

More about expanded research at General Motors

Your recent report (November, page 74) of General Motors Research Laboratories' planned expansion focused on the growth of our staff of physicists, but barely touched upon GM's strong commitment to extend our capabilities simultaneously into several new disciplines while we are strengthening existing efforts. I am sure that many of your readers are curious as to why, in these times of reduced R&D budgets, GM has embarked on a multimillion dollar research expansion program.

To us at the Laboratories, the expansion seems both a necessary—and appropriate—step to ensure that we will be able to meet the biggest challenge of modern research: The challenge of building a foundation today for the major research tasks of tomorrow. Obviously, we cannot fully predict the goals that society will set for science and technology in the 1980's and beyond; but we can anticipate many of the areas of interest, and we can work to make ourselves more flexible, adaptive, and responsive to the needs of the society we serve.

In recent years, much of our research capacity has been given over to solving the air-pollution problem and enhancing vehicle safety; today, almost half of our staff and facilities are at work in these areas. It is unfortunate—but unavoidable—that these high-priority efforts have diluted many longer-range programs in materials research, physics, chemistry, electronics, computer sciences and other basic research areas.

Our expansion will correct this state of affairs.

A major thrust of this expansion will be in the environmental sciences. This will include new and expanded programs in atmospheric and biomedical research, the behavioral sciences, transportation and urban planning. It will include a continuation of our pioneering research in traffic science.

The Laboratories already have important but embryonic programs underway in these new areas. Our biomechanics group, formerly part of our Vehicle Research Department, has developed much new basic knowledge on human impact tolerances—knowledge



that is essential to continuing progress in automotive safety engineering. This group now forms the nucleus of a new biomedical department investigating human impact and noise tolerances, the biomedical aspects of pollutants, and other fundamental investigations aimed at assuring the integrity of human life in a technological world. This new department will continue our practice of contracting with leading medical schools and research institutes on projects of joint interest.

Similarly, establishing a strong research effort in the behavioral sciences will represent a marked expansion of limited programs already underway in our new Societal Analysis Department. Increasingly, society is expecting General Motors and all of industry to solve problems where the sociological dimension is even more challenging than the technological aspect. But the social benefits that society seeks also entail significant costs. Some important questions are: What kind of yardstick does one use to assess economic costs and social benefits? How does one measure the social cost of air pollution? Can we learn to predict societal

attitudes and desires so that evolving technology can be tailored to have maximum benefits?

Much remains to be understood regarding these questions. The tools to provide this understanding must be developed by social scientists, ideally while working in close harmony with other researchers who are working at the cutting edge of the physical sciences. We have that sort of environment here at the Laboratories, and are confident we can contribute by melding both social and physical sciences into technology that better serves man.

While a major thrust of the expansion will come in the environmental area, we will also substantially strengthen our efforts in the sciences, including physics, electronics, mathematics and chemistry. The bulk of the expansion in these areas will be in the realm of basic science. This will, we hope, provide the knowledge lacking to cope with some current problems and to serve as a wellspring for future technology. For example, physical chemistry is fundamental to an understanding of such processes as combustion, corrosion, air pollution and catalytic reactions. We have made it a new focal point of research, drawing in part on activities presently diffused through six of our present departments.

To continue to meet the needs of society, it is evident that we must increase the intellectual and material resources applied to upgrading the quality of our environment, the quality of human mobility, the quality of human life. The major expansion of GM's research efforts has this objective.

PAUL F. CHENEA

Vice President, Research Laboratories
General Motors Corporation
Warren, Michigan

Soviet emigration

It is commendable that you have devoted part of September's *State and Society* section (page 69) to report on the retaliations visited on the prominent Soviet physicists Voronel' and