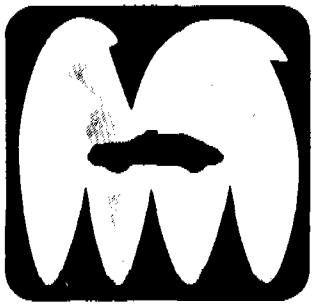
SECTION 1

CONFERENCE OPENING, INTRODUCTORY REMARKS AND GOVERNMENTAL STATUS REPORTS



Part 1 — Conference Opening

Mr. John A. Edwards, *Associate Administrator for Research and Development, National Highway Traffic Safety Administration, U.S. Department of Transportation*

Part 2 — Introductory Remarks

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SECTION 1

PART 1 CONFERENCE OPENING

INTRODUCTION BY THE CHAIRMAN OF THE SECOND INTERNATIONAL TECHNICAL CONFERENCE ON EXPERIMENTAL SAFETY VEHICLES

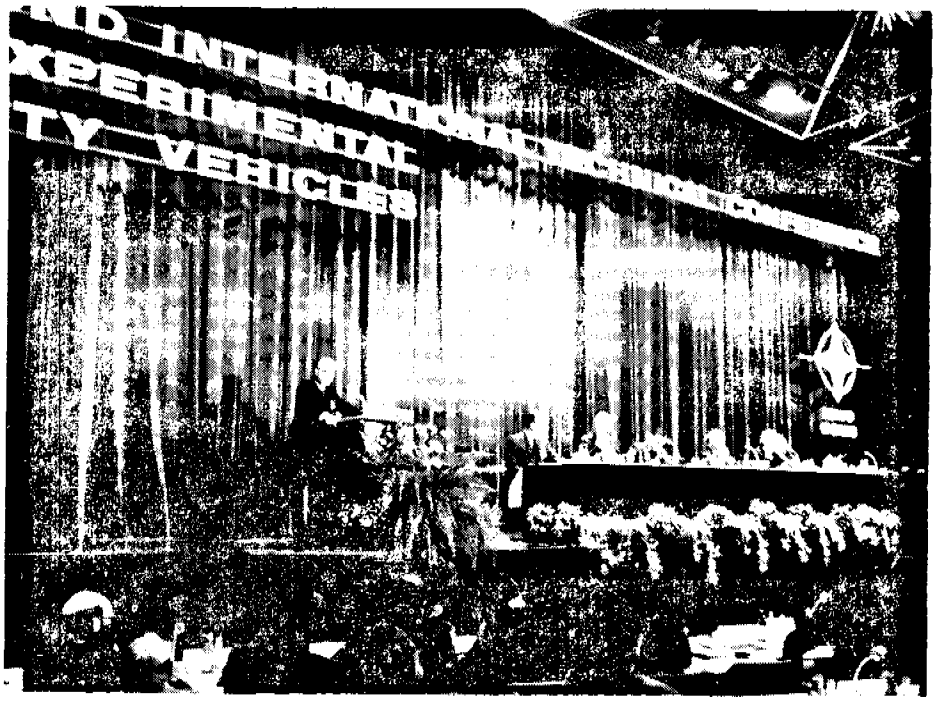
MR. JOHN A. EDWARDS

Associate Administrator for Research and Development
National Highway Traffic Safety Administration
United States Department of Transportation

Good morning ladies and gentlemen, it is my pleasure to serve as your chairman for this Second International Technical Conference on Experimental Safety Vehicles. To open our meeting it is my honor to introduce our host Dr. Joachim Zahn, Chairman of the Executive Board, Daimler-Benz Company.

SECTION 1

PART 2 INTRODUCTORY REMARKS



DR. JOACHIM ZAHN

Chairman of the Executive Board,
the Daimler-Benz Company

Mr. Secretary,
Herr Minister,
Dr. Randers,
Ladies and Gentlemen,

I should like to welcome you most cordially to Sindelfingen, a town whose history dates back for centuries, and a town whose name has for many years now been associated with the automobile. We felt it was a great honor, not only for Sindelfingen, but also for us, when we heard that the German Ministry of Transport and the U.S. Department of Transportation had selected Sindelfingen as the location for this conference.

We of the house of Daimler-Benz were all the more pleased to help with the arrangements for the conference, since as you know, safety has been one of the primary and guiding principles of our work for many years – and a great deal of that work has gone on right here in Sindelfingen.

It is also a special pleasure for me to welcome the international automobile industry, as well as the many members of the press corps. I would like to thank all of you for accepting the invitation.

You are here today as the world's leading automotive authorities, and you are here to discuss a subject which is one of the great challenges confronting society.

There are two aspects of this conference which I would particularly like to mention in the time available to me:

First, I find it a welcome state of affairs when representatives of many governments can sit together with private industry, at the invitation of two of the governments, to work out – or at least to take the preliminary steps toward – joint solutions in an atmosphere of international cooperation.

These solutions can provide the basis for the legislation in an area which is so vital to our industry – and even more important, is so vital to those persons who use our products.

Furthermore, it seems indeed significant that such a large number of experts from the fields of both science and industry are gathered here. Because we are here for a task which extends far beyond the economic and technical goals of the usual kind.

The basic subject of this conference is the safety of the automobile. I believe I can say at this time – and this conference is living proof of what I am saying – that the world's automotive industry is ready and willing to help find the answer to the problems involved, even though it is aware of the fact that this can only be accomplished with great financial involvement.

The subject of automotive safety has met with great response, indeed at times with a great emotional response, from the public. Many critical opinions have been voiced on the subject of motorization as such, but at the same time, the development of individual transportation has been regarded as a symbol of progress and proof of a higher standard of living.

The specific subject of this conference deals with what is without a doubt one of the critical aspects of the automobile as a product of modern technology. The question of safety is one of a general complex of problems which sets tasks of the first order for all of us who are concerned with this product.

The task which is set for us here is to find the most comprehensive solutions: that is, to find the most favorable solutions in the sense of a synthesis of what is necessary or desirable in the field of safety, what is technically feasible within reasonable means, and what is also economically justifiable.

One question which is bound to assume considerable significance in this and other conferences to come is that of manufacturing automobiles which will be safe, yet at the same time will remain within the economic reach of all people. This is an aspect of high social significance.

The gentlemen of the automobile industry who are present here and who are personally engaged with the problem of safety will appreciate the fact that we are all endeavoring to find solutions. We are trying, free of emotions and on the basis of rational research and precise scientific knowledge, to find solutions which are technically feasible and attainable within a reasonable period of time. These are goals to be fitted into an over-all technical concept. For I am certain that proposing goals which would prove unfeasible or which might result in negative effects in other fields would not serve our common aims.

It is in our common interest to set goals and deadlines which promote our aims in the long run, and thereby avoid setbacks which could also possibly discredit our efforts.

At a time when in many cases in the field of international trade a trend towards disintegration has become apparent, the international character of this conference is something to be particularly welcomed, and I am sure it has been greeted by everyone in our industry. This also holds true from an economic point of view, for not only has the automobile contributed toward promoting world trade, but by stimulating competition it has contributed to the general prosperity. But worldwide competition, if it is to continue, is only possible if exchange of technical know-how and equal starting conditions continue to exist.

This applies not only in the economic sense, but also in the technological when we consider the extreme importance the subject of safety will have for our entire future technological development.

I should therefore again like to thank the governments represented here for their initiative in tackling this problem, which concerns us all, as a joint effort. I once again extend a cordial welcome to all of you and I hope that your work here will be fruitful.

DR. GUNNAR RANDERS

Assistant Secretary General and Chairman of the Committee on Challenges of Modern Society, CCMS, NATO

NATO's CCMS will be celebrating the second anniversary of its creation next week. This is not ordinarily a long time in the history of an international organisation. It is the time usually needed for decorating the headquarters, appointing the key staff, moving into the new buildings, and hoisting the flags outside. The CCMS – the Committee on the Challenges of Modern Society – does not have headquarters. It also has no staff. The two years could therefore not be used for building headquarters and appointing staff. Instead, there exist today half a dozen living and active projects attacking specially-selected problems which threaten to destroy the pleasure and satisfaction of living in a highly developed society in an age of advanced technology. These half a dozen projects show that it is possible to work internationally in a new fashion, different from the old concept of international organisations, which necessarily seemed to imply bureaucracy and formality.

It may sound as a sad complaint when I say that the CCMS has no headquarters and no staff. However, it is the result of a well-designed policy. Experience over many years of international cooperation in the world has shown that the best substantive work in technology as well as in fields of research and development is done by national institutions and national laboratories. The idea of a modern international collaboration is therefore not to replace or duplicate national work, but to induce nations themselves to combine their abilities and coordinate the work of their institutions. In the CCMS, this procedure is called the pilot country approach. As most of you know, this means that each subject which is attacked by the CCMS, will have to be undertaken with one nation as the responsible leader. This pilot nation has the responsibility for the preparatory work and all possible studies that are necessary before a recommendation is formally brought to the Committee itself. The studies, the research, the regional specialist meetings, the report writing – all of this must be organised by the pilot nation. Since the pilot nation task is a voluntary task by the nation, one is always sure that interest and drive are present in the leadership. Our meeting here today is a typical example of this drive and leadership.

Eighteen months ago we had one of the first big international pilot project meetings in Milford, Michigan. This meeting was also devoted to the safety of automobiles, and at that meeting I had the pleasure, for the first time, of meeting Secretary Volpe of the US Department of Transportation. At the time, the CCMS was only a few months old and it was necessary for Secretary Volpe to explain carefully to the audience the strong support which the U.S. President gave to the work of the CCMS and to express the wish that it would be possible for an organisation like NATO to do useful work in a field which is normally considered rather different from the ordinary field of work of that organisation. It was also necessary for myself to explain why and how NATO was being used, together with other international organisations, in order to improve the deteriorating conditions which we are facing in the daily lives of human beings in the advanced world. Today, I believe, it is unnecessary to repeat both the fact that there is support for the CCMS and the explanations for why NATO can do certain things more rapidly and efficiently than many other organisations. In the meantime, most people have seen a rather surprising growth of activities, including preparations for air pollution management in Ankara, Frankfurt and St. Louis, agreement on ending of oil spills in the oceans, recommendations on flood control measures, earth quake protection, and design of pollution-free automobile engines. The speed with which these projects have grown and the determination with which they are pursued, have made people aware of the CCMS during this short period to the extent that it is today undoubtedly considered one of the most active agents in this area in our part of the world.

The agenda of the present meeting reminds one at first sight of a meeting of a sub-committee of the UN. Nine nations are giving reports on the work of their experimental safety vehicles. There are two striking features in this agenda: one is that the question of safety of automobiles is looked upon for the first time from a completely different philosophical angle than before. At earlier times, safety was something which was added here and there after cars were designed for beauty, sales appeal and speed. The philosophy of the present project is to begin with safety, and then find out whether the car can move and whether it can be sold. I have heard that the participants in this action are of the opinion that it should well be possible to combine these features. The other striking fact is that these problems are attacked by all the major automobile manufacturing industries simultaneously and jointly. This is what makes the approach dead serious, because however good intentions one may have, hardly anything could come out of safety features which would be adopted only in one country without regard to the fine balance of competitiveness between nations.

The safety car project has a third peculiarity: as a major ingredient in the road safety pilot project it has

THE HONORABLE JOHN A. VOLPE

Secretary,
United States Department of Transportation

Today marks the start of the Second International Technical Conference on Experimental Safety Vehicles.

The purpose is clear – to stimulate the design and development of safer vehicles. The need is also clear, painfully so – to stem the continuing tragedy of traffic deaths, crippling, and costly destruction of property in absolutely senseless crashes on highways throughout the world.

And the response to this need here in Stuttgart is most gratifying, with hundreds of the world's leading automotive engineers assembled to describe progress and exchange viewpoints on this one theme of how to design vehicles with the saving of life principally in mind.

This meeting relates to a number of bi-lateral cooperative agreements on ESV development which I have had the privilege of signing this past year with the Federal Republic of Germany, Japan, United Kingdom, Italy, and, most recently, France. All are of vital importance in pursuing our common goal of safer vehicles. The first such agreement was signed by me and my very good friend Minister Georg Leber in Bonn, not quite a year ago. I might note – if you will allow me a brief informality – that both Minister Leber and I are former bricklayers. So it is appropriate that the two of us were involved in "placing the foundation" for international ESV agreements. My Government is indebted to the Federal Republic of Germany, not only as the host of this fine meeting, but also our first ESV partner.

Each of the bi-lateral agreements is, of course, on a government to government basis with every government backed up by its automotive industry. In our case, I am proud of the support we are receiving from our fine ESV contractors in the United States – Fairchild Industries, American Machine and Foundry, General Motors, and Ford Motor Company. I also recognize the support that other nations are receiving from their companies. Today, our thanks go to the German automotive industry, Daimler-Benz in particular, for providing these magnificent facilities and the other arrangements for the Conference.

We could hardly start this meeting on cooperative ESV developments without mentioning that it is a vital part of our Road Safety Pilot Study for NATO's Committee on the Challenges of Modern Society. However, our pilot study includes a number of other projects which also demonstrate the broad scope of cooperation and international interest in road safety.

– *Canada* is leading our project in alcohol and driving safety.

– *The Netherlands* is leading the accident investigation project.

– *Italy* is directing the effort on emergency medical response to aid traffic victims.

– *France* is heading the work on road hazard identification and correction.

– *The Federal Republic of Germany* is leading the motor vehicle inspection project.

– *Belgium* has recently started work on pedestrian safety.

I am no less gratified by the broad range of leadership and participation in these other safety projects in our CCMS pilot study as I am with the support of ESV developments.

The Road Safety Pilot Study itself is only one of a number of CCMS pilot studies. Others – headed by various NATO Allies – are directed at a broad array of environmental matters: inland water pollution, ocean pollution, air pollution, disaster assistance, work satisfaction in a technological era, scientific knowledge and decision making, environment and the study of regional development, cities and urban transportation. Last year, in Brussels, it was my privilege to present a resolution on behalf of my Government aimed at eliminating ocean pollution from intentional oil spills. We are delighted that the recommendations were approved and that this serious threat to the environment will be abated.

All of this activity stems from a proposal by President Nixon, less than four months after he took office, that NATO broaden its programs to environmental and social problems. The far-ranging interest in solving environmental problems generated by CCMS in less than two years after NATO acted on the President's bold suggestion is almost unparalleled in the operation of multilateral forums. It demonstrates that the modern industrialized nations can work together effectively and rapidly on environmental problems that challenge us all.

Which leads me back to the subject of our Conference today.

I consider the ESV program an excellent opportunity for modern automotive technology and engineering know-how. It shows what can be done to produce safer designs. The blunt challenge that participating governments have posed to their automotive industries is simply put: "What can you do to design a really safe car if, from the very start of the design thinking, safety is the over-riding goal?"

The challenge, however, goes far beyond safety. "Can you design – from the ground up – a car that meets very high levels of safety and still have good engine performance, low exhaust emissions, attractive styling, and, above all, be adaptable into mass production vehicles at a price that people can afford to pay?"

The last issue – the price that people can afford to pay – is particularly important to me. As I have said over and over again, and repeat here – **safety must never become a luxury item available only to the rich.**

These are only a few of the technical dimensions of the challenge. I am sure that you have already encountered many more in coming to grips with the actual design of an ESV as a total system. I trust that these will be fully discussed in the next several days here.

There is still another type of challenge to be met in this worldwide program of ESV developments. This is how best to accomplish the rapid exchange of ESV technology and the lessons learned throughout. All of us are dedicated to saving lives through safer vehicle design. But it would be naive to fail to recognize as well the economic overtones in the ESV programs. My Government, for one, fully intends to have the ESV's lead the way to higher levels of safety in **production** vehicles. Thus, we recognize the difficult problem of ESV manufacturers, even under contracts to their governments, in deciding how best to exchange ESV technology with others and not compromise their competitive positions in the near-term marketplace.

I do not believe that there are any clear cut answers here, but it is my hope that out of the cooperative ESV programs sponsored by governments, methods will evolve for exchanging new safety developments far more rapidly than now is accomplished in the purely industrial operations in the commercial marketplace.

In this regard, I am pleased to learn from Doug Toms' fine staff of engineers representing my Nation in the international ESV program, that even in the short time that these programs have been in effect, there has been a marked increase in the openness of the information exchange. This will be clearly demonstrated here in the next several days.

I am sure that even more openness in information exchange will be apparent when the Third International ESV Conference takes place. I am especially pleased to announce that this will take place in June of 1972 in conjunction with the U.S. International Transportation Exposition, Transpo 72 to be held at Dulles International Airport near Washington, D.C.

In these technical conferences and in the exchange of engineering plant visits, joint observation of testing programs, and possible exchange of prototype vehicles, we are charting new methods for more rapidly sharing our separate advances in vehicle safety. But even as we thus broaden the scope of international cooperation in ESV developments, I can assure you that we continue to fully subscribe to the free enterprise system, highlighted

by intensive competition with appropriate economic rewards for the winners. As described in the guidelines that I, with a support opinion from our Attorney General, have announced, we want to promote intensive competition in the early stages of seeking new safety breakthroughs, but we also want equally intensive cooperation in sharing the new technology as rapidly as it develops, and in full detail as well.

I cannot overemphasize the importance that my Government places upon a full, two-way exchange of ESV information. Toward this end, we recently established a public information file through which the latest ESV technological advances will be made available to anyone interested in the development of safer vehicles. All information will be placed in this ESV public file as soon as my Department receives it, unless specifically forbidden to do so by the manufacturers or the foreign governments supplying this information. Necessary measures will be taken for the protection of patent rights that result from the ESV programs. I call upon all participating governments to join us in persuading everyone working on new ESV safety developments to make the results of their progress publicly available as rapidly as possible.

Thus, the United States policy in the international ESV program focuses on three major objectives:

– To stimulate the development of new vehicle safety technology.

– To promote full cooperation in sharing the new technology on a continuing basis as rapidly as it develops, and

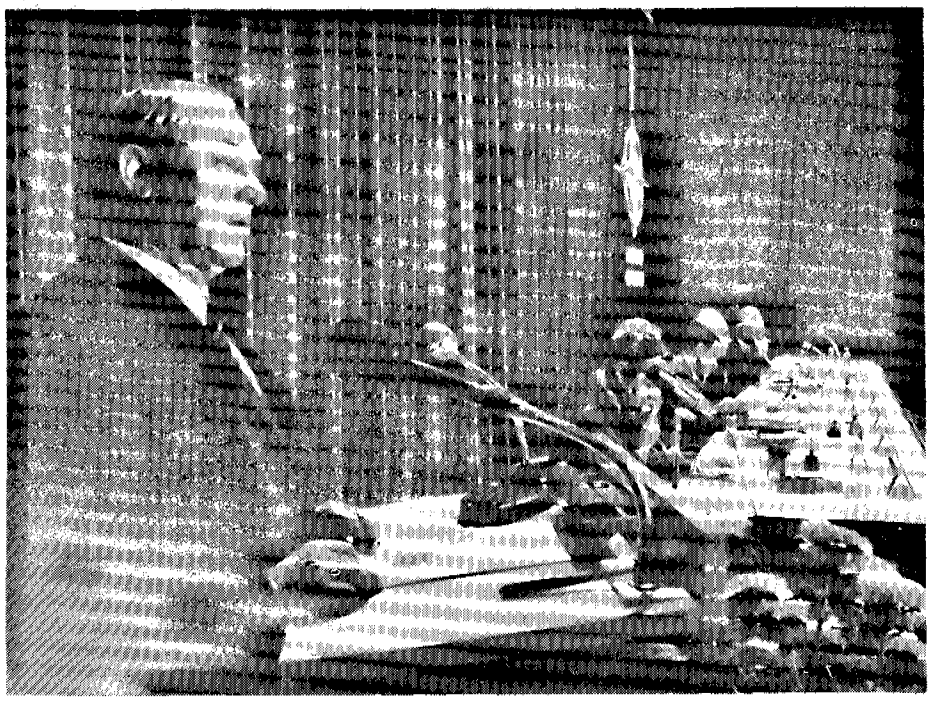
– To incorporate the safety features demonstrated by the prototype ESV's into requirements for mass production vehicles that reflect worldwide needs and research experience.

This is a competition in the fullest sense of the word.

But it is a competition of worldwide automotive engineering skills and talent aligned on one side against a common foe of death and destruction on all of our highways.

Working together in the fine spirit of cooperation shown in this meeting, I am confident that we will win.

Thank you.



THE HONORABLE GEORG LEBER

Bundis–Minister of Transport, Federal Republic of Germany

This conference, which begins today here in Stuttgart, brings the motor car symbolically back to the place of its birth, in order that it may be developed once again, so to speak. What happens to it may be compared to what happens to a grown-up man who has always thought of himself as being perfect and who now all of a sudden has to go back to school. Here a development had begun one day, which has changed life in this world in many respects. The old engine-propelled coach so much smiled at in those days, the privilege of a well-to-do class during the twenties and the thirties of this century, has become an object for everyday use, a useful article for millions of people.

This development has positive and less positive sides. Let us be careful not to pass a rash and one-sided judgment, as do so many in this world. I am one of those who without reservation consider the automobile as a progress for mankind. But he who sees only the positive side of the motor car and not also dedicates a good deal of energy to contemplating its negative effects, will in the long run even discriminate progress as such. It is one of the characteristics of human nature that we easily get accustomed to the positive sides of progress and that we without much ado put up with its negative effects. The knowledge of the negative qualities of the motor car is often suppressed. It is easier for many to occupy themselves with the performance of modern automobiles than to meditate on the problems which they give rise to. All those who hold the automobile in high esteem must direct their special attention to this underestimation of these negative sides: every driver of a motor car, the automobile industry, and every politician concerned with transport policy whose task it is to protect the banks between which the motorized flood flows along. This is no easy job. If a river is not controlled and if it flows on in unharnessed freedom, it will destroy its banks and cause great damage to the country. The river must be tamed, the damage which it causes must be kept low, the damage must be checked so that the river can fully serve mankind in harnessed freedom. This can as a rule be easily done with rivers. Man will mutter and offer resistance to unpleasant decisions and measures. The motor car has to submit to the conditions of society and to adapt itself to what society expects of it. This must be so because otherwise a dissonance, a disharmony will have to be feared between society and progress which the motor car represents.

What we must achieve, upon what we must concentrate our energy, are three things: we need safe roads, we need safe drivers, and we need safe vehicles. We are incessantly searching for new methods for making the roads safer. But we have in the past dedicated too little effort to achieving a fundamentally new attitude towards the safety of the motor car. Our successes in the

past, important and useful as they all were, may be compared to a crazy quilt. The smashing success, the ten-strike, the long step ahead, the all-embracing improvement in quality, which may also be called a renewal, has failed to happen with the automobile.

This conference shows that we are on the right track for a fundamental rethinking. The motor car as an object for everyday use is intended to serve us and to render this service without any danger to those who have to do with it, who are in contact with it, who live with it. This conference shows that the industrial countries and their respective automobile industries stand up to the demand for a ten-strike, for more safety in the motor car and in road traffic and that they in their laboratories, in their workshops, and with the help of their engineers are seeking for new methods to comply with this demand.

After these introductory remarks I should like to welcome you and to thank you for having come here to Federal Republic and that you have come together here in this assembly. I want to thank all those who have spoken in this first hour of the conference for all they have told us.

- Your house, Dr. Zahn, Daimler-Benz AG, has with prudence and devotion set up the frame necessary for the success of this conference and has taken upon themself the many troubles that that entails. This is also a positive contribution to traffic safety.
- Let me thank you, Prof. Randers, for that NATO does not limit its activity to external safety only. External safety and internal peace, peace on our roads, belong together and complement each other in an industrialized world. Only together can they form a sound basis for the march of the nations into a secured and happy future. Internal peace, however, means also that we strike the automobile off the arsenal of our weapons, that we do not live our lives armed with a motor car, that we deactivate this dangerous weapon, that we no more fly at each other, armed with the motor car, and inflict pain upon each other.
- I want to express my particular thanks to my esteemed colleague, Secretary Volpe, for having come here. The fact that he has come and has spoken to us is evidence of the great interest the United States of American takes in safety in road traffic, in more safety for the passenger car, and it proves also the great interest in the project, which is the actual object of this conference and to which it will be devoted for four days: the experimental safety vehicle.

  You, dear Secretary Volpe, have ventured to undertake what we are all grateful to you for. You have given a world-wide impulse to discover – in a scientific large-scale experiment – the greatest possible degree of safety for the occupants of motor vehicles. This is a truly humanitarian experiment which we have embarked upon together. We welcome this kind of action and the initiative you have taken. My personal opinion is: The contest for the better motor car should not in the first place be considered a contest for more horsepower, more chromium trim, and more glass, but a contest for more safety.

  You reminded us in your address, Secretary Volpe, that we on November 5, 1970 – that is a little less than one year ago – here in Bonn signed an agreement on joint action, just as a great number of agreements have been signed by you in the world. Today we have October 26, 1971 – not quite a year later – and we have not been idle in this country during that year. We are here in Stuttgart, not far from Daimler-Benz, who is still a bit coy about what they have developed in the course of these twelve months. Daimler-Benz behaves like good parents who have a well-educated and pretty young lady at home. One doesn't display her in the shop window, one keeps her back in modesty. I think the model Daimler-Benz has developed need not be ashamed of being looked at. The model may be inspected by all, I think, who want to do so.

Ladies and gentlemen, I don't want to philosophise here on the violation of human dignity by what happens day by day on our roads. Anyone who bears responsibility must be caused sleepless nights, when he sees, how little human life is valued in road traffic. The French writer Antoine de Saint-Exupery once said, 100,000 dead – that is nothing at all. 100,000 dead don't cause pain. 100,000 dead, that is but statistics. Somebody who leaves in the morning and does not return in the evening, causes much more pain than 100,000 in the statistics. And how many in our countries, how many times one somebody leaves in the morning and does not return in the evening. And how many times once in a day is sorrow and misery brought upon mankind. This is the obligation we have to face. That is why we in this country have understood the impulse to create a special experimental safety vehicle as a favourable opportunity to obtain a greater knowledge as regards the safety of the motor vehicle. Times change also here. There was once a time when people believed that new knowledge and experience concerning the construction of motor vehicles can be obtained on race tracks. Nothing or nothing much is nowadays to be gained from there for the technical development of the motor car. We must go back to the workshop with the automobile. At our request the German automobile industry has prepared a list of requirements, with the aid of which the individual manufacturers develop their prototypes. The work on the safety vehicle will bring very important information

on the technical possibilities that there are for enhancing the safety of the automobile and of its occupants.

The research results will also raise many serious questions to legislation, when we will know what the overall results will be. We need not answer them here and today. But we may be sure we will see ourselves confronted with them, and the questions that have been raised will have to be answered, because to answer them is in the interest of man. We all know that what is feasible from the technical point of view is not always also what is justifiable from the economic point of view. Or more precise: the last percent of safety which we will strive for will in all probability be also the one which will pose the largest number of questions in the economic respect. But we must forge ahead also into that last percent of safety, be it only in order to know what problems are facing us. When we examine where the ratio of the advantages and the costs of safety is more favourable, then the legislator must take care that the advantages are correctly defined. A purely commercial definition would be wrong, for human life and health are no quantities to be defined by commercial terms, which, though reluctantly, must inevitably be sacrificed to traffic.

I plead for approaching also traffic safety more and more rationally and for making it the object of practical considerations. A compromise arrived at in this way must be an honest solution which takes into account what is financially possible for motorists with an average income. After all, 80% of all passenger cars are owned by employees and by people who do not belong to the class of big earners. And then many people are not driving a car only for their pleasure, but they use it on their way to work, and this possibility must be left to them also in the future, when they will drive a safer vehicle. On the other hand we must exact from the owner of a motor vehicle and we expect it of him that he, too, is prepared to make an adequate contribution to enhancing his own safety, which is at the same time an enhancement of motor vehicle safety on the whole. If he realizes that this will above all and in the first place serve to protect the motorist himself, he will be the more prepared to pay for his own safety the amount which is absolutely necessary.

A more thorough and improved investigation into accident causation, the sequence of events in an accident, and the consequences of accidents can and will in the future supply us with the necessary data for this cost-benefit analysis, particularly with respect to the effect of the forces set free in an accident on the human organism.

Here we stand only at the beginning of a development, which I hope is a promising one. I am confident, however. We have already taken the first step, the door is no longer closed. How wide we open it into a better and a new development, depends on us and on how much energy we spend on this project. The experimental safety vehicle is the starting point. Even if we cannot expect it to solve all the safety problems overnight, we must walk on this road until we come to its end, for it is the right road and it is an important road.

Much water will drift under the bridges of the Neckar before the results of our research can be applied in serial production. We must therefore not flag nor fail in our efforts in the search for new methods of making our conventional automobiles safer. We must go on working hard for the ten-strike which we are striving for. This is what I want to request of you, for this is a task which no one, no country can solve on its own. This is on the contrary a world-wide problem, and we should feel this to be a world-wide challenge.

Let me now wind up this address by quoting Henry Ford. I couldn't find anything better than what he had once said. His words were to this effect: "What is really the basic idea of industry? It is not in the first place to make money. The basic idea of industry exacts the creation of a useful conception and its multiplication into thousands and thousands, until all men benefit from it." Ladies and gentlemen, this is exactly the gamble. This is the idea which we should be obsessed with and for the multiplication of which into thousands and thousands, nay, into millions, we should strive – as soon as we have transferred the theoretical idea into practice. This ought to be the great task, to which we shall all face up.

I thank you for your attention and I wish all of us much success in our endeavours.

SECTION 1

PART 3

REPORTS BY GOVERNMENTAL REPRESENTATIVES ON THE NATURE AND STATUS OF THEIR EXPERIMENTAL SAFETY VEHICLE PROGRAMS

UNITED STATES

MR. JOHN A. EDWARDS

Associate Administrator for Research and Development, National Highway Traffic Safety Administration, United States Department of Transportation

Introduction

Ladies and gentlemen, it is my pleasure to serve as Chairman of this Second International Technical Conference on Experimental Safety Vehicles. I welcome you to Sindelfingen and invite your active participation during the next four days of technical presentations and seminar discussions. I wish to express my sincere appreciation to the Government of the Republic of Germany, the VDA and to the Daimler-Benz Company for their most gracious hospitality and for providing this superb facility for what I hope will be a most fruitful meeting. We appreciate the excellence of the arrangements and fully recognize the great deal of hard work that is required for a successful conference of this type.

Our meeting in Paris last January allowed us to get to know each other and began a candid dialogue which I know will continue here in Sindelfingen. Our discussions then necessarily were united on specifications, and the general intent of the ESV program. Since January, we have had independent discussions with all Governments and now look forward in these next few days to exchanging detailed progress reports on all ESV projects.

As pilot country, the United States is well aware of the concern of all participants over the implications of information exchange in this program such as the proper protection of proprietary information, patent right, and the question of anti-trust as it relates to this exchange. The United States Department of Justice in August 1971 provided guidance on the operation of this program by answering a number of specific questions posed by the Department of Transportation. I believe all of the participating countries have received a copy of this guidance. Without exploring it in further detail here, we believe the guidance received has provided reasonably flexible ground rules so that significant exchange of information may take place. Most important is that each country and industry participants, while discussing with each other in these formal meetings their various approaches to problems and development results, continue independently their Experimental Safety Vehicle research and development projects.

Let me now provide a quick summary of progress in the United States Experimental Safety Vehicle Program which will be expanded upon by each of our contractors today and tomorrow. Fairchild and AMF developments are on schedule for a Christmas Experimental Safety Vehicle delivery to the United States Government. In June, the Department of Transportation signed a contract for testing of these prototypes with Dynamic Science of Phoenix, Arizona in the amount of nearly one million dollars. This company has substantial experience in dynamic testing, has conducted many compliance tests for the Department of Transportation, and provides an outstanding combination of expertise, facilities, and climate to conduct these tests.

General Motors is on schedule for prototype delivery in October 1972 and will report their very substantial progress tomorrow. In July 1971 the Ford Motor Company entered into a one dollar contract with DOT for the development of a prototype design by December 1972. We are most happy to welcome Ford representatives to this international forum, and you will hear of their detailed progress tomorrow.

In May 1971, the Governments of Great Britain and Italy signed Memoranda of Understanding to exchange information on ESV developments with the United States. Just recently, on October 7, 1971, a similar agreement was signed between the French and United States Governments.

We welcome these Governments and their industries now as official participants in this endeavor.

Finally, an annex to the United States-Japanese agreement was recently signed by both Governments specifying in greater detail the kinds of information exchange to be implemented during the course of our program. It is our intention to use this annex as a basis for negotiating similar arrangements with the other countries and a copy of this annex will be made available to the Governments during this meeting. The annex calls for, among other things, the eventual exchange of systems, subsystems and total vehicles for test by reciprocating countries. I lay before you a sincere desire that as this program matures, such an exchange of test articles may take place between the United States and all participating countries.

Again, my sincere welcome to this Second International Conference on Experimental Safety Vehicles. I look forward to hearing the progress reports of each Government and industry representative.

THE FEDERAL REPUBLIC OF GERMANY

DR. OTTO LINDER

Ministerialdirektor, Federal Ministry of Transport, Federal Republic of Germany

The Federal Republic of Germany engaged relatively early in the project of the experiemental safety vehicle (ESV), which was started in the United States of America.

In August last year the Federal Minister of Transport, Mr. Georg Leber, and the German automobile industry came to the conclusion that the ESV project must be given due regard and the German conceptions of a safety vehicle of European dimensions should be worked out.

In December 1970 the German automobile industry presented a set of rules to the Federal Minister of Transport, a survey of the technical requirements to be made on an experimental safety passenger car. This set of rules will serve as a guideline for the work of all German manufacturers of passenger cars on experimental safety vehicles, no matter whether they build complete vehicles, as do Volkswagen and Daimler-Benz, or whether they are working on individual parts for the ESV, as do the rest of the German car manufacturers.

After we could be sure that in the Federal Republic of Germany complete experimental safety vehicles are being built, we concluded an agreement with the United States in November 1970 on the cooperation in the development of experimental safety vehicles, as a result of which first reciprocal visits have already taken place. This agreement will in the near future be complemented with respect to the manner and the scope of the reciprocal exchange of opinion and experience.

I am glad to be in a position to say that our automobile industry have not closed their minds to the necessity to avail themselves as much as possible of the chances offered by the ESV project for making the motor car safer. The high degree of own initiative of the German automobile manufacturers, which greatly advances their work, must particularly be welcomed.

It must be pointed out in this connection that the cooperation in this field between the Government and the automobile industry is of a different nature in the Federal Republic than in the United States. Whereas in the United States the Government themselves have taken the initiative and have accepted the responsibility for and the supervision of the work and have commissioned industry with carrying out the projects, in Germany another method has been decided upon on account of the different structure. In Germany the Federal Minister

of Transport has invited industry – and that successfully – to create the preconditions for an experimental safety vehicle and to carry through its development and its construction. This kind of cooperation between Government and industry has proved a full success. I want to emphasize this particularly and to express our thanks to the German industry.

Daimler-Benz has developed an experimental safety vehicle on the basis of standard type vehicles and is now about to bring its qualities into line with the requirements of the set of rules.

The individual German firms will report on the state of their respective developments themselves. Volkswagen has developed components and is about to integrate these components into an overall system.

Such zeal is evidence of the willingness of the automobile industry and of the design engineers to carry the examination and the development of technical possibilities for the improvement of the safety of the passenger car as far as to such limit, where the sphere of reality ends and the impossible begins. If in this attempt a substantial portion of the efforts is spent on realizing that not all safety components will for a given additional expenditure yield an equivalent increase in safety, we would only welcome this fact.

In the course of the long history of automobile construction certain different basic conceptions have developed for the passenger car in Europe and in the United States, which are determined by a great variety of factors. It would be a miracle, if these differences in conception would not make themselves felt also in the ESV project.

So the German ideas on the requirements to be made on an experimental safety vehicle of European dimensions differ from those of the United States in the following matters:

- road behaviour
- room for survival of the passengers and
- the kinds of occupant retention device.

Moreover, the problem of mixed traffic of light and heavy vehicles causes us some trouble, as it has not yet been satisfactorily solved. Finally also the requirements with respect to rear-end and lateral collisions in comparison with the more serious head-on collisions should once again be fundamentally discussed.

I would welcome it if the pros and cons of these differences in the requirements to be made on the experimental safety vehicle could be discussed in detail in the course of this meeting and if a harmonization of the opinions could be reached.

On account of all these considerations, to which a great number of others will certainly be added at this conference in the course of the next days, we in the Federal Republic feel urged to thoroughly reconsider our set of rules. We suggest to deal with the "Requirements to be made on the experimental safety vehicle" in detail during the next seminar. Oral discussion of the problems is undoubtedly to be given preference over treatment in writing.

In spite of various technical differences of opinion in questions of detail between us and our American partners we can much to our pleasure say that both Government and industry in Germany energetically continue their work on the project ESV and that they endeavor to achieve the greatest possible international harmonization. We are convinced that this is an effective contribution to an improvement of the safety in road traffic.

JAPAN

MR. YOSHIO IGARASHI

Automobile Section, Heavy Industry Bureau, Ministry of International Trade and Industry

The Status Of The Japanese ESV Program

"The Experimental Safety Vehicle Development Project of Japan" is making steady progress and today I would like to report on the present situation and the future prospect of the Japanese project.

The Experimental Safety Vehicle development project of Japan started in November, 1970 when the United States-Japan memorandum was signed concerning cooperation on Experimental Safety Vehicle development. After the signature of the memorandum, the Japanese Government, Japan Automobile Manufacturers Association, Inc. (JAMA) and Japan Automobile Research Institute (JARI) worked collectively to establish the detailed specifications for the Japanese Experimental Safety Vehicle.

The technical expert group which consists jointly of members of the Japanese Government and representatives of automobile companies visited the United States and the Federal Republic of Germany in order to study the progress of the Experimental Safety Vehicle projects of these two countries as well as their approach to the development of specifications for their ESVs.

The results of these visits contributed considerably to the establishment of the Japanese Experimental Safety Vehicle specification. The work on the specification was completed in May, 1971 and the specification was officially adopted as a formal ESV specification by the Japanese Government (Ministry of International Trade and Industry and Ministry of Transport). Upon governmental approval of the specification copies were furnished to the United States Department of Transportation. We will cover detailed contents of this specification during the "Japanese Technical Presentation" scheduled for tomorrow.

The Ministry of International Trade and Industry and the Ministry of Transport jointly invited open proposal from the automboile companies interested in manufacturing a model car based upon the specification for the Japanese Experimental Safety Vehicle. After examination of the development programs offered to the government by several automobile companies, Toyota Motor Co., Ltd., Nissan Motor Co., Ltd. and Honda Motor Co., Ltd. were designated as the eligible participants in the Japanese ESV project. The details of each company's development approach will be discussed during tomorrow's Technical Presentation.

The manufacturing of a prototype car is scheduled to be completed by the end of 1973, with the exception of the Honda Motor Co., Ltd. which will require an additional year to complete. After the manufacture of the final prototypes, the test of the performance and the appraisal of the results will be made at and by the Japanese Automobile Research Institute.

We are considering the possibility of the exchange of experimental safety vehicle prototypes with other participating countries in this world-wide ESV development project, if this is necessary and desirable. The Japanese Government has decided to give subsidies to the Japanese Automobile Research Institute for the necessary expenses such as the construction of testing courses, the purchase of the final prototypes and the study and examination of the project.

Recently, the Japanese Government and the United States Government signed an annex to the above-mentioned United States-Japan memorandum which prescribes the actual methods of exchanging technical information on Experimental Safety Vehicles between governments. This exchange of technical information between the two countries has already begun in accordance with this annex. We hope that the technical information of the other participating countries will also be exchanged through similar procedures.

Finally, we would like to express our sincere respect and gratitude to the Government of the Federal Republic of Germany, the Society of German Automobile Industry and the United States Government for their efforts to hold this Second International Conference on Experimental Safety Vehicles. Thank you.

THE UNITED KINGDOM

MR. R. D. LISTER

Head of Vehicles Section, Road Research Laboratory, Department of Environment

British Safety Car Programme

The proposals contained in this outline programme are for a number of individual projects and studies to be carried out under the direction of the Road Research Laboratory with the aid of leading car and component manufacturers. Its aim is to develop car safety features in practical engineering forms and to incorporate them into designs of complete cars which can be used to demonstrate the latest ideas for accident prevention as well as occupant protection. The interaction and relative effectiveness of the various designs would also be considered.

It is not intended to dictate future styling except in so far as safety is affected but rather to ensure that manufacturers, with safety factors in mind, explore designs and production to meet advanced specifications for accident avoidance and injury prevention.

The programme is fluid; other items may be added as basic research progresses or a selection of the individual projects may be made.

The programme is in three phases:

- **Phase 1.** To issue a number of contracts to industry in the immediate future to design and produce specimens of various safety components and systems.
- **Phase 2.** Calls for the design production of prototypes incorporating various groups of safety features. Though basically conventional in layout, these cars should meet advanced safety requirements and demonstrate that the measures taken to do so can be incorporated in a car acceptable to the general public.
- **Phase 3.** Consideration will be given to more basic changes in car design and to advanced ideas in accident avoidance and will incorporate successful developments arising from Phase 2.

It is to be stressed at this stage that this development programme is to be a series of joint projects between RRL and manufacturers on the basis of support from government funds. For this reason it cannot be undertaken that all the projects listed below will be carried out though others may be added. Each project has to be acceptable to a car manufacturer or other appropriate firm in this country and also the firm's proposals, staff and facilities available and commercial situation, have to be acceptable to the British Government.

The Phase 1 contracts are planned to be completed within one to two years of placing each one and Phase 2 may be started before all Phase 1 items are completed.

Phase 1

Project 1

Passive safety belt layout in which belts are attached to doors; engineering of system into some current models.

It is planned that major car manufacturers should build passive safety belt systems in which the belts are attached to the car doors into some of their current models. The installations should be fully engineered so that the cars can be evaluated in everyday use and tested to see how far they comply with proposed dynamic test procedures.

Project 2

Development of belt and reel components for safety belts attached to doors.

Safety belt manufacturers are to be asked to develop belts for this application which have adequate life, low extensibility, suitable inertia lock arrangements, some means of emergency release after impact or belt failure and satisfactory means of installing the reel on to car seats or body structure.

Project 3

Design of frontal structure of small cars.

There are several design requirements and different levels of performance are possible for different sizes of car. For this reason and also because different design solutions may be proposed, several contracts may be negotiated. The main requirements are:

1. To design an energy absorbing front bumper or sub-structure to reduce injuries to lower limbs of pedestrians struck by it. The bumper should also cope with any other minor impacts without damage to other car components. The weight of the bumper to meet this requirement should be kept as low as possible.
2. The design of front structure to be such that replacement costs (component and fitting costs) of parts damaged in frontal collisions up to say the equivalent of a 20 mile/h barrier impact should be kept as low as possible.
3. No significant intrusion into the passenger compartment for full head-on impacts equivalent to barrier impacts of between 40 and 50 mile/h. The passenger compartment deceleration should not exceed say 30g.

Project 4

Car door and adjacent structure designed to protect occupants at waist level in side impacts.

Initially to design and construct doors which have a strong outer skin linking the hinges to the anti-burst locks, but with a deep padded energy absorbing interior structure to mould to the shape of the human body when one is impacted into the other. Adjacent structures such as seats and lower A and B posts might be modified to meet or assist in meeting these requirements, particularly for 45° side impacts.

Project 5

Design of A and B posts, side and frontal headers and windscreen edge to attenuate impacts by occupants' heads.

The A and B posts and headers are to be redesigned to withstand normal design loadings, impact loadings when the car overturns (as specified by whatever is latest requirement) and also to attenuate impacts by occupants' heads during impacts to the car.

Project 6

Build front seats into car structure.

This proposal is to see whether intrusion due to side impacts and the resistance of structural collapse due to overturning can both be improved by this means. It permits the optimum placing of belt anchorages, windscreens and windscreen pillars, but it requires steering columns and foot and hand controls to be adjustable in position.

Project 7

Fascia/parcel shelf development to reduce knee/hip injuries.

This is required to demonstrate a type of design meeting the knee/hip tolerance level requirements. The layout should accommodate a full range of sizes of human lower limb, and should be arranged to reduce the chances of limbs angulating around the lower edge of the fascia.

Project 8

Controlled yielding steering assembly.

Lightweight higher angle steering assemblies such as fitted to some of the smaller cars have generally satisfactory yielding characteristics in bending when impacted by drivers during accidents. Further work is required to see whether the wheel, spoke and hub can be developed to further improve this situation.

Project 9

Self-levelling body or headlight adjustment system to accommodate variations in car loading.

Some further development is required for these systems to ensure that headlight alignment is always satisfactory for range of loading and operating conditions.

Project 10

Alternative passive restraint systems.

In principle, devices are required which fit closely around the occupants and in particular, development is needed for effective restraints against side impacts.

Project 11

Crash deployed occupant protection.

Would include airbag and study of limiting parameters when supplied to small cars.

Project 12

Study of impact properties of engineering plastics.

Not limited to components but to consider fundamental properties.

Project 13

Head-up display.

To include aid for assessing distance of vehicles ahead as well as for speedometer reading, warning signal, and other information used frequently.

Project 14

Tire deflation and wear warning.

Tire deflation warning should be given to the driver within a few seconds of a drop of pressure of more than, say, 8 psi below recommended. It may not be necessary to use a radio link if some audible warning can be used. The wear warning could be a conspicuous marking exposed on the tire tread.

Project 15

Warning and command signals transmitted from ground installations.

Car radios modified to receive messages from signals generated in ground loops can be used to warn drivers of approaching hazards or delays. Alternatively, ground signals can be used to provide command instructions fed straight into a vehicle control system either to guide the

path of a vehicle or to control its speed. Various developments are at the stage of requiring the attention of car manufacturer design teams.

State Of The Art Projects

The following projects are not strictly development projects but just engineering re-assessments of the existing "state of the art." They are needed to form the basis of stricter requirements for several vehicle systems.

Project 16

Brake system review.

The aim is to specify a satisfactory system with a life of 100,000 miles or ten years, but failing this a period of half the life of a car, i.e., 50,000 miles or five years. Another aspect of the brake system is the introduction of non-locking brakes on all wheels.

Project 17

Review of car handling.

Handling characteristics are built into cars to satisfy the preferences of the general public and hopefully to make the car safe and easy to drive. A review of the situation and investigation into the relationship between handling parameters and accident involvement is required.

Project 18

Review of ergonomic control and instrument layout and operation for the driver.

This project would investigate and develop optimum pedal force and response conditions for all hand and foot operated controls as well as to review essential and informatory information to be presented to the driver.

Project 19

Review of visibility requirements.

Would include consideration of desirable front and rearward visibility as well as reconsideration of vehicle lights to see and to be seen.

With the above outline programme in mind the United Kingdom representatives welcome the opportunity at this second international ESV Conference to make a progress report on their own contribution to the Car Safety Programme. We would like to emphasise once again that in our view road safety measures should be applied over a wide front and that the cost effectiveness of the various measures should be taken into consideration when determining priorities and regulations. As far as we are concerned in the United Kingdom road safety requires continuous development in a number of fields including the road system, the vehicle (including its driver) and the environment, and will continue to do so in the foreseeable future.

As far as the vehicle is concerned we in the UK, Industry and Government together are developing car safety features in practical engineering forms and assessing these features independently and at different levels of performance. Nevertheless, we have in mind to combine the best of these features and others, which may become available from the interchange of information under the Experimental Safety Vehicle Programme, into a complete safety vehicle. In this way we should have a full knowledge of the contribution afforded by the individual design features and be sure that we are getting good value from the expenditure on the total package.

Since the first international conference we have placed a number of contracts. Very briefly these are as follows:

- Project 1 – *Passive Seat Belts*: This work is progressing very well and some acceptable designs are being developed.
- Project 11 – *Crash Deployed Restraint Systems*: This is not limited to the airbag and a number of other proposals together with a number of combinations will be investigated and developed.
- Project 13 – *Head-up Display and Station-keeping*: This work is more appropriately related to accident avoidance as it gives the driver much more information to help him avoid the accident situation.

Other projects for which contracts have been or are about to be placed cover:

- *Project 3* – The design of the front structure of small cars to collapse in a pre-determined controlled manner.
- *Project 4* – Car door and side development to obtain the optimum balance between the degree of intrusion and interior padding to provide maximum occupant protection.
- *Project 5* – Interior structural design to attenuate impact by occupants' heads on header rails, A and B posts, and windscreen pillars and frames.
- *Project 7* – Development of fascia and parcel tray area within the tolerance limits of the lower limb and chest areas of human occupants.
- *Project 8* – Improvements to steering wheel assemblies and hub mountings to control the collapse of the steering wheel as well as the column.

In addition, contracts have been placed with Research Associations in order to provide basic data in a number of fields as follows:

a. impact properties of plastics
b. human impact test devices
c. impact properties of front bumpers
d. impact properties of car bonnets
e. yielding characteristics of steering assemblies

Further contracts are under active discussion covering a wide range of projects and our programme is gathering momentum.

Project 15 – A great deal of emphasis is attached to braking performance and two important investigations are being undertaken. The first of these is a field trial of the anti-lock brake system. We know that anti-lock brake systems are available which in control tests are capable of providing effective and stable braking. A field trial is however necessary to investigate their performance in use in the hands of the general motoring public so that a realistic estimate can be made of the benefits likely to arise if they were adopted universally as standard equipment.

The second is to investigate the possibility of the development of a completely reliable braking system which would last the life of the vehicle, neither requiring maintenance nor adjustment and to have a repeatable and predictable response. One possible solution lies in a completely sealed system and sophisticated means of energy absorption.

Later in this Conference technical presentations will be made by UK representatives on the desirable handling characteristics of cars in relation to reduction of accidents, test methods of roll-over studies, passive seat belts, injury criteria, dummy test devices and recent anti-skid studies on braking and cornering.

Finally, I would like to say a few words on behalf of the Chairman of the European Experimental Vehicles Committee which has been organised to cooperate and coordinate the programmes of the European governments participating in the ESV study. The Chairman observes that the existence of that committee demonstrates the determination of the European countries to support the American initiative for greater vehicle safety and improved environmental conditions.

ITALY

DR. ING. VINCENZO MARCHIONNE
General Management for Motorization
Ministry of Transportation

A. The activities aimed at the realization of an ESV Program in Italy are directly pursued or supervised by the Ministry of Transportation within the framework of the memorandum of understanding signed with the Government of the United States and on the basis of the collaborations established in Europe under the auspices of the Governmental Technical Committee.

The Committee entrusted the Italian government and industry with certain topics of study which include mainly the following:

1. Handling of the vehicle on the road
2. Handling of vehicle in a collision or rollover
3. Driving in fog
4. Braking
5. Lighting and signalling devices
6. Passenger restraint systems
7. Fire protection

B. The organizations participating in the research and experimental program are:

- Ministry of Transport, General Office of Civil Motorization
- Alfa Romeo
- Fiat
- National Electrotechnical Institute, "Galileo Ferraris" of Turin
- Institute of Experimental Autos and Motors (ISAM) of Anagni

Some body manufacturers and equipment manufacturers have also offered their help in specific areas, either at their own expense or on the basis of the grant of subsidies or reduced rate financing on the part of the Government.

C. The topics of study numbered in Part A were divided among the participating organizations thusly:

A.1 Ministry of Transport and ISAM
A.2 Alfa Romeo and Fiat
A.3 Ministry of Transport and National Electrotechnical Institute
A.4 Ministry of Transport, Fiat and ISAM
A.5 Ministry of Transport and National Electrotechnical Institute
A.6 Ministry of Transport, Alfa Romeo and Fiat
A.7 Fiat

A detailed program, indicating the direction of the research and the desired goals in each area being considered, was established at the same time.

D. *Handling of Vehicle on the Road.* The Ministry of Transport will conduct, with the help of ISAM, research on the possibility of using non-conventional systems for control of the trajectory of the vehicle and on the performance that the trajectory can provoke outside the limits permitted in the normal coupling of the tire and the pavement. We are thinking, for example, of using controlled air jets or other similar devices.

ISAM initiated a program of considerable activity in this area. ISAM includes, besides, the adjustment of systems apt to set up and register the rolling, pitching and drift of the vehicle when moving and its responses to accidental exterior disturbances (transversal winds, aerodynamic interaction between vehicles of different sizes when passing or crossing). ISAM plans also to proceed to the evaluation of the vehicle response to instinctive and sudden actions of the driver, as in an emergency. The Institute will develop research and tests on the environment inside the vehicle in traffic, mainly from the point of view of irritating vibrations of the structure that cause fatigue, vibrations that may be noticeable or unnoticeable.

Behavior of the Vehicle in Collision or Rollover. Alfa Romeo, for its research in this area, will use cars having a regular construction (motor in front and rear wheel drive). The studies will be developed by considering all kinds of crashes including low speed collisions for which they will examine either the bumpers (not completely tied to the type of car and therefore applicable to very different cars) or the structure to which the bumper is attached. The relative tests will be conducted on cars now being built and they will include the use of new solutions (for example, use of unconventional materials such as "sandwiches" and plastic materials). The studies will also be concerned with the hitting of pedestrians and the case of fuel spillage in a crash.

Fiat will concentrate its studies on small and medium size cars with front and rear engines. It will use cars now in production or including structural modifications through specialized production.

The relative tests will be either dynamic or static by equipping the cars with appropriate instruments and anthropometric dummies, to determine the survival space and to mark on some diagrams assumptions of energy and acceleration of forces relative to the collision points and the occupants. Fiat will study also the new bodies which provide for the use of mechanical units of standard production and incorporating all the improvements and safety developments derived from acquired experiences.

Driving in Fog. This problem will be studied by the Ministry of Transportation, in collaboration with the National Electrotechnical Institute, on all sides: lighting signals, acoustics, by radio and electronics, visibility and possibility of eliminating local fog, driving attitudes, etc. Some tests involving electronic devices are now being planned.

Braking. For braking, the Ministry of Transportation will concentrate, with the assistance of ISAM, on researching the possibilities of developing and using aerodynamic brakes, effective at reduced speeds. Fiat, for its part, will study the general improvement of present braking devices and more specifically the development of antiskid devices.

Lighting and Signalling Devices. The National Electrotechnical Institute will take on the related studies under the supervision of the Ministry of Transportation. The studies involve, among others, the improvment of crossbeams, including the use of polarized light, and the limits of intensity of road lighting. Furthermore, they will study new systems of stop lights to avoid confusion with other lights and to eventually signal the intensity of a deceleration. The improvement of lighting devices thus reflects that the orientation of head lights in different uses will also be the subject of research on the part of the Institute.

Passenger Restraint Systems. The Ministry of Transportation will undertake the study of a seat attached to the driving compartment by means of elastic or flexible materials, in order to prevent the occupant from being subjected to much movement inside the car that is not associated with movement of the seat. They will watch to see if the driver can, in each instance, keep complete control of the vehicle and have at his complete disposal all the means of information and control. Some other research will also study the possibility that the interior part of the passenger compartment may be separated from the exterior part, with energy absorption through elastic systems where the two parts meet. Finally, the Ministry will study the possibilities offered by other new conceptions. Alfa Romeo, for its part, will conduct studies either on restraint systems involving the intervention of the occupant (active) or on those that function automatically in case of a crash. Fiat will concentrate on the interior set up of the vehicle and on eventual modifications of structural elements of the car as a consequence of the introduction of restraint systems, by studying thoroughly the devices themselves and in particular the air bag, automatic seat belts and padded interiors.

Fire Protection. Fiat, which is heading the research in this area, plans to study the set up and the constructive characteristics of the gas tank and of the related tubes (or hoses), by conducting crash tests on different types of cars and different types of gas tanks.

Studies of a Different Nature. In the framework of the Italian program, we also plan to develop certain research activities on particular aspects of improving safety, such as air conditioning (air climatization) inside the car, automatic regulating devices, devices to clean headlights, improved windshield wipers, etc. Alfa Romeo is particularly interested in leading the studies.

This entire program will be financed mainly by the Government, either as direct expenditures or as a partial reimbursement of the cost of industry research. The first allocation of funds has occurred and the program has just started.

Meetings are held regularly between the Ministry of Transportation and other organizations and firms interested in the program to discuss development and coordinate the different activities.

A Ministry Commission with an industry representative was set up to supervise the program by order of the Minister of Transportation.

FRANCE

MONSIEUR MICHEL FRYBOURG

Directeur de l' Institut de Recherches des Transport

I will join right away with my colleagues in giving the thanks of the French delegation to our hosts: the Federal Republic of Germany and the Daimler-Benz Society for the excellence in the organization of this conference and to the initiator of this project: the government of the United States.

Like any industrial product, the automobile should unswervingly progress toward an ever-increasing satisfaction of the needs of the community. These needs can be expressed not only in terms of mobility, but also in terms of safety and improvement of the style of life.

Certain experts, and I am thinking most of all about Colonel Stapp, have, since the 1940's, directed attention upon the large numbers of possibilities offered by the improvement of the structure of automobiles and by the restraint devices for limiting the consequences of the second collision, that of the passenger against the walls of the vehicle.

In France, since the 1960's, the National Body for Highway Safety: the O.N.S.E.R., has been directing attention upon the possible progress for the protection of the passengers.

The French delegation, therefore, considers this meeting as one step further in a continuing work, from which it is not seeking to draw either price or prestige, whether this be for its government or its builders. Our engineers, if they believe in science and technology, are not shaped by the methods of publicity. They are not trying to bring about a "dream car" nor are they trying to sate their curiosity. They keep strictly to research and experiments which we wish to see give rise to solutions which are effective and compatible with the role that the automobile should take in our modern civilization.

It is in this frame of mind that France has resolutely set out into a program called S.E.E.S.[1] in French (and E.S.S.S. in English)[2]. It is a question of utilizing all the progress that technological perspectives allow us to get a hold of in order to test some "sub-systems" on vehicles of a series, all the while making studies of cost-efficiency on each of the devices liable to be incorporated into the vehicle. We think that this method is realistic and effective in order to ultimately set up an entirely new

[1] Sous Ensembles Experimentaux de Securite
[2] Experimental Safety Sub-System

book of expenses, of such a nature as to permit a break-through (that which you have called a "break-through," Mr. Volpe) a rather promising area.

To establish evaluation criteria for the devices tested, we feel that we should take into account the income level of the population and the nature of the existing type of vehicle. The allotment, between the car that is doing the striking and the car that is being struck, of the means of diminishing the risks in the case of a collision could lead to very different results according to the make-up of the existing types of vehicles. You will hear two reports on these subjects which lead to believe that some answers to the problems could – and should without a doubt – call for some solutions to be adapted, if not in every country, at least in every large market.

The necessity of studying vehicles of 900 kilos and even of 750 kilos is now recognized by everybody.

It will be fitting to sift out methods which, all the while satisfying the demands of the large markets, guarantee that free international exchange will not be hampered.

We should likewise know that one can neither improvise nor form specialized researchers in an area which demands as much experience as that of automobile safety. For, we all want, I believe, our research to arrive at concrete results which can be progressively exploited with the new models which will be conceived in the future. Then, whenever we convoke engineers and mathematicians to ponder over these essential problems, we should ask ourselves about the possibility of overburdening their work – or drawing them away from it – by asking them at the same time to adapt upon existing vehicles disparate regulations, which had been elaborated, sometimes hurriedly, by each other.

This is a problem of conscience about which, I think, governments should concern themselves.

Other questions can also usefully be the object of an exchange of points of view between governments without the same solutions necessarily being adopted by all. I am thinking about a sharing of the research effort between on one side, big industry, specialized and compelled by the demands of administration, and on the other side, independent teams. I am also thinking of the role in the financing of the research that public power could or should play, in order to take into account the social character of these initiatives, the publicity which will be given to the results, and of the risk run by the solicited enterprises and the sizes of these risks.

I confirm that the French government is entirely open to the greatest possible cooperation through an exchange of information about means, results and costs.

This cooperation will be carried out within the framework of the bi-lateral agreements which each of the participating countries have passed with the United States. It will also be carried out within the multi-lateral framework offered by the group from London which is assembling the European nations.

We think that one could thereby avoid double work, poor utilization of means and excessive multiplication of destructive experiments. We believe that antitrust legislation should not have any influence in this endeavor, for it would confuse commercial confidence, linked to the strategic planning of the enterprise, with industrial confidence based on patents, the importance of which in these matters, in our opinion, has been highly overestimated.

Having taken into account the levels attained in our country for that which is of the most important safety, the common elements of our objectives consist essentially in bettering the safeguarding of the occupants by researching the structure of the vehicles and the restraining devices.

The methods and the means for attaining them can differ, but it is necessary to know that any unduly directive approach would be severely judged by the countries that would have to suffer the consequences of it.

It is in this frame of mind, which wishes to be simultaneously – but strictly – scientific and pragmatic, that the French government carries out its action, and that the French delegation participates in this conference, and that you will hear the technical reports of the specialists of our country.

THE NETHERLANDS

MR. J. G. KUIPERBAK

Deputy Director Road Transport, Ministry of Transport Service

Mr. Chairman, Gentlemen,

Due to the fact that the Netherlands is not officially and effectively participating in the project of the Experimental Safety Vehicle, my comments may be very brief. My country is, although not engaged in the project, very much interested in the work that is being done in this field. Also all our research organizations and institutes and last but not least our industries, i.e., automobile industry and components industry have a very high interest. This is the reason why most of these organisations are represented here in the Netherlands delegation. Our research organizations and institutes are not only interested but are doing detailed research in many fields concerning automobile and road safety. If they can be of any assistance to any one of the participating countries, I am convinced that they are willing to assist as much as is in their ability. I hope that this conference will lead to a large step forward to reach the ultimate goal of this ESV project, that is to be able to build a really safe automobile that is also economically feasible and through this, lower the death toll on our roads and highways.

SWEDEN

MR. GUSTAV EKBERG

Head, Vehicle Department, Swedish Road Traffic Safety Office

First of all I wish to express my gratitude to the U.S. Department of Transportation and to the Federal Republic of Germany for having invited Sweden to take part in this very interesting and important conference.

Sweden is certainly outside the NATO organization but we are facing the same problem as the member countries – that of the very high number of victims of road traffic accidents. We believe that road traffic safety can be increased by more rigorous requirements concerning the design of vehicles. We are therefore anxious to take part in the international work on safer vehicles.

Sweden has not signed an agreement with the Department of Transportation concerning the development of experimental safety vehicles or subsystems. My position at this conference will therefore be as an observer. Sweden has however agreed with the Department of Transportation on mutual exchange of information concerning the creation of safer vehicles for our roads and thus on cooperation in the work for increased road safety.

Having studied the program for the conference I am convinced that it will turn out to be an important step towards safer vehicles. May I also express the hope that Sweden in the future will be able to publish results from research work and investigations that will contribute to the development of ESV.

BELGIUM

MR. PAUL NICOLAS

Director of Administration of Transports, and Ministry of Communications

Gentlemen,

Traffic Safety has always been a matter of great concern to the Belgian Government.

Belgium's highest authority, His Majesty King Baudouin, openly demonstrated his interest in traffic safety by attending the formal opening ceremony of the XIIIth FISITA[1] Congress, which took place in Brussels in June 1970. It included the European part of the International Conference on Vehicle Safety, co-sponsored by the SAE of New York.

On several occasions, the present Minister of Communications, Mr. A. Bertrand, confirmed his personal feelings and engagement in this field and took far reaching legislative action which, though sometimes unpopular at the time of the release, proved beneficial later on.

Supported by such highly valued patronage, the Belgian Administration actively studies the three determining factors for traffic safety: the vehicle, the road and the driver. Appropriate action is taken as soon as positive results warrant to do so. Restricting ourselves to the vehicle aspect only, we can proudly state that Belgium is one of the few European countries and even the first one where, for years now, vehicle type approval and periodic vehicle inspection by approved independent technical control stations, have been in full operation. They are often referred to by other governments when contemplating the implementation of similar administrative and technical procedures.

Belgium also maintains a well staffed Safety Research Foundation (Fonds d'Etudes et de Recherches pour la Securite Routiere), which is available to the Administration for conducting any studies on problems involving traffic safety. Amongst the more recent assignments, we can single out investigations on the use of passing beams in built-up areas, on traffic noise from road vehicles, on crash helmets for motorcyclists, on the photometry of vehicle lights in service. This Foundation also publishes a periodical on traffic safety problems and awards every two years a substantial money prize for the most outstanding contribution to traffic safety.

Even if economical factors have considerably curtailed Belgium's activity in the vehicle manufacturing field, we nevertheless have a most flourishing automotive assembly industry and practically any product manufactured around the world can be found operating on our roads. This provides a unique condition for comparing notes and for discovering the advantages and disadvantages of world technical trends and developments. With the experience thus collected, our engineers actively participate to the work of international bodies contributing to technological automotive progress. Belgian delegates are currently present in various WP29[2], ISO[3], BPICA[4], CIE[5], CISPR[6], GTB[7] meetings and their unbiased opinion often helps to develop a satisfactory compromise between originally diverging national positions.

We, in Belgium, the Administration as well as the Industry, have welcomed with enthusiasm the United States' initiative to develop and evaluate an Experimental Safety Vehicle (ESV). It is also most encouraging and to be quoted as an example, that the US Administration and the US Industry are prepared to share with their European counterparts the knowledge and experience accumulated during such study.

Right in the early stages of this project, it became of course evident that the characteristics of this 4000 lbs American ESV would not necessarily apply to a 2000 lbs vehicle, which is about the weight of an average European car. The US suggestion that a 2000 lbs European ESV be developed was of course favorably received as to the principle, even if, to some of us, a different means of achieving the same end result may appear more attractive and better in line with current European practice. We share the opinion of those who feel that progress will be faster to evolve and produce tangible benefits if the work is split and various groups deal with different basic vehicle components. If Belgium has little to offer when considering the development of a complete ESV, we have on the contrary a well established and world known safety glass industry that has been at the origin of what can probably be named the number one safety item. Current laminated and tem-

1. FISITA: Federation Internationale des Societes d'Ingenieurs des Techniques de L'Automobile
2. WP29: Group of Experts on the Construction of Vehicles (UNO), Geneva
3. ISO: International Organization for Standardization
4. BPICA: Bureau Permanent International des Constructeurs d'Automobiles
5. International Lighting Commission
6. CISPR: International Special Committee on Radio Interference
7. GTB: 1952 Brussels Working Party on Automobile Lighting

pered safety glass of superior quality and high reliability achieved by strict manufacturing control, is being shipped all over the world. But our laboratories are not sitting idle and new types of laminated safety glass have recently been offered to the attention of the automobile technicians. They may quite well initiate a new concept in the "containerization" of vehicle passengers.

Several of the world leading tire manufacturers have manufacturing units in Belgium and maintain research facilities feeding the results of their work into the general technical group activities. If less spectacular, our contribution to tire safety certainly is worth being singled out. And is there anybody who will question the paramount importance of the tire on the overall safe performance of the vehicle?

Having thus pointed out in which particular fields Belgium is prepared to cooperate in the studies towards a 2000 lbs European ESV, we would still like to offer another suggestion, in line with information already given previously.

The purpose of designing an ESV is to give the technicians a unique opportunity to start from scratch and develop ideas and techniques that need not be hampered by economical or market limitations. We thus must hope and expect that radically new concepts will evolve. Are we sure that our present evaluation concepts or methods will then still apply? Without expressly saying NO, we nevertheless do feel that the matter deserves consideration and that we should try and restate the final purpose of the respective safety systems. In a number of instances, i.e., safety glass, the available standards and test methods have simply confirmed existing practices. It is about time that we reset our sights and that we define what we actually expect from safety glass as a contributory means for restraining the occupant in the vehicle. Once we have listed these various basic requirements and know how to check and/or evaluate them, we will be in a position to consider the new solutions being presented to us and equate them all on the same basis. We would suggest therefore that via the proper national channels we all urge the appropriate international bodies to get hold of the problem and come up as quickly as possible with purposeful standards and/or testing procedures. We, in Belgium, have already launched a similar move via our Belgian Standardization Institute, with respect to a safety glass standard to be developed by ISO/TC22/SC11. We will likewise cooperate with any other international body bent on preparing safety standards along similar lines.

Thank you for your kind attention.