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THIS special issue deals not only with integrated electronic systems but with the technology that is required to achieve successful operation. To place some of the 1969 dimensions of the highway system in the United States in proper focus, we note the following figures:

3.7 million miles of roads and streets
almost 105 million registered motor vehicles
1 trillion 60 billion vehicle miles of travel in a year
56 000 highway fatalities in a year
14 million vehicle crashes in a year.

Present trends indicate that by 1985, there will be 144 million motor vehicles driven 1.5 trillion miles each year by some 265 million Americans. This vast number of cars will be traveling that staggering total of mileage over essentially the same number of miles of road that exist today. If traffic fatalities were to continue at no increase over present rates, we could project more than 82 000 deaths on the highways in 1985.

With this situation as a frame of reference, how can electronics technology be utilized to operate the highway system more effectively and thereby reverse the trend in this projection of increased congestion and accident-related deaths and injuries?

Although electronics technology is a relatively untapped resource, electronic systems are already employed in such functional areas as highway surveillance, roadside communications, traffic control, and emergency services. Experiments are underway in merging, passing, route-guidance systems, and vehicle locator systems. In addition to research directed at the federal level, our state grant-in-aid programs under the Highway Safety Act have generated significant activity at the local level in communications, data processing, and traffic-control systems.

Electronics represents highly challenging areas of interest in which the federal, state, and professional communities can contribute as partners. There is much work to be done in all of these areas, including the exploration of new concepts which are yet to be perceived.

The tremendous achievements of the Apollo Space Program have demonstrated the performance capability and the high reliability that can be attained with electronics. If this technology is applied to the highway environment, a tremendous payoff in improved traffic efficiency and safety is assured. Let us not wait for another decade before doing something about the development of applied highway electronic-control systems. The time to determine our future is now.

—— F. C. TURNER, *Federal Highway Administrator*