PART 1

SUMMARIES OF REPORTS AND COMMENTS

Introductory Remarks

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If I were asked to select a date that signaled the beginning of the planning for the Second International Skid Prevention Conference, I suspect that it would be the date that the first conference ended in September 1958. Participants in that conference were excited about the exchange of technical knowledge and equipment techniques and wanted to schedule another. In reviewing my files, I found that the formal letter writing had gotten under way for this conference in October 1973.

The significance of the conference is widely recognized. That skidding on wet highways and runways is a major contributor to accidents is well known. In the United States alone, deaths from highway accidents have averaged more than 50 000 each year for the last 5 years, and a significant number of those accidents can be directly attributed to wet-weather conditions.

A desire to improve tractive resistance of traveled ways has been continuing since the wheel was developed. These efforts have accelerated in recent years because of high traffic volumes and, until recently, vehicle speeds. It would be difficult to document the exact place and time when we first became concerned with the measurement and improvement of pavement skid resistance. It was probably concurrent with the development of all-weather roadway surfaces. In the United States, nonskid pavement surfaces have been of interest at least since the late 1800s. The goal of providing all-weather, skid-safe travel has certainly captured the interest of professionals since the early 1920s. Progress for achieving this goal has occurred in every area involving the interaction of

the driver, the vehicle, and the driving environment. Researchers were striving to accomplish this goal as early as 1924, and yet it has not been fully realized 5½ decades later. At times, it seems to be becoming more elusive than ever because of the improved maneuverability of the automobile and increased travel, which causes accelerated pavement wear.

Much of the highway research in these past decades has been directed to seeking an incremental solution to each of the three contributing areas—the driver, the vehicle, and the roadway—rather than to mounting a significant interdisciplinary effort in all areas. Two of these areas are in the public domain and are sensitive to the needs and desires of the public; the third is in the private area of automobile and tire manufacturers who, although subject to state and federal regulations, are confronted with a problem whose solution will most likely increase the cost of their products and place limitations on their designs.

The most concerted effort in the roadway area has been the measurement of skid resistance and the development of corrective measures. Driver education has taken an independent and separate approach. Only recently have educators made an effort to include in driver programs the opportunity for the student to receive skidding experience during driver training. Automobile manufacturers, while being concerned with safety features such as handling characteristics and braking performance, have relied heavily on the tire manufacturer for improving the tire-pavement interaction. In spite of the piecemeal incremental approach to research, great technological strides have occurred in all areas. The time has now come for us to systematically optimize the relation of the driver and the machine with the driving environment. Now is the time for an expanded effort in bringing together the currently available knowledge into a disciplinary approach to seeking acceptable solutions to the goal of providing wet-weather, skid-safe travel.

A number of milestones have occurred during the years in an effort to reach this goal. The First International Skid Prevention Conference held in September 1958, which included a preconference field correlation study, emphasized the need for greater standardization of field measuring equipment. An outgrowth of that conference was the formation of the ASTM Committee on Skid Resistance. The 1962 correlation study near Tappahannock, Virginia, was organized to compare the latest designs in test equipment in an effort to afford an opportunity for greater standardization. The 1967 Florida Skid Correlation Study was an attempt to evaluate the degree of standardization achieved by several skid trailers constructed in accordance with the newly developed ASTM Test for Skid Resistance of Pavements Using a Two-Wheel Trailer. In 1968 a study was conducted at Wallops Island, Virginia. In 1972, the Pennsylvania State University conducted a locked-wheel skid trailer correlation and calibration study for the National Cooperative Highway Research Program. Although I recognize that the second international conference was directed to subjects other than skid trailers specifically, my experience has been that we are now probably able to correlate skid trailers largely because of the FHWA-sponsored field test and evaluation centers. These centers provide a sound basis for calibrating skid trailers and should provide a greater correlation nationwide for these instruments.

But the second international conference dwelled not on one small aspect of creating skid-safe travel during wet weather but on all elements of the problem. The conference objectives, which emphasized implementation of research findings, were to

1. Present an overview of current knowledge,
2. Demonstrate how this knowledge can be applied to improve safety, and
3. Determine what further steps must be taken to learn how existing knowledge can be applied or what further research is needed.

Report of Subcommittee on Tires, Vehicles, and Vehicle Components

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IMPLEMENTATION OF KNOWLEDGE

Opportunities for implementing improvements take place almost automatically in competitive industries such as vehicle and tire manufacturers. Therefore, there has been no formal implementation program of those things learned in the 19 years since the First International Skid Prevention Conference. As improvements became available, they were adopted immediately. Since the first international conference, the tire industry has just about doubled the wet coefficient of tires on slippery roads and at the same time doubled tire life.

One matter, however, that the tire manufacturers could not deal with and that needs immediate attention is the matter of laws governing minimum tread depth.

In a panel discussion during the second international conference, John R. Treat of Indiana University estimated that a 28 percent increase in wet coefficient of friction would decrease skidding accidents by 50 percent. An increase of this magnitude could be achieved, for the vehicles most likely to skid, by replacing bald tires with tires having at least a groove depth of 1.6 mm (2/32 in). Minimum tread-depth laws already exist in about 35 states and many other countries. Such laws are being effectively enforced in Germany and the United Kingdom. During the conference, a representative from Virginia indicated that minimum tread-depth laws can be effectively enforced by a required vehicle-inspection program every 6 months.