLE WITHOUT COST TO ANYONE. IN THE PAST MONTH, WE HAVE DISTRIBUTED A HALF MILLION OF OUR NEW BROCHURES.

MUCH HAS BEEN WRITTEN ABOUT HOW TO RIDE A MOTORCYCLE SAFELY. MOST MATERIALS ARE CENTERED AROUND PROPER SIGNALING, ROAD HAZARDS, SAND ROADS, ETC. WHILE WE DO NOT WISH TO MINIMIZE THE ROAD HAZARDS, IT IS OBVIOUS IN STUDYING MOTORCYCLE ACCIDENT STATISTICS THAT A VERY LOW PERCENTAGE OF REALLY SERIOUS ACCIDENTS OCCUR IN THIS MANNER.

WE SHOULD TELL PEOPLE HOW TO RIDE A BIKE BUT SHOULD ALSO TELL THEM HOW TO AVOID TANGLING WITH A CAR OR OTHER MOVING VEHICLES WHICH ARE THE CAUSES OF MANY ACCIDENTS.

A GOOD PORTION OF CAR-MOTORCYCLE ACCIDENTS HAVE HAD THE CAR DRIVERS AT FAULT. NO MATTER WHO IS AT FAULT IN A CAR-MOTORCYCLE ACCIDENT, IT IS THE MOTORCYCLE RIDER WHO OFTEN COMES AWAY INJURED.

HOW DO WE AVOID SUCH ACCIDENTS? WE CALL IT DEFENSIVE RIDING. WHAT IT REALLY MEANS IS RIDING YOUR BIKE IN A MANNER THAT YOU ARE ON THE DEFENSIVE AT ALL TIMES. THE HEADS-UP RIDER WILL ANTICIPATE THE MOVEMENT OF THE CAR AHEAD OF HIM, THINKING THAT THE DRIVER COULD POSSIBLY TURN INTO HIM. ALWAYS ASSUME THAT THE CAR DRIVER CANNOT SEE YOU AND ANTICIPATE DANGEROUS SITUATIONS WHERE YOU ARE VULNERABLE TO AN ACCIDENT.

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WE FIRMLY BELIEVE THAT ANYONE WHO FIRST LEARNS TO OPERATE A MOTOR VEHICLE BY STARTING ON A MOTORCYCLE AND BECOMING A SKILLED RIDER WILL MAKE A BETTER CAR DRIVER. FOR TO BE A GOOD BIKE RIDER REQUIRES AN ALERTNESS THAT THE AVERAGE CAR DRIVER OFTEN DOES NOT POSSESS, AND IF THIS ALERTNESS IS LEARNED AT AN EARLY AGE, IT CAN BE CARRIED THROUGHOUT LIFE WHETHER IT BE TWO WHEELS OR FOUR.

LACK OF TRAINING AND PROPER DRIVER TESTING METHODS ARE AT THE ROOT OF MANY OF THE PROBLEMS. TODAY IN ALMOST ALL STATES, A CAR DRIVER LICENSE WILL ALLOW A PERSON TO DRIVE A MOTORCYCLE. BECAUSE OF THIS, AN INEXPERIENCED PERSON CAN DRIVE A MOTORCYCLE INTO THE STREETS AND HIGHWAYS. LEGISLATION SHOULD PROTECT THESE INEXPERIENCED PEOPLE BY CALLING FOR A SPECIAL MOTORCYCLE LICENSE.

MISMANAGED RENTAL AGENCIES SHOULD BE CLEANED UP AND ANYONE WANTING TO RENT A BIKE SHOULD BE GIVEN AMPLE INSTRUCTION TO ALLOW SAFE DRIVING IN TRAFFIC.

THERE ARE, OF COURSE, MANY OTHER ELEMENTS TO BE CONSIDERED FOR LEGISLATION. ALTHOUGH VIRTUALLY ALL INJURIES ON OUR HIGHWAYS ARE, IN THE FINAL ANALYSIS, THE RESULTS OF HUMAN FAILURE AND ERROR, MANY CASUALTIES CAN BE PREVENTED OR AT LEAST MINIMIZED BY MORE ATTENTION TO SAFETY BY EDUCATORS; AND WE FEEL OUR INDUSTRY HAS THE OBLIGATION BOTH TO TALK AND TO ACT ON SAFETY IN ORDER TO MINIMIZE THE ACCIDENTS.

WE FEEL THAT IN THE STUDY OF SAFETY AND IN EDUCATION, WE WILL LEARN THE CAUSES OF ACCIDENTS AND HOW THEY CAN BE PREVENTED. WE MUST POSSESS A FOUNDATION OF KNOWLEDGE WHICH WILL ENABLE US TO MAKE

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INTELLIGENT, SOUND DECISIONS AND TO SUPPORT LEGISLATION THAT WILL PROVIDE FOR AND IMPROVE SUCH AGENCIES AS ENFORCEMENT, ENGINEERING, THE COURTS, EDUCATION, AND THE COORDINATION OF THEIR EFFORTS.

ACCIDENTS IN MANY CASES ARE LIKE A DISEASE. LEGISLATION TO A CERTAIN DEGREE IS LIKE MEDICINE AND CAN ARREST THE GROWTH; WHILE EDUCATION LIKE A VACCINE CAN PREVENT THE OCCURENCE. WE ARE ALL PRIMARILY CONCERNED WITH THE EDUCATION AND PREVENTING THE OCCURENCE.

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**"Crash Injury Research Requirements  
for Two-Wheel Vehicles"**

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Thank you very much.

I will have to apologize to you for not being able to make the seminar yesterday. My motorcycle broke down and I couldn't quite make it here.

My topic is "Crash Injury Research Requirements for Two-Wheel Vehicles." Now, being in the field of medicine, probably I could speak better on two-legged vehicles, whereas the topic for discussion today is on the motorcycle.

The advances of medicine during the past quarter century have drastically reduced the morbidity and mortality of many of our disease processes. However, accidental injury and death have continued to rise. As a matter of fact, at the present time, accidents are the foremost cause of death between the ages of 1 to 35.

In 1960, the motorcycle vehicle accidents accounted for about 37,160 fatalities in the United States. In 1954, the loss to the Armed Forces from off-duty accidents ranged around 1,600 deaths and over 10,000 injuries.



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In the past couple of decades, extensive research programs have been set up to elucidate the causative factors involved in motor vehicle accidents. Centers throughout the country have been set up by Dr. Ross A. McFarland at the Harvard School of Public Health, Mr. John O. Moore from the Cornell University Medical College and Dr. Severy at the UCLA Center for Health Science. Information gained from these investigators has aided industry in improving automotive safety factors.

All of the research projects have been to prevent the ejection of the passenger and the driver from the automobile and maintain the passengers within a protective shell. Now, unfortunately, with the motorcycle, we have no protective shell; and there is approximately a 100% rate of ejection. Now, we have to decide whether it would be better to stabilize the driver to the motorcycle; whether it would be safer, or is it safer for them to actually be thrown clear? But, this we don't know yet.

In motorcycle accidents, the rate of injury is extremely high, ranging about 95%. Before we can outline any safety program for motorcycles or any type of an

extensive research program, we have to consider the accidents as a kind of an epidemic and apply the principles of epidemiology in the study. And, in so doing, we divide the study into the component parts. One, we have the agent or the motor vehicle; two, the host or the driver; and three, the environment. Improvement in vehicular design from the standpoint of safety is being carried out by various manufacturers. It is essential to determine whether the heavier machines are safer than the light and whether inherent design changes can alter the stability of the vehicle. Now in the typical analysis, it appears that about 80 to 90% of the accidents are due to the driver's negligence or driver error. There is very strong evidence to support the theory that there is a direct correlation between the accidents and low intelligence, youth, and egocentric immature personalities. In order to avoid accidents, drivers must have a fair degree of intelligence in order to practice the defensive driving tactics because there is no doubt about it--that if a motorcycle rider has an encounter with an automobile, no matter who is at fault, he is going to turn out to be second best.

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In my experience with the motorcycle injury, I found that the injuries occur in the following order of frequency. The most common, of course, are the multiple injuries and abrasions. The second most common would be fractures of the lower extremities, including fractures of the tibia and the ankle. Third, head injuries with brain concussions and contusions. Fourth, injuries to the cervical, dorsal and lumbar spine. Fifth, the upper extremity injuries. Sixth, the internal injuries.

I would like to show you a photograph of the safety console at the UCLA Medical Center. As you can see, we are about ten years behind times as far as research is concerned.

Now in recent years, there has been a tremendous campaign to elevate the public image of the typical motorcycle rider, and we find that there are more college students and so forth. And, if you eliminate the war helmets and the black leather jackets, they comprise a fair population.

Now the most common fatality from a motorcycle injury would be to the head, and certainly the research into

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the helmets have aided considerably. Head injuries and also fractures of the cervical spine comprise the greatest danger in injuries of this nature.

This merely shows a football helmet. We've been using football helmets for years now; and in sports medicine, they realize that this is an essential part of the program.

Hyperextension injuries to the cervical spine.

This is a patient with a concussion.

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Neck injuries, fractures, sprains, and so forth, comprise one of the great dangers of any accident.

This is where we have one of the most common causes for a fatality--hyperextension injuries as demonstrated here.

This demonstrates a compression fracture of the vertebra. The problem here is that not only do you have the possibility of fatality, but there is also great danger that if you get a dislocation of the spine, the spinal cord can be cut, and resulting in complete paraplegia.

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Now, going into the upper extremity injuries, this patient here was thrown from his bike and had multiple severe injuries--a fractured dislocation of his shoulder which was treated with a pin. A fracture of his opposite arm: the humerus of the upper part of the arm is fractured. He had a fractured femur and a shoulder separation, but fortunately, he was able to survive the crash.

This demonstrates an injury which can occur when you are thrown directly on your shoulder. You get a shoulder separation where the clavicle is pushed up. The ligaments are torn; the clavicle gets pushed out of position, and generally requires surgical repair.

This is after surgery where the clavicle has now been pulled back down and held into position.

Fractures of the forearm can occur when riders have their hands out in kind of a protective attitude. They are very bad injuries and generally require an open-reduction-and-fixation with a pin device, as shown here.

This merely demonstrates fractures of the hand of the same patient. The fractures are pretty hard to see here.

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But, in general, extremity injuries aren't too bad; at least, they are not usually crippling or fatal.

Now, going into the lower extremity, fractures of the hip can occur in severe injuries; and these are fairly difficult cases to treat. They usually require an open-reduction-and-fixation with a pin. This shows the fractured hip and a pin in position to hold everything back together.

Here is the patient post-operatively--back to her usual occupation.

This is a knee injury where the leg was caught and pulled out--out of position, tearing the ligaments of the knee. This is also a very common injury in football where the ligament is completely torn.

This demonstrates another patient with a knee injury where the foot struck the ground, and he sustained kind of a twisting injury to the knee; and he tore the cartilage and the ligaments.

On occasion--burns and soft tissue injuries to the legs can be more disabling than any fracture as shown by this young lady who sustained burns and kind of a

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crushing injury to both of her legs. None of her bones were broken, but she is now completely disabled. She has a permanent disability and eventually will lose both of her lower extremities.

This boy here was struck by an automobile while riding his motorcycle. It was a direct blow on the tibia by the bumper, and he sustained a very severe compound fracture and loss of most of the tissue in that leg.

This is the fracture of the tibia and fibula, or the lower leg fractures. Ankle injuries are extremely common and generally occur because as the foot hits the ground, it is twisted outwards. There is an external rotational force which causes fractures, dislocations and sprains.

This merely shows the ligaments which have been torn; and very often, this can be much worse than a fracture. Actually, this injury can be worse than sustaining a fracture of the ankle.

This merely shows the different types of sprains and strains.

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Now, injuries to the abdominal viscera, chest injuries, and so forth, can be very serious. Ruptured spleens, ruptured livers, and so forth, are frequently seen and these usually result from a direct blow. Fortunately, in the motorcycle cases, we don't see this too often. What we usually see are fractures of the lower extremities and head injuries.

This merely shows protective clothing that can be utilized for motorcycle riders.

This is the public concept of a typical motorcycle driver.

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So, in summary, I feel that the initial research program should be aimed at compiling data from all the hospitals and whatever sources we can get, so that we can catalogue, study all the x-rays, and make up a list or a kind of a monograph which we can refer to and analyze what caused the injuries. Was this due to driver error? Was this due to the environment? Or is this due to the motorcycle itself?

Generally, it is the driver who is at fault. As far as the motorcycle is concerned, I am sure that the weight of the motorcycle, the design may have something

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to do with it. But, in general, the motorcycle is a relatively unstable vehicle. It is stable while it is moving; and while it is stopped, it is relatively unstable. There is a very high rate of passenger ejection--approximately 100%. And, so what we have to do is to go through all the hospital records and try to catalogue injuries and find out what portion of the body is injured most frequently. And what I have shown you here is just an impression from the cases we have seen at UCLA--you know, the areas that are injured most frequently.

Now, I think Dr. Severy is involved in a crash injury research program for motorcycles. I am not sure exactly what his data is going to show as yet. They have just started and up to now, there has been very little research done in this relatively wide-open field. Eventually, when we gather all the data, I feel that we can elicitate the factors which would minimize injuries following motorcycle accidents.

Thank you.

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**"Impact Protection of  
Head and Neck"**

**By**

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IMPACT PROTECTION OF THE HEAD AND NECK

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### INTRODUCTION

Protection of the head and neck during exposure to impact, as occurs when a passenger of a vehicle is suddenly accelerated or decelerated, is a broad subject without considering other ways or means by which the impact can be obtained, e.g., a "bean ball" during a baseball game. Protection implies that a damaging agent is at work to cause harm to the body, in this instance the head and neck. Definition of the agent and the harm which it can cause is necessary before protection can be engineered. Therefore, the three elements which will be discussed are the agent(s), the potential injuries, and the protective devices. A reference list is included for the reader who has the time and need for further study.

### AGENT(S)

Impact is the agent which is dangerous. According to the USAF Dictionary, 1956 Edition, impact is a "forcible contact; the imparting of force by sudden impingement or by the pressure of sudden contact, as by a bomb striking the earth." Impact for our purpose can be considered as the brief application of force which tends to change either the state of uniform motion or the state of rest of the head and neck. This force results in an acceleration of the head and neck which in terminology common to researchers in this field, has a profile consisting of at least the onset, the peak, and the duration. The degree of injury will be dependent upon the characteristics of the impactor, i.e., the shape, hardness, loading area, etc.; direction of forcing function; the profile of the acceleration; and the protection provided. With all of the variables of these factors the problem rapidly becomes complex. Thus, for a better understanding of head and neck protection requirements, let us select two cases in which a rider of a two-wheeled vehicle is 1.) thrown from the vehicle striking his head and body on the road or 2.) thrown from the vehicle in such a manner that his head and body are not uniformly stopped. In the first instance, we are concerned with head injury and in the second, with luck, only neck injury.

Head impact upon the road will produce injury dependent upon all the factors previously mentioned, but let's assume the most common impact experienced is lateral to the head i.e., front, sides or back and against flat hard surfaces or a sharp stone or corner like a brick. Since the velocity of concern is primarily due to the fall of perhaps 8 feet, we are dealing with a velocity of up to 16 ft/sec, which is well within the protective range of a good helmet. However, due to the velocity imparted to the rider by the vehicle, he will continue to move forward after striking the ground.

If he runs into an obstruction before sliding to a stop, he may experience a range of velocities beyond the protective range of the helmet. If the head with helmet impacts upon a sharp corner or stone, there will be a concentration of the force with possible penetration of the helmet shell and contact with the head in addition to the deceleration of the head. This can produce serious to fatal local injuries and emphasizes the need for shell rigidity to prevent penetration and to spread the load.

Indirect injury to the neck and head is incurred by the inertia of the masses involved. If the body is accelerated, or decelerated, and the head is not, the inertia of the head will cause it to lag behind, or to continue on respectively. The resultant hyperflexion and the hyperextension both can cause injury not only to muscles and bones but to other tissues including the central nervous system. The brain stem with all its vital centers are involved and injuries not too well defined may result.

#### POTENTIAL INJURIES

To better understand impact protection of the head and neck, a knowledge of the effect of impact and the resultant injuries is essential. Physical effects of blows to the head as classified by Gurdjian (13) are:

1. deformation of skull with decrease in internal volume
2. sudden increase in intracranial pressure at time of impact
3. mass movements of the intracranial contents
4. distortion of the skull and dural septums
5. shearing off a portion of the head
6. shearing and tearing of intracranial contents as in ballistic injuries

7. combinations of 1 through 6

He lists compression, tension and shear as the operative mechanisms which may occur simultaneously.

In addition to scalp injuries and skull fracture, Evans ( 5 ), discusses the intracranial lesions from the "Closed Box" concept. Four categories of lesions recognized are: meningeal clots, blood volume variations, cerebrospinal fluid volume variations and brain volume variations. Cerebral trauma is categorized as: cerebral concussion, cerebral swelling, cerebral contusion, cerebral laceration, intracerebral hematoma, focal cerebral cicatrix, and late atrophic sclerosis of the white matter. Both the cicatrix and the atrophic sclerosis, though not acute injuries, are included for a better understanding of brain damage. Cerebral concussion, and the loss of consciousness associated with it, is incurred when the head is hit by a hard moving object or when the moving head hits a hard object. Acceleration or deceleration is produced respectively and is considered to be the cause of concussion ( 4 ). Friede ( 7 ) believes that concussion is caused by the stretching of the brain stem during flexion of the head on the neck; a view not shared by Denny-Brown ( 4 ) who does recognize the injury produced but as separate from concussion. Gross ( 9 ) postulates cavitation as a main mechanism while Holbourn ( 22 ) postulates rotation of the brain in the cranial cavity. Probably any one or all of these mechanisms can be operative as a cause of brain injury, including brain stem.

#### PROTECTIVE DEVICES

A basic requirement in the prevention of injury through the use of a helmet is to minimize the amount of energy transmitted. This is accomplished by:

a. Deflection - use a helmet shell with a hard smooth surface to deflect missile and/or head away from the other, to prevent penetration of sharp points through the helmet to the head, and to minimize sharp bending of the neck.

b. Absorption and attenuation of impact energy -- use appropriate materials to reduce the level of acceleration, the rate of onset, and the amount of energy transmitted.

c. Retention - insure that the helmet is worn and retained.

Additional principles in helmet design are:

Hardware, loose or protruding, should be excluded from inside of the helmet shell to minimize secondary missile effect. The mass center of the helmet should coincide with the center of gravity of the head to prevent neck strain and "lopsided" sensory effects. Protective visors or face shields should be shatterproof. External protusions should be minimized to prevent snagging. The chin strap should be of adequate strength (600 lbs), with addition retention provided as needed. American Standard Specification For Protective Headgear For Vehicular Users ( 1 ) should be utilized and updated as required. Thermal protection should be provided by a reflective surface on the helmet shell, and by inclusion of material of low thermal conductivity between the shell and the head. Provision for ventilation, and body cooling is essential in hot environs to prevent excessive sensible perspiration in the head and face area. Ventilation can be achieved by using a sling suspension which permits air to pass over the head, but instability and vibration may become a problem.

Helmets are of two general types: suspension or contact. Sometimes we find a combination of these two types in which some desirable features are sacrificed to obtain other features considered to be more desirable or at least "saleable".

Suspension type helmets are preferred by construction workers who are not subject to dynamic environments and who desire as much ventilation about the head as possible. In dynamic environments, the spring-mass relationship of the helmet shell-to sling-to head presents a problem of vibration and retention. If this type of helmet is to protect against impact, the external shell must have high rigidity to prevent deformation resulting in contact with the head thus causing serious local injury even at low energies. High speed movies show this can occur with no transmission of the force to the opposing side to which the sling is attached. If the force is not transmitted, the head can not be pulled away from the inbending shell by the sling and injurious contact results. This can be prevented by the inclusion, on the inside of the helmet shell, of an energy absorbing or attenuating material which is carefully selected to keep the force within "safe" limits,

commensurate with the total energy absorption possible and feasible. The Los Angeles Police use a helmet of this type.

The contact type helmet dates back to the early history of man. Metal or hide helmets were sized and padded with a variety of material to provide comfort during normal use and some ill-defined protection during combat or dynamic situations. Wishful engineering described the shell as hard and the padding as adequate. It had always been assumed that comfort and protection were only degrees of the same quality of padding and that by feel one could judge the protection. This is not the case since protection from impact if efficient, is definitely not comfortable. Not until the development of the current types of helmets like the APH-5 of the U. S. Navy, the HGU-2/p of the Air Force, the Toptex of the sports world, and the Los Angeles Police Department, etc., was there a definition of requirements for protection by a crushable liner separate from the comfort requirements.\* The advantages of a separate crushable liner have been illustrated by the impact of a helmeted head against curb during a slide after a spill on a motor bike, and by the head hitting on the tail of an aircraft during "bail out". In both cases, the helmet shell and foam plastic liner were partially crushed and the wearers had sore areas on their heads but after several days were back to normal. Without the energy absorption by the helmets, both men would have been fatally injured. The basic mechanics of the use of the crushable liner and the hard shell construction in protective helmets is briefly presented in the following paragraphs.

#### Mechanics of Crushable Liner

The basic head helmet system is shown in Figure 1. When the system is impulsively loaded, the helmet shell experiences a velocity change in a time very small compared to the duration of the response. The dynamic response characteristics of the head depend on the characteristics of the crushable liner, which are expressed by the material physical properties, and the following system variables:

$m$  - mass of the head

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\* U. S. Patent No. 2,625,683.



- v - velocity change of the helmet shell
- A - projected area of the head normal to the direction of the forcing function
- t - duration of impact
- h - thickness of the liner

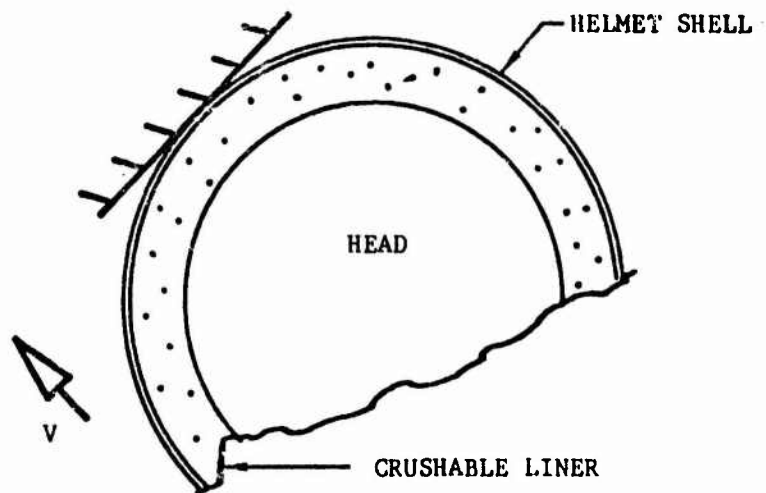


FIGURE 1 HEAD - HELMET SYSTEM

The dependence of the dynamic response on the system variables has been functionally represented by Soper and Dove (40) in their study on Similitude in Package Cushioning. Their equation governing the acceleration (a) of the packaged item with a given cushioning material can be non-dimensionally represented by the following relation

$$\frac{a}{v^3/2h} = f\left(\frac{mv^3}{2Ah}, \frac{v}{h}, t\right) \quad [1]$$

It can be noted that the functional form of equation [1] lends itself to optimization of the dynamic response characteristics of the system. It may also be used to establish an index similar to the fragility index employed in package cushioning analysis.

The impact protection provided by the basic helmet can be investigated by studying the impact attenuation of an energy absorber. Typical energy profiles and the stress-strain relation for an energy absorber are shown in Figures 2 and 3, respectively.

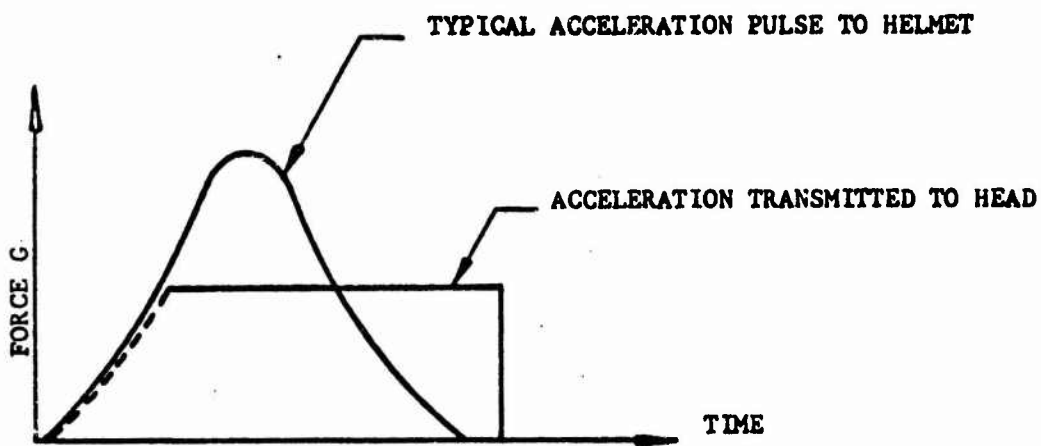


FIGURE 2 ENERGY PROFILE

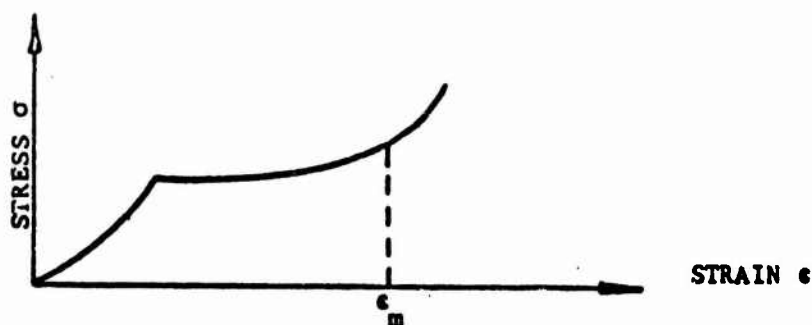


FIGURE 3 STRESS-STRAIN RELATION FOR AN ENERGY ABSORBER

Equations for the system are

$$H = \frac{v^2}{\epsilon_m (2 G g)} \quad [2]$$

$$W G - \sigma_1 F = \alpha_2 \sigma A \quad [3]$$

where

$V$  is the impact velocity

$G_g$  is the acceleration transmitted to the head

$H$  is the compression of the energy absorber

$W$  is the weight of the head and helmet combination

$\epsilon_m$  is the maximum permissible strain

$\alpha_1$  is a constant dependent on the increase in the load carrying capacity of the outer helmet shell

$F$  is the load required to compress the outer helmet shell

$\alpha_2 \sigma$  is the average stress

and  $A$  is the compressed area of the energy absorber

From equation [2], for  $H = \frac{1}{4}$  and  $\epsilon_m = 0.9$ ,  $G = 0.83V^2$

then for a velocity change of 10 ft/sec

$$G = 83$$

To obtain the maximum compressive force  $\sigma A$  for this value of  $G$ , let

$$F = 300 \text{ lbs}$$

$$\alpha_1 = 1.5$$

$$\alpha_2 = 0.4$$

$$W = 12 \text{ lbs}$$

and solve for  $\sigma A$  from equation [3] to obtain

$$\sigma A = 1363 \text{ lbs} \quad [4]$$

Therefore equation [4] determines the maximum stress for a given area of compression. Haley et al (16), have estimated an area of 16 square inches for front impact with a flat surface. This yields

$$\sigma = \frac{1363}{16} = 85.2 \text{ psi}$$

This value is well within the range of existing materials.

Equations [2] and [3] are the basic system equations and the system variables  $G$ ,  $V^2$ ,  $F$ ,  $\alpha_1$ ,  $\alpha_2$  and  $A$  can be optimized to meet protection requirements for various types of impacts.

#### Helmet Shells

Present helmet shells are primarily of glass reinforced plastic construction. Standard procedure involves the impregnation of a glass cloth with

an epoxy binder thus stabilizing the glass fibers and making them efficient load carrying structures. Structural efficiency of the glass fibers can be increased by orientation of the fibers parallel to the direction of stress resultants. To ensure maximum structural efficiency, all fibers must be simultaneously and equally reacting to an imposed load. This situation can be approximated by stressing the fibers. Methods such as filament winding and pretensioned layups have been used to make glass reinforced plastic structures with unit stress values unequalled by any other technique. The use of other high strength fibers also deserves attention i.e. boron fibers. The design of a helmet shell with maximum structural integrity should give careful consideration to pre-loaded, stress oriented, maximum density fiber construction. For a hard helmet shell design, maximum rigidity is required. This is particularly true of helmet designs where shell flexibility is not a donning requirement. Flexural rigidity is a function of the section modulus and the modulus of elasticity of the material in a bowl shaped configuration such as a helmet. Increased flexural rigidity may be achieved by the following methods:

1. Select a material with a high modulus of elasticity
2. Make maximum utilization of the rigidity inherent in a structure with a double curvature
3. Utilize a high section modulus

Metals and reinforced fibers exhibit high elastic moduli. The use of double curvature as a method of achieving rigidity is largely self-explanatory. Section modulus is essentially a function of material thickness. To achieve a high flexural rigidity in a light weight shell structure, a sandwich type construction consisting of a low density material bonded between two thin high strength skins is commonly utilized. Honeycomb core material is typically used for this application. Several types of honeycomb core material that will form to complex curvatures are available. A design utilizing such a core material bonded between thin fiber reinforced plastic skins can be designed to yield a range of flexural rigidity limited primarily by the shell strength and total section thickness. Such shell structures lack hard deflecting surfaces and the use of an additional hard deflecting outer shell would incur a weight penalty. Thus it appears that current helmet shells fabricated of glass reinforced epoxy will best meet design requirements.

#### Impact Survival Levels

The impact survival level of head acceleration in man has been estimated by Snively (37) from analysis of accident data to be in excess of 450 G. Four out of the ten had temporary loss of consciousness with three above and one below the 200 G level. "All drivers survived and detectable neurological residuals have not been noted." Data included analysis of the residual deformation of crushable foam liners of protective headgear following accidents involving survivable head trauma. The maximum deflection of the crushable liner was determined and correlated with a stress-strain curve produced using standard helmets on a metal head impacted by a bob weight with a known energy. Fortunately these observations on accidents by Snively, himself both a physician and an engineer are recorded for the benefit of the design engineer and the safety of man - a task impossible through direct experimentation.

#### Recommendations

It is recommended that: 1. All riders of two wheeled motor vehicles wear protective headgear which meet or exceed the recently issued American Standard Specification for Protective Headgear for Vehicular Users (ASA Z 90.1 - 1966). 2. Reasonable weights for protective headgear be established and included in the above specifications. 3. That efforts be continued to upgrade the above specifications and to include various helmet accessories, e.g. visor or face shield.

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**"Educational Requirements and Methods  
for Two-Wheel Vehicle Operators"**

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EDUCATIONAL REQUIREMENTS AND METHODS  
FOR TWO-WHEEL MOTOR VEHICLE OPERATORS

by

Charles H. Hartman

An abridgment of the presentation made to the USAF-Industry Two-Wheel Vehicle Seminar at Norton Air Force Base, California, November 30, 1966. Dr. Hartman is Director, Education Division, Automotive Safety Foundation, Washington, D. C.

Keynote speaker Douglas Toms provided a sub-title for his opening presentation. I would like to follow this pattern and sub-title my address, "What You Don't Know Can Hurt You."

The implications of this thought are obvious for two-wheeled motor vehicle operators--what the operator doesn't know about the equipment and how to operate it safely can hurt him. In this presentation, however, I hope to introduce another dimension to this problem. Those responsible for planning or implementing education and training programs can also be hurt by a lack of knowledge and understanding. More about this later.

First, I'd like to give a capsule description of the organization I represent. This is done because there are a number of organized groups working in behalf of highway safety and transportation. Those not thoroughly familiar with the field on a day-to-day basis may welcome information that helps to give identity and personality to a particular organization.

The Automotive Safety Foundation is a non-profit organization dedicated to education and research for highway transportation development. It is supported financially by more than six hundred companies and associations representing automobile manufacturers, petroleum and asphalt, parts and accessories, rubber tire, advertising agencies and media, steel, automobile finance, portland cement, major banks, automobile and tire dealers, and others. Those familiar with the Action Program for Highway Safety can recognize a parallel between its major components and our staff organization. Staff includes professionals in the areas of traffic law, highway engineering, public relations, traffic engineering, traffic safety organization, police and motor vehicle administration, education, and other areas.

I have been with the Foundation only a few years, but to the best of my knowledge ASF has no prior history of significant involvement with two-wheeled motor vehicles. If so, a most legitimate question on your part might be, "Then what is he doing here?"

I'm not sure I know! To save face I'll attempt to briefly qualify myself as an "expert." Please note the quotation marks.

First, I was invited to participate in an Exploratory Meeting on Motorcycle Safety Education called by the Accident Prevention Division of the U. S. Public Health Service on April 7, 1966. On this basis I have been an "expert" for nearly eight months.

Secondly, someone has defined an expert as one who is more than fifty miles from home. With my home base in Washington, D. C., it is obvious that on a mileage basis I am one of the most expert people on the program. Only Col. Bryan, in fact, has the edge on me here, and since his home location is Andrews Air Force Base, he is more expert by only 10-15 miles.

Now these "expert" qualifications may strike you as flimsy indeed, but they're all I've got. This, too, I'll say more about later.

Education and training heralded by all.

It is clear to those in attendance that previous speakers have been strong in their vocal support for suitable education and training programs for two-wheeled motor vehicle operators. Education and training appears to be popular, acceptable, and consistently well-recommended as one of the solutions to the problem. Let me illustrate with some notes taken as I listened to earlier presentations. The quotations may not be letter perfect, but they are substantially accurate.

Mr. Davidson of Harley-Davidson Motor Company spoke in behalf of the Motorcycle, Scooter, and Allied Trades Association. He said, "The lag in licensing and training is at the heart of the problem."

Mr. Jingu of Yamaha International Corporation spoke with emphasis in favor of training and testing.

Mr. McCormick of the U. S. Suzuki Motor Corporation called for "an all out effort in instruction."

Mr. Matsuoka of American Honda Corporation stated that "the best approach is through education."

Mr. Berry of the American Motorcycle Association talked of training needs and cited several obstacles to development of sound education programs.

Mr. Landgraf of Financial Indemnity Company, representing the insurance industry viewpoint, cited the need for education and training. He gave particular emphasis to proper attitude development among operators.

In responding to a question regarding the reason for success in the ground safety program in USAF-Europe, Mr. White, speaking from the audience, said he thought, "instruction made the difference."

And, Mr. Toms, Director of the Department of Motor Vehicles in the State of Washington, called for the teaching of "good sense driving." I might say, since I've known Doug Toms for some years, that he is by no means a "Johnny-Come-Lately" in his interest and concern with two-wheeled motor vehicle safety. I recall a conversation with him as early as four years ago (when he was on the faculty at California State College at Los Angeles) in which he foresaw the industry growth and attendant problems long before most of us were even dimly aware of them.

Well, everyone seems to be for education and training, so what's the problem? It is that, as yet, no systematic, widespread education and training program is available to two-wheeled motor vehicle operators. Why not?

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Many seem to have faith in education and training. But perhaps, as Robert Hutchins wrote in an entirely different context in 1945, "We do not know what education could do for us, because we have never tried it."

At this seminar mention has been made of several brochures, kits, films, and other training aids that are available or soon becoming so. And, one such aid-- made available by Universal Underwriters Insurance Company-- has been designed for use specifically as an extension of the formal instructional program in high school driver education. I don't mean to dismiss these commendable efforts to help meet the problem, but the fact remains-- no systematic, widespread education and training program is yet available to those who can profit from it. Again I ask, why not?

In attempting to answer this question, I'll return to an earlier topic I left unfinished.

Who represents educators?

As already indicated, my "expert" qualifications are far from impressive. In addition, I come here as a sort of ambassador without portfolio.



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Many other speakers are able to reflect a position taken by a recognized group. A good example is Mr. Vern Hill, past-president of the American Association of Motor Vehicle Administrators. In his forthcoming presentation, Mr. Hill can speak either as Oregon's Motor Vehicle Department Director or from the position taken by AAMVA. The Association is already on record in support of numerous specifics relating to instruction permits, special licenses, written and road tests and other matters applied to two-wheeled motor vehicle operators. He speaks for motor vehicle administrators. Who speaks for educators?

By default, I suppose, I do. But I do so without benefit of a specific program, or even some sort of official endorsement by the nation's driver educators.

This is not to suggest there is no action in the field. I have personal knowledge of some high school driver education instructors, teacher preparation professors, and other specialists who have mounted successful on-going two-wheeled motor vehicle education programs. But there is no evidence of any general enthusiasm for and acceptance of this functional role. Why?

While I can't claim to officially represent or speak for educators, I can offer my personal thoughts on the subject. They might shed some light on the mystery surrounding the apparent apathy or inertia preventing educators from meeting the two-wheeled motor vehicle safety challenge. Here are five possible reasons:

1. Driver educators are generally not well aware of the problem. This may seem strange to those of you so close to the subject, but few are as well informed as is this audience.
2. The potential usefulness of the instruction may be legitimately questioned in some places. It would be difficult to make this case in California, perhaps, but not impossible in, for example, Maine. Maine has had a 169 per cent increase in registration of two-wheeled motor vehicles between 1961 and 1965 according to U. S. Public Health Service statistics. This is certainly impressive growth, but note that the total 1965 registration of these vehicles in Maine numbered just a little better than five thousand. Subtract from that number those operators not attending high school

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and scatter the remainder among the state's more than one hundred school districts and you can see, I believe, that, presently at least, it may be hard to make a case for the utility of a formal school program in some localities.

3. The thirty-three year fight to gain universal approval for teaching safe automobile operation in public schools is not completely won and some of the "troops" are too battle weary to make a major offensive in behalf of teaching safe two-wheeled vehicle operation. The Highway Safety Act of 1966 may change this in time, but even at best the road ahead is still long and difficult.
4. Driver educators are typically expected to "work their miracles" in thirty-six hours of instruction (both classroom and road) and can ill-afford to "give-up" any of that time. If you subscribe to the belief that one should be educated, tested and licensed for automobile operation prior to two-wheeled motor vehicle operation--and I join those who champion this cause--then you must work for an expansion of the driver education program.

It is unfair to teachers and students alike to expect the typical driver education program to absorb additional content in the existing time package.

5. The majority of driver education teachers in the schools probably have little, if any, experience with and only sketchy knowledge of two-wheeled motor vehicles. Moreover, their lack of confidence is difficult to overcome because they presently have inadequate opportunities and resources to become sufficiently experienced and knowledgeable to provide quality instruction.

For these or other reasons progress is slow. The goal is clear: an acceptable plan for providing high-quality instruction to all two-wheeled motor vehicle operators in an efficient, economical manner at the time when greatest gain will result. Solutions must be found.

Some thoughts for the industry.

Now a return to the other unfinished topic: what you don't know can hurt you.

I'm becoming more "expert" by the minute. I'm now ready to offer unsolicited advice and that's really only

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Seriously, I would like to offer some thoughts particularly for the consideration of industry representatives in the audience. I'm going to be candid and to some I'll sound critical.

If it is criticism, it's certainly intended to be friendly criticism. I've been in Washington during the last year where I've seen a number of things happen to another industry that were, in my judgment, eminently unfair.

I hope I don't see that sort of thing repeated in another year with another industry. But I honestly feel that unless some lessons are learned from the past, this particular piece of history will repeat itself. Hence the following seven-point program is offered for thought and, I hope, action.

1. Industry must work hard to speak with one clear voice and act on common policy. Company vs. company competitiveness, small vs. large machine conflicts, road vs. trail riding differences, and company efforts vs. association plans can't be permitted to cloud the basic issues common to all. Many voices singing different songs leads

to a fragmented approach, creates public confusion, and weakens the industry position.

2. Industry can't be content to simply "encourage," "recommend," and pass resolutions calling for driver educators to teach safe operation of two-wheeled motor vehicles. The problem is too complex for this approach. The public and the school board must be convinced. Instructional materials and facilities must be provided. Teachers must be adequately prepared. And time must be found to do all these things. It won't happen just because industry says it should. Industry must be prepared to work with educators and laymen and to meet some needs through financial support.
3. Industry must recognize the limitations inherent in company-produced materials and company-sponsored training programs. This is not to suggest companies should not produce pamphlets, films, and other materials, but only that when this is done it should be approached in an eyes-open manner. Understandably, few companies are willing to talk about a competitor's product; hence the material is

usually too specifically related to one machine for sound instruction. And much company-produced material leans to the idealistic, promotional approach at the expense of realism and practicality. Recommending that dealers conduct training programs assumes that all dealers are competent to teach and willing to do so. Both these assumptions are questionable.

4. Industry should move quickly toward greater standardization of equipment components location and operation. The implications both for education and training and safe operation of the vehicles are obvious.
5. Those interested in education and training should adopt an experimental attitude, seek competent professional assistance wherever it may be found, and be willing to finance needed research and development. There are many instructional approaches possible. The USAF program viewed here yesterday offers much potential where classroom group instruction is practical; the Air Force is to be commended for this two-year-old pioneering effort.

In the non-military setting auto-instructional techniques may be more appropriate than group approaches. We are told of simulators under development. Eight and 16 mm films, slides, television are other possibilities. Now is the time to experiment with the various approaches to determine the best alternatives. In so doing it is advisable to seek out knowledgeable, competent teachers and researchers who, unfortunately, are not in abundant supply. Some people make the mistake of going to the nearest or the biggest university to secure this assistance. The talent you need for your purposes is not always available at the nearest or largest source.

6. Two-wheeled motor vehicle enthusiasts should "pull in their horns" regarding the apparent antagonism toward four-wheeled vehicle users.

The name of the game is the same--both are using the streets and highways. You are in the process of overcoming the unfair Hell's Angels black-leather-jacket stereotype. Don't replace it with an oversensitive, carping, look-what-they-are-



doing-to-me-now image. You may have good reason for anger toward some individual car drivers. Avoid generalizing to the entire population.

7. Recognize both what education and training can and cannot do. Education and training is not capable of overcoming the effects of alcohol ingestion, offers no protection to the unhelmeted rider when he falls, is no substitute for slipshod licensing or enforcement, and obviously can't help those (e.g., the unlicensed) who are never exposed to it. Education and training has much to offer, but it's not a panacea.

#### Conclusion

What you don't know can hurt you--both you the two-wheeled motor vehicle operator and you the person concerned with his education and training. There are several decades of formal instructional experience in preparing automobile, truck, and bus drivers. It behooves the vital, expanding two-wheeled motor vehicle industry and user groups to examine and profit from this earlier experience. I hope my remarks may stimulate your thoughts along these lines.

I commend the United States Air Force personnel for planning and executing this seminar. It has been a pleasure for me to participate.

We at the Automotive Safety Foundation are concerned with safe and efficient highway transportation. If the Education Division can be of direct or indirect assistance to you in your work, we would be pleased to do so to the extent of available time and resources. That last phrase is a slight hedge, for we do find ourselves busy inasmuch as the four-wheeled motor vehicle safety effort has not yet overcome all obstacles either.

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**"Safety Promotion Helps"**

**By**

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Address by Mr. J. C. Parkhurst  
Publisher, "Cycle World" Magazine  
Long Beach California

Gentlemen, Dr. Hartman, Mr. Davidson and Mr. Jingu yesterday covered the subject of safety helps, they left me absolutely nothing to add. I'll be brief.

The subject of safety helps as applied to the Air Force or what could be useful to the Air Force is a very limited area. I am in the publishing business, but our approach is like most magazines of this type--entertainment rather than safety work or anything like this because people don't buy this type of a magazine to be preached to.

We do quite a bit of safety work--as much as we possibly can. We had a series that ran for the last year and a half on motorcycle safety disguised by covering it up with instruction on how to ride in every form of motorcycling, including competition, with emphasis placed on safe riding, helmet wearing, proper equipment--a number of things. We reprinted it. This is not a commercial for it. I am going to have some samples on the table outside for anyone who would care to see them. We are going to reprint them and offer them to anyone in the industry

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or the Air Force, for that matter, at our cost because this was the only way I saw to approach the problem from the standpoint of an enthusiast's magazine. We are not oriented in this direction, so it is very difficult for us to include very much in safety in the magazine.

I made a list of safety material that is available to you. Other than Suzuki's "Freedom of the Road," the Universal Underwriter's Program--which I just found out about yesterday, Honda's booklet, Yamaha is working on a publication now that is shortly to be printed. The National Safety Council did issue a series of cartoons not long ago that are available. I don't know how this would apply to the Air Force. We ran one or two of them. They are quite well done--not very well drawn, but the points are well made. Although they were issued to the newspapers, I don't know how extensively they were used. I have seen Harley Davidson's "Rider Instructor's Manuals" which they issue to police departments, and this is probably the best publication I have ever seen on rider instruction. Mr. Davidson supplied copies to you here at Norton. I can not recommend anything better than that because this type of instruction, particularly on how to ride a machine, is very difficult

to communicate, especially in printed matter. It is easier to instruct riding in person than it is to put it down on paper. I think they did a quite good job.

You are going to see movies today; they are all quite good, and I think very useful for the Air Force. There has been talk of other types of movie productions; Dr. Hartman referred to an outside source; someone that is not profit oriented who might possibly produce a movie. I don't know who it would be at the present. It's a very expensive undertaking; it's a very involved undertaking; but it might be that this type of movie could be put together by the association or by an independent party. I would like to see someone try it. Maybe Suzuki would loan you the girls, too.

My original assignment was to itemize any and all written material, printed material of any forms, movies, etc., the tools of teaching motorcycle safety. I can't add anything to what you have heard already. I learned quite a bit myself, because there were a few projects going on that I didn't know about; Yamaha's new book, which is very soon to be made available. I saw several new things Motorcycle and Scooter Allied Trades

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Association is doing, and they all look excellent. I have four pages of notes, and I can't add a thing except that our series, the series we have recently reprinted, is now available. They are useful. I don't know how useful to the Air Force because again it approaches the problem of instruction, partly from the standpoint of learning competitive riding. In fact, this is probably the last thing you want to discuss when teaching someone to ride. Although as soon as he learns to ride it, he will be competitive anyway. The motorcycle has a way of making a competitor out of you just by simply getting on it.

The printed matter situation--I have done as much research as possible--I had hoped that I could come up here and reel off a list of really usable and new and refreshing and technically accurate instruction material. There isn't any. It is going to have to come from your staff, from the Air Force staff. It will have to be self-generated. After seeing your movie yesterday, I think you don't need very much help. I think you need a little technical assistance, but we discussed that

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last night. The Air Force program is really excellent; one of the best I have ever seen. I can't recommend anything any higher.

I wish I could add more but the meeting has been so complete and has generated so much information both useful to the Air Force and particularly useful to me, or anyone in the industry outside of the Air Force, that I can't make any additional contributions.

So I want to thank the Air Force for inviting me. My function has been more as a reporter than as a contributor to the efforts because of the type of publication I represent. The editor is with me, and we will do extensive coverage on the seminar. The information is going to be extremely useful to us, and I want to thank everyone for inviting me.



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**"State Legislation and Administration  
for Two-Wheel Vehicle Operators"**

**By**

**Mr. Vern L. Hill  
Director  
Department of Motor Vehicles  
State of Oregon  
Salem, Oregon 97301**

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STATE LEGISLATION AND ADMINISTRATION  
FOR TWO-WHEEL VEHICLE OPERATORS

Vern L. Hill, Director  
Oregon Department of Motor Vehicles

I. The Motorcycle Explosion

- A. In 1955, Oregon had 5,429 motorcycles. As recently as 1960, the state's motorcycle population was under 8,000.
- B. Then came the revolution--the one some physicians in our state, the plastic surgeons, have referred to as "the Japanese revenge for losing World War II."
- C. By the end of 1965, the state's motorcycle population was 33,435--a 318 per cent gain over 1960.
- D. Oregon's experience, of course, was not unique.
  - 1. In 1965, there were 1,287,806 motorcycles in the United States--a 31 per cent gain over 1964.
  - 2. Six years ago, in 1960, there were 575,000 motorcycles in the nation.

II. The Secondary Explosion

- A. The motorcycle explosion has been accompanied by a secondary explosion of deep concern to all motor vehicle administrators, law enforcement officials and traffic safety officials.
- B. Nationally, there were 1,580 motorcycle deaths in the United States last year--a 41 per cent increase over 1964.
- C. In my state, deaths in motorcycle accidents last year numbered 23--two less than were recorded in 1964. But this offers little consolation when we consider that motorcycle deaths have increased 130 per cent since 1960.
- D. Deaths, however, do not tell the entire story. In our state the number of non-fatal injury accidents involving two-wheel vehicles has increased about 160 per cent.

III. A Grim Forecast

- A. These figures are but a prelude to what could happen.
- B. By 1970, the National Safety Council has estimated there will be five million motorcycles in the United States and that deaths could go as high as 3,000...unless something more is done to control their use.

IV. States Move to Meet Problem

- A. New laws have been passed recently in a number of states, such as New York, Pennsylvania and Michigan.
  - 1. The Michigan law is quite comprehensive. It requires cycle riders to ride on the right of the road and to wear a crash helmet. Riders are forbidden to ride on the white line between two moving lanes of traffic. The law also regulates the renting of two-wheelers.
  - 2. Pennsylvania now requires motorcycles to be inspected.
- B. At the annual AAMVA conference in September, an entire session was spent in discussion of the various approaches now being utilized by the states and possible future programs which should be undertaken. A film has been produced by the Association and the cycle industry on testing riders.

V. The Oregon Study of Motorcycle Accidents

- A. Oregon began to express its concern over the increasing motorcycle problem several years ago.
- B. Our first step was a motorcycle accident study conducted by our department. It covered motorcycle accidents which occurred during a six month period in 1963. It produced several important facts:
  - 1. In 97% of motorcycle accidents, the operators were males.
  - 2. About one in 10 was not licensed at the time of the accident.

3. About seven per cent had "cycle only" licenses and most of these were in the 16-19 year age range. (Cycle only was a provision which permitted a 16-year-old to obtain a license to operate a two-wheeled vehicle after a short demonstration ride observed by a driver license examiner.)
4. Less than half the drivers were insured at the time of the cycle accident. Those between 20-24 were least likely to be insured.

VI. The Oregon Motorcycle Safety Proposal

- A. Based on this study and growing public concern, it was determined that some new action was necessary. Legislation was prepared, based on recommendations of a local citizen safety council and official agencies. The original bill provided for:
  1. Training courses to be offered by dealers, with the courses approved by the Department of Motor Vehicles.
  2. Crash helmets and other suitable protective clothing to be approved by the Department of Motor Vehicles.
  3. A motorcycle indorsement on a driver's license in order to operate a two-wheeler.

VII. The Current Program in Oregon

- A. The final bill approved by the Legislature in 1965 included only the last feature, plus some control on the firms or individuals who rent, lease or furnish motorcycles to another person.
- B. The Oregon law provides that "no person shall operate a motorcycle on a public highway of the state unless he has a valid license as an operator or chauffeur, and unless he has obtained an indorsement on his regular license to operate a motorcycle."
- C. Our reasoning: a motorcycle operator must know the problems of the operators of standard vehicles in order to understand the limitations on stopping distances, vision, etc.

- D. This means that to operate a motorcycle in Oregon a rider must: (1) pass the regular written, vision and behind-the-wheel test in a motor vehicle; then (2) be examined to determine if he (or she) is qualified to operate a motorcycle in such manner as not to jeopardize the safety of persons and property.
- E. The law also permits us to revoke the indorsement if we find that a person with such an indorsement is no longer competent to operate such a vehicle.
- F. Finally, the law provides that "no person shall rent, lease or otherwise furnish a motorcycle owned by him or under his control to any person who has not first displayed to him an operator's or operator-chauffeur's license which has been indorsed as provided by law."

#### VIII Testing Results To Date

- A. We have issued 22,113 indorsements, after testing of applicants. Only 267 have failed the test, but 784 others have failed because their two-wheelers failed to meet equipment standards called-for in another section of Oregon law.
- B. Most frequent equipment failures are "no rear-view mirror", followed by "no stop lights", "no horn".
- C. The test itself is a simple one with applicants requested to perform two right and left turns and stop and start in a traffic situation. The examiner stands where he can observe the maneuver.

#### IX. A Beginning Only

- A. Oregon's program is not sophisticated and may be considered only a beginning.
- B. Ultimately, special written tests may be given in all states to applicants for such licenses. In addition, more comprehensive on-cycle tests should be given, when adequate courses can be made available.
- C. All this probably should be preceded by instruction in high school driver education classes, and in communities through commercial schools.
- D. Adequate steps now may be the only hope for defeating the

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**"Law Enforcement Problems  
and Actions"**

**By**

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Zone 6, 3703 Camino Del Rio  
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LAW ENFORCEMENT PROBLEMS AND ACTIONS  
BY  
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CALIFORNIA HIGHWAY PATROL

GOOD MORNING GENTLEMEN -- IT IS A PLEASURE TO BE HERE TODAY TO MEET WITH PEOPLE WHO NOT ONLY ENCOUNTER SOME OF THE SAME PROBLEMS WE OF THE CALIFORNIA HIGHWAY PATROL DO, BUT, MORE IMPORTANT TO FIND THAT YOU, LIKE WE, ARE INTERESTED IN DOING SOMETHING ABOUT THESE PROBLEMS.

MY SUBJECT TODAY IS "LAW ENFORCEMENT PROBLEMS AND ACTIONS". THIS COULD COVER A MULTITUDE OF SINS, SO I WILL LIMIT MY REMARKS TO THOSE PROBLEMS AND ACTIONS THAT RELATE TO THE OPERATION OF TWO-WHEEL MOTOR VEHICLES ON OUR HIGHWAYS. THERE IS AN OLD SOUTHERN FOLK SONG ENTITLED "RIDIN' TO HEAVEN ON A MULE". THIS SONG ENDS HAPPILY BUT, UNFORTUNATELY, THE MODERN "MULE" OR "HOG", AS THE MOTORCYCLE VERNACULAR TERMS THEM, DOES NOT ALWAYS END SO HAPPILY.

THE GROWTH OF MOTORCYCLING, BOTH AS A SPORT AND AS A MEANS OF TRANSPORTATION, HAS BEEN PHENOMENAL DURING THE LAST DECADE. BASED ON PAST FIGURES, IT IS ESTIMATED THAT BY THE END OF 1966 WHICH IS JUST A SHORT TIME AWAY, THERE WILL BE 1,880,726 MOTORCYCLES REGISTERED IN THE UNITED STATES. BY 1970, THIS FIGURE

WILL REACH AN EXPECTED INCREASE OF ONE MILLION A YEAR. THESE FIGURES DO NOT INCLUDE MANY TRAIL AND RACING MACHINES WHICH ARE USED EXCLUSIVELY "OFF THE ROAD" AND ARE THEREFORE NOT REQUIRED TO BE REGISTERED.

BECAUSE OF THE LOW INITIAL COST AND ECONOMY OF OPERATION, LIGHTWEIGHT MOTORCYCLES NOW COMPRISE AN INCREASINGLY SIGNIFICANT PORTION OF THE TOTAL NUMBER OF MOTOR VEHICLES IN THIS COUNTRY.

CALIFORNIA, WITH A VAST MAJORITY, HAD 268,185 MOTORCYCLES REGISTERED DURING 1965 AND THE FIGURE HAS INCREASED CONSIDERABLY DURING 1966. JUST TO GIVE YOU SOME IDEA HOW SIGNIFICANT THE GROWTH IN MOTORCYCLES HAS BEEN, THERE WAS AN INCREASE OF 218.1 PER CENT IN MOTORCYCLE REGISTRATION BETWEEN 1961 AND 1965.

WHAT HAS BROUGHT ABOUT THIS SUDDEN INTEREST IN CYCLING IN CALIFORNIA? WHILE IT WOULD BE DIFFICULT TO PINPOINT ANY ONE FACTOR, THERE ARE SEVERAL, HOWEVER, THAT WE BELIEVE CONTRIBUTE SIGNIFICANTLY. ONE IS THE ECONOMY OF OPERATION. SECONDLY, THE CLIMATE IN CALIFORNIA IS CONDUCIVE TO MORE YEAR-ROUND OPERATION. YET, ANOTHER MIGHT BE THE GREATLY EXPANDED OUTLETS THAT HAVE SPRUNG UP THROUGHOUT THE UNITED STATES WITH JAPANESE, ENGLISH, GERMAN AND SWISS MANUFACTURERS COMPETING FOR THE EVER-INCREASING MARKET. SERVICEMEN RETURNING FROM OVERSEAS POSTS, AND EVEN THOSE STATIONED DOMESTICALLY, FIND THE MOTORCYCLE AN EFFICIENT, ECONOMICAL MEANS OF TRANSPORTATION, BOTH ON AND OFF THEIR BASES. IT IS NOT UNUSUAL TODAY TO SEE A BUSINESSMAN WITH BRIEFCASE TIED TO THE LUGGAGE RACK, AND



COAT TAILS FLYING, RIDING HIS MOTORCYCLE TO WORK. PARKING IS LESS OF A PROBLEM IN METROPOLITAN AREAS AND THE LICENSE AND MAINTENANCE COSTS ARE CONSIDERABLY LESS THAN THAT OF AN AUTOMOBILE IF ONE IS WILLING TO FOREGO SOME OF THE COMFORTS.

THE ACCIDENT RATE INVOLVING TWO-WHEEL MOTOR VEHICLES IS OUR GREATEST CONCERN. IN JULY OF 1965, THE FATAL AND INJURY ACCIDENT REPORTS WERE ARBITRARILY SELECTED FOR STUDY AS TO THE CAUSES AND EFFECTS OF MOTORCYCLE ACCIDENTS.

A MOTORCYCLE OR MOTOR-DRIVEN CYCLE WAS INVOLVED IN 1,216 FATAL AND INJURY ACCIDENTS. OF THESE, 690 OR 56.7 PER CENT WERE ACCIDENTS WHERE THE DRIVER OF THE MOTORCYCLE WAS CONSIDERED TO BE AT FAULT. OF THE 1,216 ACCIDENTS, 26 WERE FATAL AND 1,190 WERE INJURY ACCIDENTS. THESE INCLUDED 26 PERSONS KILLED AND 1,434 PERSONS INJURED. IN THE 26 FATAL ACCIDENTS, 8 OF THE MOTORCYCLES CARRIED PASSENGERS; 7 OF THE 8 PASSENGERS WERE KILLED AND THE DRIVER SURVIVED.

THE FILES OF THE CALIFORNIA HIGHWAY PATROL AND LOCAL POLICE AGENCIES ARE FILLED WITH INCIDENTS OF AN UNUSUAL NATURE INVOLVING A MOTORCYCLE, BUT ONE RECENTLY CAME TO MY ATTENTION, WHICH I WOULD LIKE TO RELATE TO YOU.

A YOUNG PETTY OFFICER, WHO WAS A CREW MEMBER ON THE U.S.S. HENRY W. TUCKER, PARTICIPATED IN A SAFETY PROGRAM WHILE ENROUTE FROM PEARL HARBOR TO LONG BEACH. THIS PROGRAM HAD BEEN GIVEN BY A MEMBER OF THE CALIFORNIA HIGHWAY PATROL WHO HAD BEEN FLOWN TO HAWAII BY THE U. S. NAVY EXPRESSLY FOR THIS PURPOSE, AND

UNFORTUNATELY, THREE WEEKS AFTER THIS PROGRAM WAS GIVEN, THIS YOUNG MAN WAS DEAD OF HEAD INJURIES SUFFERED IN A MOTORCYCLE ACCIDENT.

THE FOLLOWING POINTS OF INTEREST WERE OBTAINED IN AN INTERVIEW WITH FIVE CREW MEMBERS OF THE TUCKER WHO WORKED WITH THIS YOUNG MAN OR LIVED WITH HIM IN AN APARTMENT IN LONG BEACH. THIS CREWMAN DID, IN FACT. ATTEND A SPECIAL SESSION OF MOTORCYCLE SAFETY ON THE U.S.S. TUCKER AND ALSO A SESSION BY COMMANDER WILLIAMS, COMMANDING OFFICER OF THE TUCKER, BEFORE EMBARKING ON LEAVE.

APPARENTLY, THE SESSION HAD AN EFFECT. THE INTERVIEWED CREWMEN SAID HE HAD A MOTORCYCLE HARD HAT, A LEATHER JACKET, GLOVES, BACK PROTECTOR BELT AND AN EXTRA REAR-VIEW MIRROR MOUNTED ON HIS MOTORCYCLE. THEY ALSO ADVISED THAT THIS WAS HIS FIRST MOTORCYCLE AND THAT HE WAS A POOR RIDER, TO THE POINT WHERE SOME SAID THEY WOULD NOT RIDE WITH HIM AS A PASSENGER WHILE HE WAS OPERATING THE MACHING; BUT THAT HE HAD EXTREME CONFIDENCE IN HIS RIDING ABILITY.

THE FATAL ACCIDENT WAS HIS THIRD ACCIDENT SINCE HIS RETURN TO LONG BEACH SIX WEEKS PREVIOUSLY. HE HAD HAD A MINOR ACCIDENT IN WHICH HE BROKE A HEADLAMP WHEN HE WENT DOWN AT SLOW SPEED, SHORTLY AFTER HIS RETURN TO THE STATES. HIS SECOND ACCIDENT WAS IN ARIZONA WHILE HE CONTINUED ON LEAVE. THE ACCIDENT IN ARIZONA CAUSED VISIBLE DAMAGE TO THE PETTY OFFICER'S HARD HAT, WHICH HE EXHIBITED ON HIS RETURN, SO HE WAS AWARE THAT A HELMET COULD REDUCE INJURY.

FROM THE INTERVIEWERS IT WAS LEARNED THAT THE DECEASED HAD CONSUMED A CONSIDERABLE AMOUNT OF INTOXICANTS DURING THE AFTERNOON AND EVENING BEFORE THE FATAL ACCIDENT. HE WAS SEEN DRINKING IN BARS IN LONG BEACH AND WAS OBSERVED APPROXIMATELY ONE HOUR AND TWENTY MINUTES BEFORE THE ACCIDENT AND APPEARED INTOXICATED AT THAT TIME. TRAGICALLY, HE WAS DESCRIBED AS A CONSCIENTIOUS, HARD-WORKING PETTY OFFICER WITH A RESPONSIBLE JOB ABOARD HIS SHIP AND WAS HIGHLY THOUGHT OF BY HIS SUPERIORS.

THE HELMET HE HAD PURCHASED WAS FOUND IN HIS DOWNTOWN LOCKER AND WAS NOT IN USE WHEN HE WAS FATALLY INJURED. THIS COULD INDICATE THAT A STORAGE PROBLEM OF HELMETS IS DIRECTLY RELATED TO THEIR USE BY RIDERS. IN OTHER WORDS, THE HELMET IS BOTH EXPENSIVE AND CUMBERSOME. TOO EXPENSIVE TO LEAVE ON A PARKED MOTORCYCLE AND TOO BULKY TO TAKE INDOORS.

I WISH THERE WERE SOME KIND OF A MORAL OR HAPPY ENDING TO THIS STORY, BUT THERE IS NOT. EVEN THOUGH PROPERLY ORIENTED TOWARD SAFETY, THE NAVY HAS LOST A FINE PETTY OFFICER. WHERE DID WE FAIL? WAS THERE INSUFFICIENT STRESS PLACED ON PROPER MENTAL ATTITUDE AND RESPECT FOR THE TWO-WHEEL MOTOR VEHICLE?

THERE IS NO NATIONAL COUNT OF THE NUMBER OF INJURIES FROM MOTORCYCLE ACCIDENTS. BASED ON THE DEATH-INJURY RATIO FOUND IN A 1962 STUDY OF MOTORCYCLE ACCIDENTS IN NEW YORK STATE, IT IS ESTIMATED THAT ABOUT 43,000 PERSONS THROUGHOUT THE NATION WERE INJURED IN 1964; WHILE IN 1965 THE FIGURE MAY HAVE EXCEEDED 60,000. IT IS ESTIMATED THERE WERE ABOUT 1,580 DEATHS

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FROM MOTORCYCLE ACCIDENTS DURING 1965. THERE IS NO DOUBT THAT AS THE NUMBER OF MOTORCYCLES INCREASES, THE NUMBER OF DEATHS WILL ALSO INCREASE--UNLESS PREVENTIVE MEASURES ARE TAKEN. DEATH RATES PER 100,000 REGISTERED MOTORCYCLES MORE THAN DOUBLE THE RATES OF OTHER MOTOR VEHICLES.

OUR RECORDS INDICATE THE NUMBER OF MOTORCYCLE ACCIDENTS WAS FAR GREATER DURING DAYLIGHT HOURS THAN DURING THE HOURS OF DARKNESS. THERE IS THE PROBABILITY THAT THERE ARE MORE MOTORCYCLES BEING RIDDEN DURING DAYLIGHT THAN DARKNESS, BUT I AM PRONE TO BELIEVE THAT THE DRIVER DOES NOT EXHIBIT THE SAME AMOUNT OF CAUTION DURING DAYLIGHT HOURS AS HE DOES DURING DARKNESS. OUR RECORDS ALSO INDICATE THAT THE MAJORITY OF MOTORCYCLE RIDERS INVOLVED IN ACCIDENTS ARE CITED FOR A SPECIFIC VIOLATION. THIS CLEARLY INDICATES THAT A MAJORITY OF THE ACCIDENTS DO NOT JUST HAPPEN--THEY ARE CAUSED BY A VIOLATION OF THE CALIFORNIA VEHICLE CODE.

I WON'T EVEN ATTEMPT TO GO INTO THE SERIOUSNESS OF THE INJURIES ENCOUNTERED IN THESE ACCIDENTS, AS I AM SURE THIS HAS BEEN WELL COVERED BY OTHERS MORE QUALIFIED. THE NUMBER OF HEAD INJURIES AND BONE-SHATTERING ACCIDENTS, HOWEVER, ARE SERIOUS ENOUGH TO WARRANT SERIOUS CONSIDERATION OF SOME RECOMMENDATIONS WHICH I WILL MAKE LATER.

AT THIS TIME I WOULD LIKE TO SAY A FEW WORDS ABOUT SOME OF THE ENFORCEMENT PROBLEMS ENCOUNTERED BY THE CALIFORNIA HIGHWAY PATROL, AS WELL AS OTHER POLICE AGENCIES. FIRST, THERE IS THE CONSTANT PROBLEM OF WHAT WE TERM "OUTLAW" MOTORCYCLE

CLUBS. OUR RECORDS INDICATE THAT THERE ARE PRESENTLY OVER 3,000 MEMBERS OF THESE VARIOUS CLUBS WITH SOME VARIATION IN MEMBERSHIP DUE TO DROP-OUTS AND NEW MEMBERS. AS YOU ARE ALL WELL AWARE, THESE PEOPLE ARE NOT KNOWN FOR THEIR RESPECT FOR THE LAW.

ANOTHER PROBLEM ENCOUNTERED BY OUR OFFICERS IS THE SPEED PROBLEM. ON A CROWDED FREEWAY WHERE OUR PATROL CARS HAVE SOME DIFFICULTY IN MANEUVERING THROUGH TRAFFIC, A CYCLIST WILL OFTEN ATTEMPT TO OUTFRAN THE OFFICER BY DARTING IN AND OUT OF TRAFFIC IN AN EFFORT TO EVADE ARREST.

THERE WERE 88 MOTORCYCLE ACCIDENTS HERE IN THE SAN BERNARDINO AREA FROM JULY 1 TO SEPTEMBER 30, 1966, IN WHICH 106 PEOPLE WERE INVOLVED. SPEED VIOLATIONS TOPPED THE LIST WITH 10, FOLLOWED BY RIGHT-OF-WAY WITH 9. OTHERS INCLUDED WRONG SIDE OF ROAD, IMPROPER MOUNTAIN DRIVING, IMPROPER PASSING AND RUNNING STOP SIGNS, JUST TO NAME A FEW.

POOR OR IMPROPERLY EQUIPPED MOTORCYCLES ADD TO THE ACCIDENT PICTURE. WHILE THE MANUFACTURERS OF THESE VEHICLES MAKE EVERY ATTEMPT TO COMPLY WITH THIS DEPARTMENT'S ADMINISTRATIVE REGULATIONS AS FAR AS REQUIRED EQUIPMENT, WE ARE STILL FACED WITH THE AMERICAN'S INDIVIDUALITY. MODIFICATIONS TO SUIT THE RIDERS' WHIMS ARE OFTEN MADE BY THE REMOVAL OF STANDARD SAFETY EQUIPMENT, RESULTING IN AN UNSAFE VEHICLE. A CONTINUOUS PROGRAM OF VEHICLE INSPECTION, COMMENSURATE WITH PROPER ENFORCEMENT ACTION FOR THE CORRECTION OF POORLY-MAINTAINED OR UNSAFE EQUIPMENT, IS PART OF OUR PROGRAM.

ALTHOUGH WE CAN PASS LAWS REGULATING EQUIPMENT, THERE IS NO  
SURE WAY TO LEGISLATE COMMON SENSE.

AS RELATED PREVIOUSLY IN THE STORY OF THE PETTY OFFICER,  
HE HAD ALL THE NECESSARY EQUIPMENT AND, THEREFORE, HE APPARENTLY  
FELT HE WAS A QUALIFIED RIDER. IT WOULD BE DIFFICULT TODAY TO  
FIND A RIDER OR, FOR THAT MATTER, A DRIVER WHO DOES NOT CONSIDER  
HIMSELF QUALIFIED.

THE OLD ADAGE THAT THERE ARE OLD MOTOR RIDERS AND BOLD  
MOTOR RIDERS, BUT NO OLD, BOLD MOTOR RIDERS IS GRAPHICALLY  
DEMONSTRATED EVERY DAY TO THE MEN WHO HAVE TO INVESTIGATE  
ACCIDENTS. TWO, OR FIVE, OR EVEN TWENTY HOURS DOES NOT MAKE  
A GOOD MOTORCYCLE RIDER. THIS LEADS US INTO -- "JUST WHAT DOES  
MAKE A GOOD RIDER?"

THE CALIFORNIA HIGHWAY PATROL AT THE PRESENT TIME IS  
OPERATING ABOUT FIVE HUNDRED MOTORCYCLES WHICH ARE DRIVEN FROM  
FIVE TO SIX HUNDRED THOUSAND MILES A MONTH IN GOOD WEATHER.  
THIS FIGURE WILL INCREASE PROPORTIONATELY WITH THE EXPANSION  
OF THE PATROL.

APPROXIMATELY 64 HOURS ARE DEVOTED TO MOTORCYCLE TRAINING  
AT THE CHP ACADEMY IN SACRAMENTO. DURING THE TRAINING COURSE,  
THERE ARE APPROXIMATELY TWENTY SUBJECTS COVERED, STARTING WITH  
MAINTENANCE AND PROGRESSING TO THE BEGINNING RIDER'S COURSE,  
RIDING ON CURVES, WET PAVEMENT, PROPER OVERTAKING AND PASSING  
TECHNIQUES AND EMERGENCY BRAKING, JUST TO NAME A FEW.

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THIS TRAINING IS UNDER THE GUIDANCE OF EXPERTS AND IS ONLY A FORERUNNER OF THE ADDITIONAL EXPERIENCE A RIDER WILL GAIN ON THE BEAT AFTER HE IS ASSIGNED TO AN AREA. WITH THIS TRAINING WE STILL FEEL THAT AN OFFICER IS A NOVICE UNTIL HE HAS RIDDEN UNDER WORKING CONDITIONS FOR AT LEAST A YEAR. HOW, THEN, CAN A RIDER WITH TWO OR FOUR HOURS' EXPERIENCE HOPE TO REMAIN ALIVE OR UNINJURED UNLESS HE EXERCISES EXTREME CAUTION DURING HIS LEARNING PERIOD?

IN ADDITION TO THE TRAINING MENTIONED ABOVE, AN OFFICER ASSIGNED TO MOTORCYCLE PATROL IS CONTINUALLY EVALUATED AND, WHEN NECESSARY, GIVEN ADDITIONAL TRAINING TO MAINTAIN THE SAFE STANDARDS NECESSARY FOR HIS WORK.

IN SPITE OF THE TRAINING AND PRECAUTIONS TAKEN BY THE PATROL, ONE OF OUR OWN OFFICERS WAS KILLED HERE IN SAN BERNARDINO COUNTY AS RECENTLY AS AUGUST 25TH OF THIS YEAR. OFFICER WILLIAM ISAACS, AN EIGHT-YEAR VETERAN OF THE PATROL, WAS WESTBOUND ON CONNECTOR ROUTE I-10 TO NORTHBOUND ROUTE I-15. ACCORDING TO WITNESSES, OFFICER ISAACS WAS TRAVELING AT A MODERATE SPEED WHEN FOR NO APPARENT REASON THE MOTORCYCLE STARTED SLIDING TO THE LEFT. THE OFFICER CORRECTED AND THEN THE VEHICLE STARTED FISH-TAILING AND WENT DOWN ON THE LEFT SIDE. ACCORDING TO WITNESSES, THE OFFICER WAS NOT IN PURSUIT OF A VIOLATOR.

INVESTIGATION REVEALED THAT AS THE MOTORCYCLE WENT DOWN, OFFICER ISAACS' HEAD STRUCK A 12" X 12" POST SUPPORTING THE GUARD RAIL AT THE WEST EDGE OF THE ROADWAY. HIS PROTECTIVE

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HELMET WAS TORN FROM HIS HEAD AS IT BECAME WEDGED BETWEEN THE GUARD RAIL AND THE PAVEMENT. HIS HEAD THEN STRUCK THE SECOND POST, CAUSING A BASAL SKULL FRACTURE AND MASSIVE HEAD INJURIES. THE LOSS TO THE PATROL WAS GREAT--BUT TO HIS FAMILY, IT IS IMMEASURABLE. FROM THIS AND OTHER ACCIDENTS WE TRY TO LEARN SO THEY WILL NOT HAPPEN AGAIN.

IT IS THE POLICY OF THE PATROL TO USE MOTORCYCLES WHENEVER POSSIBLE ON FREEWAYS OR IN HEAVILY-CONGESTED AREAS WHERE MANEUVERABILITY IS ESSENTIAL. PUBLIC THINKING TO THE CONTRARY, IT IS NOT THE POLICY OF THE PATROL TO USE MOTORCYCLES IN THE ROLE OF THE OLD "SPEED COP" CONCEPT AS WE FIND OUR CARS ARE MUCH SAFER AND MUCH FASTER. IMMEDIATE RESPONSE TO AN ACCIDENT SCENE AND THE CALLING OF ADDITIONAL ASSISTANCE, WHILE THE INJURED ARE BEING CARED FOR AND THE ACCIDENT SCENE PROTECTED, IS ONE OF THE FUNCTIONS PERFORMED BY THE MOTOR OFFICER.

NATURALLY, ENFORCEMENT OF TRAFFIC LAWS IS STILL A PRIMARY RESPONSIBILITY. EVERY CALIFORNIA HIGHWAY PATROLMAN, AS PART OF HIS TRAINING, IS TAUGHT HOW TO SAFELY OPERATE A MOTORCYCLE. SINCE THERE ARE SOME AREAS OF THE STATE WHERE USE OF THE MOTORCYCLE IS NOT PRACTICAL, IT IS POSSIBLE THAT SOME OFFICERS MAY NEVER RIDE AGAIN AFTER THEY LEAVE THE ACADEMY. THE TRAINING THEY RECEIVE, HOWEVER, IS NEVER FORGOTTEN AND SERVES THEM WELL IN DEALING WITH VIOLATORS WHO DO RIDE MOTORCYCLES.

THE PATROL HAS INSTITUTED ANOTHER PROGRAM FOR MOTORCYCLE SAFETY WHICH I FEEL MAY BE OF INTEREST TO YOU. ABOUT FOUR AND ONE-HALF YEARS AGO, IN COOPERATION WITH THE UNITED STATES NAVY,



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A PROGRAM CALLED "AUTOMOBILE SAFETY AT SEA" WAS INAUGURATED IN THE ELEVENTH NAVAL DISTRICT. THIS PROGRAM CONSISTED OF THE NAVY FLYING AN OFFICER OF THE PATROL TO A RETURNING AIR-CRAFT CARRIER WHOSE PERSONNEL HAD BEEN DEPLOYED IN VARIOUS PARTS OF THE WORLD FOR SEVEN MONTHS OR LONGER, AND HAVING HIM GIVE LECTURES, SAFETY MATERIAL AND ACCIDENT FILMS IN HIS PRESENTATIONS. THE THOUGHT BEHIND THIS WAS THAT MANY OF THESE MEN WERE FROM OTHER STATES AND TOTALLY UNFAMILIAR WITH OUR TRAFFIC LAWS. OTHERS HAD NOT DRIVEN A CAR FOR MANY MONTHS OR HAD BEEN DRIVING IN A FOREIGN COUNTRY WHERE THEY HAD DRIVEN ON THE LEFT SIDE OF THE ROAD UNDER DIFFERENT RULES THAN THEY WERE TO ENCOUNTER HERE. CHANGES IN TRAFFIC LAWS WERE OFTEN THE RULE AND THESE CHANGES WERE EXPLAINED IN DETAIL.

THESE TALKS WERE NOT DIRECTED TOWARD THE CROSS-COUNTRY DRIVER, BUT RATHER TOWARD THE COMMUTING DRIVER OR "LIBERTY" DRIVER. THE THOUGHT CARRIED OUT IN THIS PROGRAM WAS THAT MOST DRIVERS WERE AWARE OF THE HIGH-SPEED HAZARD AND LONG TRIP SAFETY, BUT TENDED TO LET THEIR GUARD DOWN ON RETURN TO THE MORE NORMAL SHORT-HAUL, MODERATE SPEED OPERATION.

STATISTICS SHOW THAT THIS LIBERTY OR ENTERTAINMENT DRIVING ACCOUNTS FOR MORE THAN 75 PER CENT OF ALL REPORTABLE (INJURY OR DEATH) ACCIDENTS. IT IS INTERESTING TO NOTE THAT THESE REPORTABLE ACCIDENTS ARE GENERALLY CONFINED TO A RADIUS OF 25 MILES OF THE HOME OR DUTY STATION.

WHILE THESE PRESENTATIONS ADVISE THAT A HIGH-SPEED ACCIDENT WILL PRODUCE FATAL INJURIES, THE NEED FOR SAFETY DURING LIBERTY

DRIVING IS IMPRESSIVELY DEMONSTRATED IN THE CRASH SCENES FROM SUCH FILMS AS "BEFORE IT'S TOO LATE" OR "RED LIGHT RETURN." BOTH OF THESE FILMS HAVE BEEN USED WITH MUCH SUCCESS TO PUT THE POINT ACROSS.

DUE TO AVAILABILITY, PRICE CONSIDERATION AND TRANSPORTATION, MANY MOTORCYCLES ARE PURCHASED OVERSEAS. AN AIRCRAFT CARRIER, FOR EXAMPLE, WILL TRANSPORT ANYWHERE FROM 200 TO 450 MOTORCYCLES FOR RETURNING CREWMEN.

PARTICULAR PHASES OF SAFETY SUCH AS THE NEW MOTORCYCLE OWNERS WHO ARE BRINGING THEIR MACHINES BACK WITH THEM ARE GENERALLY GIVEN SPECIAL SESSIONS WHERE THESE OWNERS AND ANY OTHERS INTERESTED IN MOTORCYCLES ARE INVITED OR DIRECTED TO ATTEND. SESSIONS OF THIS TYPE GENERALLY COVER SAFETY HELMETS, EQUIPMENT, PROPER RIDING HABITS AND A RESPECT FOR THE MOTORCYCLE AND THE INJURY-INFLICTING CAPABILITIES IF IMPROPERLY OR CARELESSLY HANDLED. THESE INFORMAL CONTACTS REACH VIRTUALLY ALL OF THE CREW AND IT IS THE OPINION OF THE COMMAND STRUCTURE THAT THE PROGRAM IS VERY WORTHWHILE AND OF IMMEASURABLE VALUE TO THE CREWMEN OF PACIFIC FLEET UNITS RETURNING TO CALIFORNIA'S HIGHWAY SYSTEM.

HERE IN CALIFORNIA, ANYONE FIFTEEN AND ONE-HALF YEARS OF AGE OR OVER MAY OPERATE A MOTORCYCLE ON AN INSTRUCTION PERMIT ONLY, WITH A PERMANENT LICENSE BEING ISSUED AT AGE SIXTEEN. EFFECTIVE JULY 1, 1967, A PERSON WILL HAVE TO HAVE REACHED THE AGE OF SEVENTEEN AND ONE-HALF YEARS. WE HOPE THIS MORE MATURE AGE WILL, IN SOME MEASURE, HELP TO CUT DOWN ON THE ACCIDENTS.

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TO CONCLUDE, I HAVE SEVERAL RECOMMENDATIONS:

1. MOTORCYCLE TRAINING CLASSES BE SET UP ON ALL MILITARY BASES WITH SUCCESSFUL COMPLETION OF A PRESCRIBED COURSE BEFORE PERSONNEL ARE ALLOWED TO BRING THE MACHINE ON THE BASE.
2. MORE TRAINING FILMS BY THE MANUFACTURERS DIRECTED TO SAFE OPERATION OF THE MOTORCYCLE AND, ADDITIONALLY, THAT DEALERS THEMSELVES SET UP AND OPERATE TRAINING CLASSES FOR PURCHASERS AND OTHER PERSONS IN THE INTEREST OF PROMOTING SAFETY. GOOD WILL AND GOOD PUBLIC RELATIONS CAN BE ENHANCED BY THESE COURSES.
3. THAT THE MANUFACTURERS OF SAFETY HELMETS WORK CLOSELY WITH MANUFACTURERS OF MOTORCYCLES TO DEVELOP A SAFETY HELMET THAT CAN BE LOCKED ONTO THE MOTORCYCLE WHEN NOT IN USE. THIS WILL ELIMINATE THE PROBLEM OF RIDERS HAVING TO LEAVE A BULKY HELMET TO BE STOLEN OR WILL PROVIDE A MEANS OF STORAGE.
4. THAT WINDSHIELDS AND CRASH BARS BE A REQUIRED ITEM OF EQUIPMENT ON ALL MOTORCYCLES.
5. IN ADDITION TO THE FOREGOING, IT IS STRONGLY RECOMMENDED THAT ALL RIDERS BE URGED TO WEAR GOGGLES, LEATHER GLOVES, LEATHER JACKETS, PROTECTIVE SUPPORT BELTS AND LEG COVERINGS OR BOOTS WHEN RIDING A MOTORCYCLE.

THE TWO-WHEEL MOTOR VEHICLE HAS BECOME A WAY OF LIFE. WE MUST RECOGNIZE THIS AND DO EVERYTHING IN OUR POWER TO INSTILL SAFETY IN THE MINDS OF PRESENT AND POTENTIAL MOTORCYCLE RIDERS.

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THE DEPARTMENT OF CALIFORNIA HIGHWAY PATROL HAS FILMS  
AND SAFETY LITERATURE, AS WELL AS THE MANUALS, REGARDING OUR  
OWN MOTORCYCLE PROGRAM. IF ANY OF THESE WILL ASSIST ANY OF  
YOU IN ANY WAY, WE WILL BE MOST HAPPY TO COOPERATE.

THANK YOU FOR YOUR INTEREST. ONLY BY WORKING TOGETHER  
CAN WE ACHIEVE A RESULT WHICH WILL BE MEANINGFUL AND PURPOSEFUL  
IN THE FIELD OF MOTORCYCLE SAFETY.

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**"The State of Nevada  
Testing and Licensing Program"**

**By**

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"THE STATE OF NEVADA TESTING AND LICENSING PROGRAM"

An address by Robert S. Brown, Supervisor, Public Information and Traffic Safety, Department of Motor Vehicles, Carson City, Nevada, before attendees of the Air Force/Industry Two-Wheel Motor Vehicle Safety Seminar, Norton Air Force Base, California, November 29, 1966.

It's a pleasure to be with you here today, to have a part in considering this timely and pressing topic on which we are focusing our attention today.

I was asked to come here principally because Nevada does have a practical testing program which we have had in effect for nearly two years now.

I won't attempt to give you the broad philosophies or dazzle you with studies, because I think Inspector Donaldson from the California Highway Patrol, has covered that phase. We are pretty small when compared to the state of California anyway. We are doing things in numbers of hundreds and sometimes thousands; where California handles thousands, at the least, and mostly in the millions, it seems. Possibly, this is one of the things, in observing at the outset, that has allowed us to move along with this program in the manner in which we have. Because, although we are

not nearly as large as California, we are beginning to see the effects of the two-wheeler problem; especially in our more metropolitan areas--Reno and Las Vegas.

Yesterday, I think we in governmental administration heard quite a challenge thrust forth by my good friend, Bill Berry, American Motorcycle Association, when he suggested that we take the two-wheeler as a separate entity and consider it as such. There are some problems which are common to the two-wheeler which do not necessarily apply to the other types of motor vehicles for which we are called upon to administer programs. Consequently, in order to be effective and get at the heart of the program, we have to consider the two-wheeler as an entity itself as well as in the context of the overall traffic safety matter.

I am proud to say that I believe that we have reached possibly the first plateau in the state of Nevada when we implemented a practical motor scooter testing program. This program does not attempt to cover the whole spectrum of the two-wheeler, and it certainly is not indubitable or infallible as you will be able to see as I progress into the talk.

As Dann has said, the presentation will be two-fold. The other gentleman, whose name you see here on the program, Mr. Howard Hill, was the person who presented this program to the Department of Motor Vehicles for consideration. I worked with Mr. Hill in the development of this program and in adopting it into its present state as an administration order in our overall testing program.

But, as one of the gentlemen from industry observed yesterday, this doesn't make us ground experts, but, in implementing this program, we are seeking to do something to check this, and I say this in quotes, "epidemic," and doing it on a logical basis. We are proud in Nevada that we are one of the five who are attempting to do something in this program now.

If I may spin a little Nevada homespun Department of Vehicle philosophy, I would like to quote from my boss, Louie Spitz, who is the National Chairman of the Advisory Committee for the Motorcycle, Scooter and Allied Trades Association. He said, "That if the young scooter operator is to take the vehicle into the crowded traffic, he assumes the role of an adult regardless of his age; and, therefore, it is logical to assume that if we require a practical driving test for the four-wheel



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vehicle operator that we should do the same and require the motorscooter operator to be equally well prepared." I think this is especially important because of the vulnerability of the person riding the two-wheel vehicle.

I would like to take a moment here in observing, and this is strictly from the state of Nevada, I would like to commend the people of industry for the cooperative attitude which they have extended in encouraging their entrepreneuring sales force to assume some of this moral responsibility in helping see that the person is well qualified or is capable of operating the scooter before they attempt to go out onto the road with it. I think this is probably a step forward, aimed toward, what I believe Mr. McCormick yesterday called, "Teaching the proper rider instructions to the various people."

A little bit of history on our program in the state of Nevada: It was born, I suppose, when Mr. Hill came to me in 1962, when I was organizing the Governor's Traffic Safety Conference, and asked for a sub-section of the Driver's License Workshop to consider something that he had found to be a growing problem in Las Vegas. Mr. Hill, at this time, was a Juvenile Judge in Las Vegas.

I said it sounded like a good idea if it was something where a lot of his people who were coming before the court were having problems in this particular area, so the workshop, the sub-section of the Driver Licensing Workshop, passed a recommendation recommending that some thought be given to a specialized, practical driving test in order to assure that the young motorscooter license applicant would be qualified. This was passed along to Mr. Spitz, and he assigned me to work with Mr. Hill in working it out.

In Las Vegas, April 1, 1964, we initiated an experimental program to see if the thing was actually practical. At the outset, there was a marked decline in the number of people coming before Mr. Hill's court, and there was also a decline in the number of deaths and accidents as a result of the two-wheeler. But, this was a very small sampling and nothing large enough to form a conclusive result. However, we thought that the program did have merit, and we decided to keep it and expand it. On June 1, 1964, 90 days later, we moved the program into Reno. It has since been moved into Carson City and North Las Vegas. Because of the nature of the program, it has not been moved into the regions of Nevada served by

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traveling examiners. We hope, however, in the near future to have it available to everybody who seeks to operate a motorscooter. We are also studying the feasibility of adapting this program to the motorcycle as well. At present, it is confined to the motorscooter, with the performance capabilities of less than 6 1/2 horsepower and speeds under 35 miles per hour.

The tests which we give in this program are the same tests, the same type of tests, which we give the four-wheel applicant--the auto applicant--for a driver's license. The written test is confined solely to questions concerning the operation of a two-wheel motor vehicle. It is a specifically tailored test. The sign test is the same because the signs read the same for the two-wheel vehicles as they do a four-wheel vehicle. The visual acuity test is also the same; and the feature, which we feel marks this as a unique program, is the practical driving test.

And, if I may have the slide, I will show you how this practical driving test is set up. Mr. Hill will give you the whys and wherefores and review in more detail; I would just like to hit the high spots.

First of all, I would like to say that this is not drawn to scale, so if things appear to be out of proportion here, please bear with me.

The first test which is given is the quick stop test. This line, as you can see, is 150 feet long. These lines here are 18 inches apart. The young scooter operator is instructed to go down this course keeping his scooter within the confines of the line. The driver license examiner is standing off to the side with a switch controlling the stoplight down there. When the scooter applicant hits approximately this point, the light is turned on, and he must stop within this region here. If he goes past here, a certain number of points are subtracted, or if he veers out. This is to test his mastery of holding the scooter in a straight line in the crowded traffic conditions.

The second portion is a figure 8 which is designed to test the motorscooter applicant's stability. This, as you can see, quite obviously is a figure 8. These lines are also 18 inches apart. We require only that the person keep the front wheel of the scooter within the confines of the line. They must run through it twice.

The next step is the slalom. This is a stability testing apparatus where we set cones every 9 feet along the 150 feet. They must go through these in slalom fashion. For each cone they dump, there are so many points taken off. One other observation, if they dump the scooter at any time during the test, they fail.

The last portion, of course, is the left turn, right turn, U-turn, where we have the interior complex with the applicant coming up in the intersection. These are cross points, incidentally. He makes his right turn, goes down--makes a U-turn, and comes back and executes a proper left turn.

And these, basically, are the four steps that are involved in the practical test. Although this is confined merely to the 14 and 15-year-old, we are studying the thing, and if it appears the program is flexible, we plan a similar test that can be adapted to the more powerful bikes.

This particular test, I don't believe, is practical for larger machines. We have had some of the Las Vegas policemen go through it. With regard to the cone

arrangement--designed for the small scooter--we find that even some of the most accomplished riders on the Las Vegas police force are dumping cones.

There are some weaknesses in the law. First of all, as I said, it is too narrow. It's effective on the 14 and 15-year-old motorscooter applicant, or at least, it has been to this point. There are some who would disagree with our state of Nevada philosophy concerning the 14 and 15-year-old motorscooter applicant. I noted the Inspector from the California Highway Patrol commented about increasing the age in order to gain a more mature operator. Also, another weakness of our law, we have found, is that there is no provision for a learner permit except for the moral responsibility that is assumed by the various and sundry dealers and the long suffering parents who take Junior out to learn to operate the scooter--it's really tough. We feel very strongly that we cannot go to something similar to our learner's provision on our vehicle driver licenses where we allow six months before to get a learner's permit. If we brought the motorscooter age down to 13 1/2, I am sure that we would incur the wrath of virtually everybody in the nation.

One suggestion, which I believe came from one of the gentlemen from industry yesterday, which I found particularly interesting--it's a relatively simple observation, but something that had never occurred to me before is that there are no professional driving schools to instruct the two-wheelers. Speaking strictly from opinions formed from observation of our particular program, I believe that the driving school, or the driving simulator, either program, could be adopted and could be very useful.

Concerning the 14 and 15-year-old motor scooter operator, we are constantly asked--I gave a presentation at the California Governor's Safety Conference a week ago, and this was one of the most prevalent questions, I believe, was, "What about the 14 and 15-year-old?" And, in virtually every time I know that I have ever been interviewed, this is something that people wonder about.

Well, once again, I will go back to a direct quote from my boss, Mr. Spitz, who said, "That as of this time, the 14 and 15-year-olds are not a problem in the state of Nevada as far as we are concerned; and, if they do become a problem, we will abolish our executive order--we will abolish the program. It's as simple as that." But

Mr. Spitz, possibly reflecting some sentiment as a former juvenile officer, has the philosophy that if you treat the young motorscooter applicant like an adult, require him to go through the same test that an adult is required to go through to get his license, that he will have a little bit more respect for it. He'll have a tendency to show off once in a while, but, in the state of Nevada, we feel that we have no significantly greater problem with the 14 and 15-year-old than we do with the 16, 17 and 18-year-old applying for a two-wheeler license.

Another problem which we have incurred in the state of Nevada, and this is something which, if we keep the program I am sure we are going to have to call on industry to assist us, is determining what constitutes a 6.5 horsepower. There are some bikes that are just above this or just below it, and I think that you can see the jockeying for position among the sales people-- if one can be figured just out or if it can be figured just under, you lose a great sales potential if it is 6.7 horsepower. And, at this time, there is confusion because of the varying ways, apparently, that the criteria for horsepower is determined. This is one area that the administrator in the state of Nevada has had some problem with.



Another suggestion that I would have is that the people from industry utilize the safety equipment in the promotional material which they put out. If you see a person riding along in the most attractive setting that is possible, and they are devoid of head gear, foot gear, and everything else, it creates a real problem in convincing Junior that when he gets his, he shouldn't do the same thing--especially in the resort areas. And, in Nevada, we have our greatest problem in areas where the resort atmosphere is very prevalent, namely Las Vegas and the south end of Lake Tahoe. We must convince the young people that it is absolutely necessary to use safety equipment at all times, and I would earnestly suggest that the people of industry give strong consideration to having people wear helmets at all times in anything of a promotional nature.

Now, I am going to be inconsistent here, because the slides to be shown you in the second half are young people going through the test without safety equipment. We were going to retake the pictures last week, especially for this presentation, utilizing the necessary--the proper safety equipment, but there was three inches of

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snow on the course in Reno and Carson City last week; which presented another problem in operating a two-wheeler on a wet, snow-covered course.

I will turn the program back to Dann and he will introduce Mr. Hill who will analyze the test piece by piece, giving you his thinking on what prompted the various elements of the program which he suggested to us, and we later adopted.

Thank you.

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Address by Mr. Howard Hill  
Assistant Managing Director  
Nevada Safety Council  
Las Vegas, Nevada

I will just take a few minutes of your time and go through the motorscooter test, show you how we administer it, and how we value the points and determine whether the applicant flunks or passes.

This motorscooter test originally came out of a course that I put into the Juvenile Traffic Court. We have a law in Nevada that allows kids 14 and 15 to operate scooters. In addition, we have a Traffic Safety School at night for the kids who were 16 and 17, but we felt that we shouldn't mix 14 and 15 year old motorscooter riders into a traffic school with kids of an older age. Consequently, we set up a separate 16-hour course, with the driving range and more detailed testing. We also have some scooter films, and we have a discussion of about seven hours where the officer goes through all the traffic laws and the scooter laws.

Many of the scooter shops in our area cooperated and loaned us scooters for those kids who had a license but did not have a scooter. I feel very strongly on

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this point: if you put a boy on a scooter that he is not used to--scooters are different--he will have a problem in passing the test. He should be tested on the scooter he is going to buy or one such as his own. So we had a few cases where a boy was sent to court for an accident; his scooter was in the shop, and he needed a Honda or a Yamaha, so the scooter shops in Las Vegas loaned us these scooters so the kids could be tested on the scooter of their choice.

Let's follow a case through.

A boy goes down to get a license; the first thing that he has to do is show proof of age. And, in Nevada, his parent must be there and present a birth certificate. Now, in your folders, I think you have a copy of the pamphlet which is given to the parent before the parent is allowed to sign the application for the license. We do this because it answers all the questions about horsepower and, mainly, and this is what we are going to incorporate into our program for kids 17 and 18, it explains the scooter laws regarding required safety equipment. The applicant then takes the eye test, and then the written test.

Now, the written test concerns mostly the items about motorscooters. We have also added a part on the responsibility of parents--how the juvenile, or the applicant, is placing his parents' insurance in jeopardy and the possibility of insurance being cancelled. The juvenile applicant must also understand the parental responsibility, in case he has an accident.

Now, if the applicant passes all these tests, he does not go right out and take the scooter driving test because we have set up a definite time at each location for this test. We feel that not every examiner is qualified to give the driving test. The applicant is given a return form which gives the appointment date and time he is to come back and take the test. And, it also states that the parent must be present, and that it is the parent's responsibility to get the scooter from home to the course. We go one step further--if Junior flunks the test, it's the parent's responsibility to get the scooter from the testing grounds back home. If he does flunk the test, he is given another date to come back and try to pass. And it's very funny on the days that the scooter tests are given--for example, on one testing day, I saw a 250-pound father riding a Honda

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down the street to the testing range. Some parents put the scooters in the trunk of their cars; some parents get a truck. In any event, it's the responsibility of the parent to get the scooter to the test area.

Now, if the juvenile, or the teenager, passes all the written tests, the eye test, and so on, he comes back on the specific time with the scooter.

We conduct the test in the Department of Motor Vehicle parking lot. The major cost of the testing program is \$7.94 for the red light that is used on the fast reaction time test.

Now, we have five tests; the left turn, the right turn, the zigzag, the figure eight and the fast reaction test. There are 20 points for each test, with a possible 100 points total on the complete driving test. The original concept was that we didn't want to be too easy on the kids; however, the first day, when we had the newspaper reporters there and about 10 kids to take the test, every kid flunked. We had to go back and rewrite the test.

This is a picture of an applicant taking the 150-foot test where the examiner tells the applicant to go at a

certain speed, and then the red light flashes "on" when he gets to this line. This is to test his reaction time. Now, if he goes across that line, he loses three points for every foot beyond the line.

Next, we have the left and right turn tests. We test three things here--signalling, the approach and the lane change. Now, three demerits are given for each error that the applicant makes in this course. Before the applicant takes the test, we let him run through the course once--the right and left turns--just to be sure he is accustomed to using the scooter.

If an applicant falls off or dumps the scooter during the test, he automatically flunks. The problem we have in Nevada is word-of-mouth; the kids tell the parents, "I can ride a scooter--no problem--no sweat." Now, with Dad there and Junior falls off, he can say, "Okay, son, let's go."

As mentioned, on the reaction tests, we give three points for one foot over. six points for two feet over, and twelve points for the third foot over. As you see, we made the signal with a battery, a light and a red lens. The officer has a button. When the applicant

reaches a certain line, the officer puts on the red light, and then the applicant must stop before crossing the second line.

The fourth, the zigzag, is to test the agility of the teenager. We have twelve cones that are placed nine feet apart. He must then start down here, go in and out, and then come back. Number 1, each time his foot touches the ground, he loses three points. If he knocks over a cone, he loses three points. On this test, if he loses fifteen points, he automatically flunks the examination even if he gets a perfect score on the rest of the test. We feel that this is one of the two most important parts of the test. Consequently, if he can't handle this test, we don't feel that he is ready to be out on the streets.

The fifth test is the figure 8. Bob explained the size, the lines and the fact that the front wheel cannot go across the line. Now, each time the front wheel does go across the line, or an applicant's foot touches the ground, three points are lost. And, in this test, like the cone test, fifteen demerits is an automatic flunk of the examination.



Now, when we set up the course, as you can see on the diagram, after we run the 150-foot test, we just put the cones in place and run that test, and then the figure 8 is incorporated right into this line. Basically, these two lines are the same spacing as these two lines here, so they can just go around.

The examiner starts the kids off in one group with all of them on a left-hand turn, then the right-hand turn, and then they go into the 150-foot test; then into the zigzag test where they just have to set up the cones. And, finally, the figure 8.

This slide was filmed in Las Vegas. Your course can be set up to meet the area that you have to work with. The course in Las Vegas is different than the course in Reno, even to the extent of the intersection tests. We saved a lot of paint by just working it in with the parking stalls, and making the parking stall on one side, one side of the street; and the parking stalls on the other side, the other side of the street; and just ran a line right down the middle for the left and right turns. So, actually, all we had to paint was the 150-foot lines and the figure 8.

As Bob mentioned, this program can be incorporated with your 16-17-year-olds, and we feel that it is a good program. Since the law says 14 and 15-year-olds can drive, rather ride a scooter--this may be right; this may be wrong--but, at least, we feel that the state has done their part to assure that the applicant knows what he is doing when he is out there in traffic. And number two, although it was not the case before we had this program, when all the kid had to do was go down and take a written test and that was all, the main point is that now the parents know their responsibility and understand what goes into operating a scooter. The way that most of these kids get a license is to tell Dad, "Well, I want to learn how to be a businessman, and so if you buy me a scooter, I will get a route." So, Dad goes down and buys a scooter. Then Junior goes out and does a route for about a week or two, and he quits the route, and then Dad is stuck with paying for the scooter. Here, again, parents' responsibility is involved and we feel that this is one of the big things in teenage driving. We are starting the parent out, not when the kid is 16 or 17, in a car; but earlier, when the kid is 14 and the parent is more aware of his responsibilities and can plan ahead for his insurance costs.

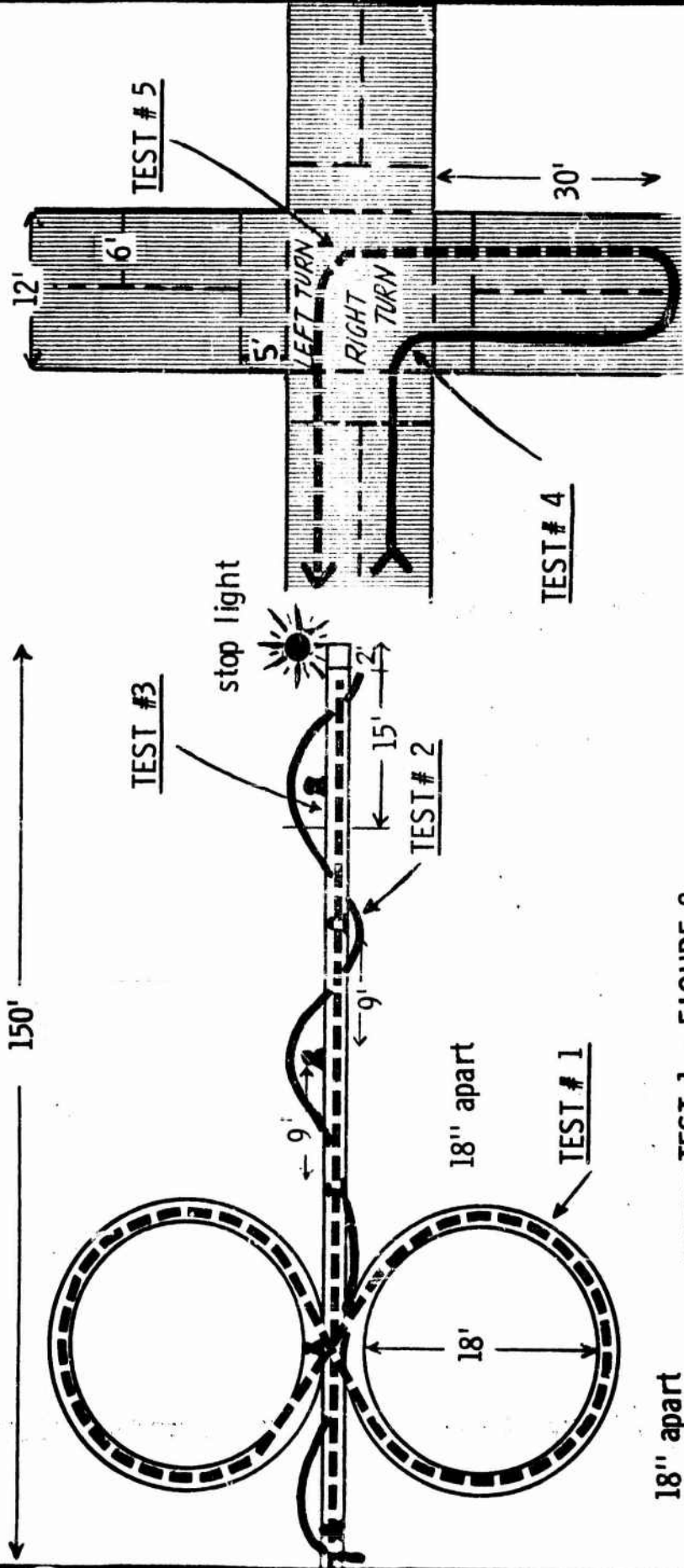
Thank you very much.

MANEUVERS	ROAD TESTS			ROAD TESTS		
	BAD	FAIR	GOOD	BAD	FAIR	GOOD
<b>Figure Eight</b>				2	1	0
Control of Power Cycle	3	2	0			
Ability to Stay in Circle	3	2	0			
Turns	3	2	0			
Speed	3	2	0			
Maneuverability	3	2	0			
<b>Zig Zag Course</b>						
Control of Power Cycle	3	2	0			
No. of Obstacles Knocked Over	3	2	0			
Speed	3	2	0			
Maneuverability	3	2	0			
Touching Ground with Foot	3	2	0			
<b>Fast Stop Reaction Time</b>						
Control of Power Cycle	3	2	0			
Ability to Stop at Given Point	3	2	0			
Straight Line	3	2	0			
<b>Posture</b>						
Clutch	3	2	0			
Attention	4	2	0			
	4	3	0			

EXAMINER'S OVERALL EVALUATION OF APPLICANTS ABILITY TO OPERATE POWER CYCLE

EXAMINER'S SCORE \_\_\_\_\_ Name of Applicant \_\_\_\_\_ Date \_\_\_\_\_

# NEVADA DRIVER'S LICENSE MOTOR SCOOTER TEST COURSE



- 18" apart
- TEST 1 - FIGURE 8
- TEST 2 - SLALOM ( ZIG - ZAG )
- TEST 3 - QUICK STOP REACTION TIME
- TEST 4 - RIGHT TURN
- TEST 5 - LEFT TURN

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**"Two-Wheel Vehicles  
Endemic or Epidemic"**

**By**

**Mr. Frederic D. Reynolds  
PACAF (IGSA)  
APO San Francisco 96553**

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TWO-WHEELED VEHICLES -- ENDEMIC OR EPIDEMIC

by

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USAF/Industry Two-Wheeled Vehicle Seminar  
29 November 1966  
Norton Air Force Base, California

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The efforts with which we are concerned today stem from a long history of actions throughout the Pacific Air Forces.

Shortly after the close of World War II, a new menace to our society appeared on the horizon. A menace which many felt, if ignored, would just go away -- but this was not to happen with the increasingly popular two-wheeled vehicle. A small minority, however, attempted some form of control. One of the first such attempts known was in 1949 when the half-dozen or so Harleys and Indians were "banned" from an oversea base of another command. The results of this abortive attempt, obviously, were no more successful than some of our barbaric attempts at V.D. control.

But, the scene was rapidly changing -- and the change was faster than management planning to cope with the problem.

During the ensuing years there came upon the scene a steady stream of Cushman's, Lambrettas, Vespas, Mopeds, Allstates, NYUs, Yamahas, Suzukis, and Hondas. A formidable group of lethal weapons in a price range that made them more readily available than ever before known. Years before there was a general recognition of a problem concerning these vehicles, PACAF was already intimately involved in finding solutions.

One of the first actions taken in the PACAF area was in 1954 when passengers were prohibited on two-wheeled vehicles unless "a seat was provided on the vehicle by the manufacturer."

Shortly after this we began staffing requirements for the mandatory use of head protection. The requirement for protective helmets became effective in 1959 and was subsequently adopted as a USAF requirement.



These actions were, obviously, not accident prevention considerations at all. They were nothing more, or less, than an interim method of injury reduction. A method used primarily to permit safety staffs more time for accident prevention through a reduction in the time required for injury investigation and reporting.

Problem analysis, at this time, indicated a continuing change at a more rapid pace. In the years past, cars were owned predominately by officers and married NCOs, who represented a mature and stable group. More recently, the Japanese factories had been turning out scooters, motorcycles, and motorbikes, that our young airmen could afford to buy -- and they began driving in ever-increasing numbers. They be, an driving -- and having accidents.

As these changing forces were manifest, a

special study was conducted in PACAF to analyze the private motor vehicle problem and to determine new approaches to reduce the toll in lives and property. It was found that two-wheeled vehicles were involved in the greatest number of vehicle accidents -- 66% in 1961. Problems identified included lack of, or inadequate, corrective action in disciplining drivers and, of greater concern to accident preventionists, a lack of standard procedures for training and testing the novice two-wheeled vehicle operator. Recommendations were developed to control and reduce these accidents. Many of these recommendations are included in PACAF Manual 127-1, 4 March 1964, that has been passed out to you.

This manual has served well in filling the void in two-wheeled vehicle training and control. We have progressed to the point, however, where major

revision and updating is required. As you can see, the language of this document is, to a great degree, permissive and not directive. An effective guidance tool to be sure -- but without the "teeth" desired. Additionally, the training procedures outlined are primarily based on police training procedures, which were the only guides available at the time of writing.

At best, these procedures are of limited value and applicability in training young, novice, two-wheeled vehicle operators. Implementation to date runs a complete continuum. Although motorcycle clubs are required, there is a wide divergence of functional performance. The lack of definitive guidance in such considerations as the qualifications of driver examiners; test validity and reliability; and determination of qualification standards for

operators requires that standardized system of control be devised.

History has shown that motorcycle clubs have a transitory effectiveness only in direct relationship to the personal enthusiasm of its leadership. When this enthusiasm dissipates, club effectiveness wanes and disappears. Transitory enthusiasm has frequently been observed in the rise and fall of a multitude of model railroad, airplane, slot racing, putting greens, skeet ranges, archery, and motorcycle clubs. This is not a dependable approach.

If commanders are required to comply with the mandatory provisions of two-wheeled vehicle control they must be furnished logical techniques, realistic procedures and effective tools. The alternative, if this cannot be done, would be to prohibit the operation of two-wheeled vehicles by Air Force

personnel. This is not a realistic or acceptable solution.

The operation of two-wheeled vehicles is no longer unique or endemic to PACAF. It has become a world-wide USAF problem of considerable magnitude.

Yes, there is much to be done. Even with all of the controls that we have established throughout PACAF, the percentage of PMV injuries resulting from two-wheeled vehicles has risen from 66% in 1961 to 76% this year. The percentage of all injuries jumped from 11% for two-wheeled vehicle injuries in 1961, to 21% in 1966 -- almost double. During the corresponding period, however, our strength almost tripled -- (37,613 vs 103,506); and registration of two-wheeled vehicles increased 32% -- (6,276 vs 8,300).

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SIGNIFICANT TWO-WHEELED VEHICLE ACCIDENT CAUSES

Period: 1 Jan 1965 -- 31 Aug 1966

25% "Had been drinking" prior to the accident (40)

27% Were speeding (44)

20% Had one year to one month experience on a two-  
wheeled vehicle (33)

41% of the accidents occurred between the hours of  
0800 to 1600 (66)

28% of the accidents occurred on Sunday (95)

39% of the accidents involved the E1 to E3 grades (65)

18% of the drivers had prior traffic violations (27)

58% of the accidents were collisions with other  
vehicles and/or objects (94)

40% of the accidents involved the vehicle and/or  
the operator only (67)

61% of the accidents occurred on good roads (97)

38% of the accidents resulted from unsafe road or traffic conditions (60)

9% of the drivers involved in accidents had any formal two-wheeled vehicle training (16)

18% of the drivers involved did not wear helmets and/or goggles (30)

(38% of the accidents occurred on base (50)  
(  
80% (42% of the accidents occurred less than five miles  
(  
( from the base (68)

26% of the accidents occurred over five miles from the base (34)

21% of the drivers involved did not have an approved license to operate vehicle (34)

To reduce these losses, some of our bases have instituted a variety of individual actions. These include:

1. Written permission to own and/or operate.
2. Rented two-wheeled vehicles not permitted on base.
3. Probational Operators' Permits.
4. Six-months' operating experience before permitted to carry passengers.
5. No after-dark operation except to and from work.
6. Braking distance 25' at 25 MPH on dry, level, hard surface.
7. Electrical turn signals.
8. License revoked for tour for drunk driving.
9. Passengers authorized only on the flight line.
10. Passengers must be 18 to ride with club members over 21 on 125cc vehicles and larger.



11. Passengers permitted only on 250cc and over operated by club member approved by BDCL.
12. Passenger and operator tested before double riding permitted.
13. Monthly safety meetings.
14. Prohibiting two-wheeled vehicle operation.

The great challenge of this seminar is to provide better resources for developing new and improved programs for control of the basic factors in traffic accidents involving two-wheeled vehicles. The results of our meeting here will not replace a single force that has been at work on traffic safety. Instead, it will lend a much-needed hand to all of them. Indeed, this meeting should make clear, to the greatest extent possible, where the primary responsibilities for two-wheeled vehicle safety lie.

President Johnson recently said --

"We have lost four times as many American servicemen in motor vehicle accidents as our enemies have been able to kill in all the fighting in Vietnam. We can no longer tolerate such anarchy on wheels, we can no longer tolerate unsafe automobiles, we can no longer tolerate poorly planned and lighted highways, we can no longer tolerate inadequate licensing procedures, we can no longer tolerate ineffective safety programs that result from complete lack of basic research into the real cause of accidents.

"The American people are aroused. They want action. We want action, too."

To initiate such action we submit the following recommendations to this seminar for consideration.

Since our Two-Wheeled Motor Vehicle Accident

Prevention Manual has outlived optimum usefulness, we do not propose to republish it. In view of this, and the considerations previously mentioned, we recommend that this manual be revised, replacing many of the permissive recommendations with mandatory language. This should be expeditiously accomplished as a joint services directive applicable equally to Army, Navy, and Air Force. Overseas commanders, particularly, are placed in a difficult position when required to enforce Air Force controls when Army and Navy controls are different, or do not exist at all, and are operated in a vacuum of no civil control.

As indicated in our manual, and supported by accident analysis, driver training is a fundamental requisite to successful vehicle operation and accident

prevention. To accomplish the training we recommend that examining and supervision be conducted by a qualified two-wheeled vehicle instructor functioning under the provisions of AFR 34-4. We can depend on enthusiasm no longer.

Uniform standards for operator testing and examiner qualification should be developed.

ASA Specification Z90.1-199, "Protective Head Gear for Vehicular Users," issued 22 June 1966, should be evaluated for adoption to Air Force use. Norman Benedict, who was a consultant on the original board, has indicated that this is a substantial improvement over previous standards in this area. Publication of an "Approved Helmet List" is required.

Increased participation in the Stapp Car Crash Conference with emphasis on two-wheeled vehicles

should result in an increased effectiveness of the overall program.

More comprehensive medical analysis and increased participation in crash injury investigation and research is required.

Definitive license tests are required. Only four states presently require a test for two-wheeled vehicle operators' licenses. We can no longer depend on the various civil governments to service an Air Force requirement.

Development of standards for crash bars should be considered. Experience shows a predominance of below the hip injuries.

Standards for eye protection should be developed. The present market is glutted with all sorts of gadgets purported to be effected. It is not uncommon

to see the same tinted visors used for daytime operation being used at night. Can the operators see adequately? We don't know, but it seems unlikely.

Armed Forces Disciplinary Control Boards, operating under AFR 125-11, should consider motorcycle leasing, renting, and vending establishments in off-limits determinations.

The safe operation of motor vehicles is dependent to some extent on personality characteristics. Youthfulness and aggressiveness contribute to vehicular accidents but are necessary attributes for military personnel. Other traits such as low intelligence, egocentricity, anti-social trends and social irresponsibility are detrimental to the drivers of military or private vehicles. In the course of examinations of motor operating personnel, the physician should

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seek evidence of these characteristics and evaluate them in relation to past driving performance, evidence of maturity in judgment, interest in future job performance and other positive personal traits which form the basis of safe drivers. The ultimate question the examiner must ask himself is, "Would I be willing at all times to be a passenger with this individual operating the motor vehicle?"

The psychoses, affective reactions, schizophrenic reactions, and paranoid reactions in the majority of individuals present no recognizable morphologic changes, but the functional disability may be severe. In the majority of instances a frankly psychotic individual will be under hospital care and incapable of driving a motor vehicle. After hospitalization in many states there are special

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provisions for re-licensing these individuals.

Physicians should be familiar with these regulations.

In exceptional instances where a frankly psychotic individual is being treated on an outpatient basis, the individual and a responsible member of the individual's family should be advised that the individual should not operate a motor vehicle. Individuals who have been returned to duty and require maintenance therapy with the ataractic drugs should not drive a motor vehicle if drowsiness or syncope occurs. Individuals receiving maintenance therapy with the tranquilizers should be observed closely for possible deleterious side effects from alcohol. Such effects have been reported with certain of the tranquilizer drugs. Anxiety reactions, dissociation reaction, conversion reactions, phobic reactions, obsessive-compulsive reactions and depressive reactions are



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among the conditions observed in the psychoneurotic individual. The individual with a psychoneurosis represents an unknown factor with respect to highway safety. Each case requires separate evaluation regarding alertness, social behavior, and possible psychomotor retardation. If no significant behavioral problem or drug therapy side-reaction exists, then the psychoneurotic individuals may drive. Careful appraisal of the driving capacities of all these individuals, with sound advice and recommendations to them, provides the physician with an exceptional opportunity for protecting both the safety of the individuals and the public. In this manner, physicians can make most significant contributions to the prevention of highway accidents.

In view of this, we recommend that Base Surgeons

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be included as an approval/disapproval authority  
on requests to operate two-wheeled vehicles.

Definitive guidelines should be established by this  
workshop.

In conclusion, gentlemen, I have been directed  
to return to my command with clear-cut approaches  
and solutions to the two-wheeled vehicle problem.  
I am hopeful that this will be achieved.

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CLOSING ADDRESS

○ By

Brigadier General Frank K. Everest, Jr.  
Director of Aerospace Safety  
Headquarters U. S. Air Force  
Norton AFB, California 92409

## CLOSING ADDRESS

PRESENTED BY BRIGADIER GENERAL FRANK K. EVEREST, JR.  
DIRECTOR OF AEROSPACE SAFETY

Gentlemen, in closing the formal session of our seminar, I am convinced most of us are much wiser and better informed regarding two-wheel vehicle safety problems than we were two days ago.

To those of you who are the attendees, I express our sincere thanks for the cooperation, interest and willingness you have displayed. Although I was unable to attend the entire seminar, those papers and talks that I did hear were outstanding. I will certainly review all of them when they are finalized in one complete package.

I know many of you have taken valuable time from your other busy activities and responsibilities to attend the seminar. It is my sincere hope that your attendance has been equally worthwhile and beneficial.

During personal discussions with some of you at luncheon yesterday and with others last evening, it was my impression that the responsibilities and authority of the USAF Directorate of Aerospace Safety were not clearly understood.

To clarify: The Directorate has world-wide Air Force responsibility for all aspects of ground, flight, and missile safety. We establish Air Force safety policies and insure that they are implemented and carried out.

As a Headquarters Air Force staff agency, we are geographically located at Norton rather than Washington DC, because of the proximity to aircraft and aerospace industry, which is largely concentrated here in Southern California.

I would like to make it clear to each of you that the Air Force is deadly serious in developing and implementing a model two-wheel motor vehicle safety program at all bases. If the program is successful and competent, our sister services, Army, Navy and Marines may also be implementing similar programs. The fact that we are conducting the seminar has already been communicated to Washington DC for possible attention of President Johnson. Past experience indicates he is keenly interested in all aspects of traffic safety.

We might consider for a moment the excellent opportunity we have in the Air Force to conduct a model two-wheel motor vehicle safety program. The Air Force population,

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over a million, is a stratified group that is much more controllable than the public at large. In essence, you can consider the Air Force to be a large laboratory where, under reasonably controlled conditions, we can determine effectiveness in terms of lives saved, accidents prevented and rate reductions. Consequently, I solicit your help in making this program a true model. And, with the by-product of information exchange, we can provide a service to the entire country in the area of two-wheel vehicular safety. Since other countries are prone to follow us, it could be international in scope.

As a military people, we are able to control our people to a considerable degree. Commanders in overseas areas have even more control over their men than in the United States. Here, in the U. S., civil authority supersedes, so, we have to exercise control with your help, and we solicit your assistance within your own states and federal agencies to try to give us the tools and wherewithals to reduce our rates and fatalities.

In the late 1940's and early 50's, our accident rates were high. Many questions were asked, and we had to

take action. Had those rates continued, we would probably have upset the economy of the entire nation before we reached the early 60's. As you know, aerospace weapons systems are extremely costly--in the billions--and we can ill afford any accident losses. Your pocketbooks, and mine, and the country's economy, are affected. Now, the same factors are involved in two-wheel motor vehicle safety. For example, an airman, fresh-out of technical training school, buys a two-wheel cycle. If he is involved in a fatal accident, we estimate his loss to the Air Force at \$84,000. In addition, he must be replaced. Multiply this figure by the total number of fatalities, plus the cost of 11,000 mandays lost--the figure becomes very large. Many industries, particularly small industries, could not survive with a rate of that magnitude.

Now, we talk about certain restrictions. I have experienced them in my career. I can well remember, as a young lieutenant, flying combat in Africa in shirt sleeves. Today, this is ridiculous. Like fighter pilots, motorcycle operators will have to grow up.

I can remember when fighter pilots were directed to wear oxygen masks--it took a long time to get full compliance. When shoulder harnesses were installed in our aircraft--we hated them. We wanted to continue flying in shirt-sleeves when our combat environment dictated otherwise.

Today, if you could see pilots donning and wearing partial or full-pressure flying suits, or even survival suits, you would be able to appreciate the problems encountered. The astronauts in their full pressure suits endure many days of misery for their flights. They are certainly restricted and are not living in a shirt sleeve environment. Fighter pilots who make trans-oceanic crossings must wear survival suits when the water temperature along their route is below a certain degree. Depending on their deployment destination, pilots must endure many discomforts for  $4\frac{1}{2}$  to  $10\frac{1}{2}$  hours created by equipment designed to save their lives in emergencies. The prevention of accidents is our sole purpose. If we do not, then our costs rise considerably.

The old days of "kicking the tire" and "lighting the fire" and flashing off into the blue, are long gone. Similarly,



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everyone here will have to discourage the concepts that anyone can ride a two-wheel vehicle and that safety equipment is unnecessary. Failure to take action will increase our accident costs in addition to the misery that families and relatives must endure. I am confident that you are well aware of the problems and the solutions we seek. We need your guidance. Yet, at the same time, we challenge you to go back home and do something about these problems.

I look forward to seeing and being with you in future meetings and seminars when we explore other safety topics where combined Air Force and industry effort will be for our mutual benefit. I use the term "industry" in the collateral sense, knowing that many of you represent a cross section of vested interest organizations at national, state and agency levels. Your presence and the way you have participated has been most gratifying.

In conclusion, I wish all of you a pleasant and safe journey home.

Thank you very much.

**AIR FORCE/INDUSTRY TWO-WHEEL MOTOR  
VEHICLE SAFETY SEMINAR**

**MAJOR COMMAND - AIR STAFF  
WORKING PANEL RECOMMENDATIONS**

**Ground Safety Division  
Directorate of Aerospace  
Safety**

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Major Command - Air Staff

WORKING PANEL RECOMMENDATIONS

1. General: A USAF/Industry Seminar covering all aspects of two-wheel motor vehicle operation was held 29 Nov - 2 Dec 1966 at Norton AFB, Calif, to develop a thorough USAF understanding of current accident causation and solicit the best techniques and guidance available from industry and vested interest organizations. A portion of the seminar panel was devoted to the development of the requirements for a USAF Two-Wheel Motor Vehicle Accident Prevention Program. Three work panels, composed of representatives of interested major commands and Hq Air Force, participated in the development of actions and recommendations.

2. Program Elements Considered by Work Panels:

- a. Administration
- b. Education/Training
- c. Surveillance

3. Work Panel Conclusions/Recommendations/Required Actions:

- a. Administration: AFR 125-14, AFR 127-1, AFR 127-4, AFR 34-4, AFR 125-28, AFR 50-24 are satisfactory foundation

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directives requiring change or amendment to provide logical controls for USAF two-wheel motor vehicle accident prevention.

(1) Safety inspection policy be developed for two-wheel motor vehicles and incorporated in existing pertinent directives.

(2) AFR 32-7 requires revision to provide directive guidance regarding key personnel actions and participation in base/community councils, and state or regional workshops for two-wheel accident prevention.

(3) Proposed Traffic Safety Manual should include specific guidance and direction for two-wheel vehicle accident investigations. Guidance will include programmed instruction for accident investigators covering requirements and techniques peculiar to two-wheel accident investigation.

(4) Para 23, AFR 127-4, be changed to prohibit use of traffic accident reports for disciplinary action although report is not a privileged document.

(5) AFR 34-4 be revised by appropriate staff agency to provide direction and guidance for organizations, administration and management of on-base motorcycle clubs. Directive should include a standard constitution and by-laws as an attachment.

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(a) Specific staff agency be designated primary responsibility for monitoring and supervising motorcycle club activities.

(b) Specific responsibilities of primary staff agency and support functions be clearly outlined.

(6) Motorcycle clubs be encouraged at all Air Force bases having sufficient number of two-wheel vehicle owners and operators to support the activity.

(a) Explore methods and procedures of authorizing motorcycle club membership for new potential two-wheel vehicle owners, renters, and those who do not have their vehicles registered on-base.

(b) Explore procedures and methods for internal self policing/disciplinary actions by motorcycle club.

(7) USAF Two-Wheel Vehicle Accident Prevention programs must be sufficient in scope to accomplish their purpose independent of outside agencies. Where possible, determine scope, adequacy, and applicability of state and local accident prevention programs to USAF.

(8) Full cooperation will be maintained with federal, state and local agencies in two-wheel accident prevention programs.

(9) Establish procedures to insure that important changes in local laws and ordinances affecting two-wheel vehicle operations are communicated to the major command and Hq USAF when appropriate.

(10) Office of Legislative Liaison insure that USAF Traffic Safety Committee and the Directorate of Aerospace Safety are informed of national legislative actions regarding two-wheel vehicles. The Directorate of Aerospace Safety (AFIAS-G) will insure notification to all major commands.

(11) Close liaison be maintained with organizations and agencies represented at the USAF/Industry Two-Wheel Motor Vehicle Safety Seminar in order to include new technical developments and ideas in Air Force program.

NOTE: The panel developed a suggested Wing/Base Action Program for Two-Wheel Motor Vehicle Accident Prevention which is included as Atch 1.

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b. Education/Training: The Multi-media system is a satisfactory device to provide the necessary education for two-wheel vehicle owners and operators.

(1) Education/training will apply to:

(a) All military personnel who own or operate a two-wheel motor vehicle on or off-base. Exclude military personnel whose records verify that education, training, testing and licensing have been successfully completed at another Air Force base.

(b) All civilian personnel and dependents of military personnel prior to on-base operation of a two-wheel motor vehicle.

(2) Prerequisite training will include successful completion of the following AFR 50-24 courses:

(a) I -- Standard Course.

(b) II -- Basic Orientation Course.

(c) III -- Overseas Orientation Course, when applicable, or suitable substitute approved for those organizations not serviced by USAF Traffic Safety Multi-Media Training programs.

(3) Training to be completed prior to testing and approval for unlimited operation of a two-wheel motor vehicle:

(a) USAF Two-Wheel Accident Prevention

Self Study Pamphlet covering the practical and essential elements of specific existing training materials and including applicable state vehicle codes and the appropriate vehicle manufacturer's instructions for operation and maintenance. Recommended items:

1. Applicable state highway codes.
2. PACAFM 127-1, Two-wheel Motor Vehicle Accident Prevention.
3. Hq 803 Combat Support Group, Davis-Monthan AFB, Two-wheel Motor Vehicle Safe Operating Procedures Booklet.
4. Northwestern University, Traffic Institute, Motorcycle Operation, A Manual for Riders.
5. Los Angeles Police Department, Motorcycle Officer School, Motorcycle Riding Exercises.
6. Universal Underwriters Insurance Co., Kansas City, Mo., Handbook of the Driver Education Program for Motorbike Operators.
7. The manufacturers' brochure for the specific vehicle owned, or contemplated for use or ownership by the applicant.



(b) Completion of 2 - 4 hour multi-media two-wheel motor vehicle training course, to be developed, covering, but not limited to vehicle operation, protective clothing and equipment, crash-injury research and the effects of alcohol on the operator.

(4) A 20-25 minute two-wheel motor vehicle accident prevention film is programmed for production during second half of FY 1967. Four basic areas are identified for coverage: Man, Environment, Technique, and Equipment. In each area, film advisors should emphasize the right attitudes, the proper techniques of operating and maintaining the two-wheel motor vehicle and why they are essential.

(a) Man: Identify individual attitudes necessary for two-wheel vehicle operation (basically the same as those for four-wheel vehicle operator).

(b) Environment: The environmental differences in visibility, maneuverability and vulnerability should be shown (urban, rural, freeway, etc.).

(c) Technique: Operator techniques illustrated in commercial films could easily be adapted to meet Air Force requirements (braking, maneuvering, following, passing).

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(d) Equipment: Include mechanical factors of the machine (controls, tires, brakes, etc.) and protective factors of personal equipment (helmets, shatter-proof eye protection, boots, jacket, gloves, reflective outer garments).

(5) Six themes for two-wheel motor vehicle posters are proposed:

(a) Proper Versus Improper Techniques  
(Two Panel Posters)

1. Passenger Riding (Position).
2. Braking and shifting techniques.
3. Coping with road conditions.
4. Portray results of improper protective equipment.
5. Portray See and Be Seen principles.
6. Following techniques.

(6) USAF direct an interim two-wheel motor vehicle training demonstration to be conducted at each Air Force installation having two-wheel vehicles registered or the potential as determined by the commander. Local resource organizations, motorcycle clubs, police and civic, will be solicited to assist in providing a

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practical demonstration of good operating techniques.  
Demonstration to be supplemented with available materials  
and films.

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c. Surveillance: AFR 125-14, Motor Vehicle Traffic Supervision, and AFR 125-28, Mechanization of Air Police Records, are satisfactory foundation directives requiring amendment and changes to provide proper surveillance and control of two-wheel vehicle operators. (See proposed change to AFR 125-14 and draft of Model Base Program, Atch 2.)

(1) Para 9, AFR 125-14, and AFR 125-18, be revised to include two-wheel vehicle registration data by make, model and engine displacement. Form 1312 is considered adaptable to ten single digit codes covering engine displacement by cubic centimeters (range (0-100cc-1) (101-201cc-2), etc.)

(2) Attachment to AFR 125-14 will require either permissive or mandatory safety inspections of two-wheel motor vehicles, (Administration Panel I, mandatory) (Enforcement Panel, permissive), as a prerequisite to registration if it is not required and provided by state in which organization is located.

(3) AFR 125-14 will be changed to expand application of regulation to all two-wheel motor vehicles.

(4) Education, examining and testing programs incident to operator qualifications are to be prescribed in appropriate directives.

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(5) Para 7, AFR 125-14, will be changed to require registration of special category two-wheel motor vehicles owned and operated by USAF personnel on military installations.

(6) Proposed Change B of AFR 125-14 and attachment will require certification of satisfactory completion of two-wheel motor vehicle instruction and demonstration of proficiency on:

(a) AF Form 623 - Airman Consolidated Training Record. Requires change to appropriate directive.

(b) AF Form 971 - Supervisor's Record of Employee (Civilian). Requires change to appropriate directive.

(c) AF Form 1313 - Driver Record (military and civilian). Requires change to appropriate directive.

(7) Proposed attachment to AFR 125-14 will provide a special on-base operating license to be issued to the operator upon satisfactory completion of all USAF and locally prescribed two-wheel vehicle inspection, training, operating and equipment requirements. Form SF 46, as Government Motor Vehicle Operating Identification Card, over stamped with Motorcycle, will be issued to operator granting on-base operating privileges.

(8) Proposed attachment to AFR 125-14 will recommend organization of a motorcycle club (AFR 34-4) to assist in various phases of administration, training, testing and supervision of two-wheel vehicle accident prevention program.

2 Atch  
1. Suggested Wing/  
Base Action Program  
2. Draft, Model Two-  
Wheel Motor Vehicle  
Accident Prevention  
Program

SUGGESTED  
WING/BASE  
ACTION PROGRAM  
for  
TWO-WHEEL MOTOR VEHICLE ACCIDENT PREVENTION

Administration Panel

Atch 1

## POLICY

The two-wheel vehicle represents an acceptable mode of transportation and recreation for an ever-increasing segment of the Air Force population. The accident potential of two-wheel vehicles can be minimized by a positive accident-prevention program involving leadership, education, inspection, and control.

## ORGANIZATION

Establish a Traffic Safety Coordinating Group for two-wheel vehicles. Group participation should include representatives from command, safety, security and law enforcement, judge advocate, medical officer, civil engineer, and the base motorcycle club.

## MANAGEMENT

1. Implement an action program for two-wheel vehicle accident prevention.
2. Develop a "staff-team approach" and encourage commanders to personally identify themselves with two-wheel accident prevention programs.
3. Assure that all military and civilian supervisors are aware of the safety program elements that relate to two-wheel vehicle operation.

## EDUCATION

- \*1. Establish a two-wheel vehicle drivers' training program to include multi-media, lecture, and practical application training.
2. Establish procedures to assure that two-wheel vehicle accident prevention materials are made available to all registered operators.



3. Provide local orientation multi-media training for two-wheel vehicle operators.

4. Provide for civil motorcycle expert driver/speakers for two-wheel vehicle accident prevention programs.

#### ENGINEERING

- \*1. Establish a two-wheel vehicle on-base inspection program.
- 2. Require an annual (minimum) base traffic safety survey oriented to two-wheel vehicle problems (oil slicks, chuck holes, loose sand and gravel, etc.). Survey should be conducted by a team including safety, civil engineer, security and law enforcement, and the base motorcycle club.

#### ENFORCEMENT

- \*1. Assure that two-wheel vehicle safety inspections are completed regularly.
- \*2. Assure that prescribed protective equipment is worn by two-wheel vehicle operators.
  - a. Helmets, chin strap secured; helmet marked with reflective tape for improved day/night recognition. Tape as specified for aircrew helmets.
  - b. Goggles or face shields.
  - c. Gloves.
  - d. Nylon jacket or vest of fluorescent cloth with reflective tape sewn on front and back for improved day/night recognition.

e. Boots.

3. Provide commanders and appropriate staff with periodic summaries of corrective actions on moving traffic violations and accidents involving two-wheel vehicles.
4. Establish a response system with law enforcement agencies within a 25-mile radius for notification of accident and moving violation data on Air Force personnel.

#### PUBLIC RELATIONS

1. Support base/community traffic safety workshops.
2. Publicize accident prevention programs and safety awards in local papers.

#### MOTIVATION

1. Encourage all personnel to suggest safety promotional methods.
2. Promote competitive effort in traffic accident reduction.

#### INVESTIGATION AND REPORTING

1. The team approach will be utilized in the investigation of two-wheel vehicle fatal or special interest non-fatal accidents. Teams should include safety, medical, driver training, skilled motorcycle operator, and security and law enforcement representatives.
- \*2. Private motor vehicle accident reports (two- and four-wheel) will not be used for punitive disciplinary actions.

\*USAF action required.

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DRAFT OUTLINE

USAF

MODEL TWO-WHEEL VEHICLE

ACCIDENT PREVENTION PROGRAM

Atch 2

1. **Command (Actions/Responsibilities)**
2. **Policy**
  - a. **Education**
  - b. **Engineering**
  - c. **Enforcement**
3. **Administration/Controls**
  - a. **Directives/Regulations (applicable)**
  - b. **Staff - Team Actions/Responsibilities**
    - (1) **Chaplain**
    - (2) **Civil Engineer**
    - (3) **Information Services**
    - (4) **Medical Service**
    - (5) **Personnel Officer**
    - (6) **Safety**
    - (7) **Security Police**
    - (8) **Special Services**
  - c. **City, State, Region Liaison - Workshops**
    - (1) **Participation**
  - d. **Motorcycle Club**
    - (1) **Organization - AFR 34-4**
    - (2) **Constitution - By-laws**
    - (3) **Supervision**

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e. Records - Forms

- (1) AF Form 623 - Airman Consolidated Training Record
- (2) AF Form 971 - Supervisors Record of Employee

(Civilian)

- (3) AF Form 1313 - Driver Record (Military and Civilian)

f. Vehicle Inspection Requirements

- (1) Windscreen
- (2) Guards
- (3) Seats
- (4) Lights
- (5) Handlebars

g. Protective Equipment Requirements

- (1) Individual - Helmet, Glasses
- (2) Clothing - High Visibility

4. Education and Training

a. Application

b. Training

- (1) Prerequisite
  - (a) Self Study Package
  - (b) Complete Standard, Basic, Overseas,

Orientation Courses

- (c) Two-wheel Safety Film (In production)
- (d) Riding demonstration by skilled operator

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(2) Classroom - Lecture

(a) Maintenance Procedures - lights, controls  
brakes.

(b) Environment Hazards

(c) Multi-media training (2 hr proposed)

1. See and Be Seen

2. Following

3. Passing

4. Circle of Safety

5. Freeway operation

6. Urban operation

7. Rural operation

(3) Practice Course - Area

(a) Skill, proficiency techniques

(b) Use of controls

(c) Starting, stopping, shifting

(d) Emergencies

(e) Leaning, turning, balance

(f) Signalling

(g) Passenger carrying

(h) Evaluation - Test

5. Surveillance

a. Vehicle Inspection

b. Protective Equipment Inspection

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- c. Written Examination (Training)
- d. Proficiency Demonstration Examination
- e. Licensing

(1) SF Form 46 - U. S. Government Motor Vehicle  
Operators Identification Card (Proposed)

(2) Revocation

6. Two-Wheel Motor Vehicle Accident Investigation/Reporting

- a. Team Investigation
- b. Multi-media Training for Two-Wheel Accident

Investigators

c. Privileged Status for Two-Wheel Motor Vehicle  
Accident Reports

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**Roster**

**of**

**Speakers and Attendees**



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## AIR FORCE-INDUSTRY TWO-WHEEL MOTOR VEHICLE SAFETY SEMINAR

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