

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

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letters

Levich who wish to emigrate to Israel. Nonetheless, I wish to register two objections to your report.

Firstly, by repeated use of the word "apparently" you cast doubt on the reality of the problem—but first-hand reports by many Western scientists who have recently been to Moscow leave no room for doubt.

Secondly, you close by quoting Murray Todd to the effect that "the tragedy is that men of very high competence are being lost to the world of science..." But surely the tragedy lies far more in the fact that *numbers* of individuals, highly competent and average, scientists and ordinary people, are being intensely persecuted without justifiable cause.

LEE A. SEGEL
Rensselaer Polytechnic Institute
Troy, N. Y.

The employment problem in physics has often been described in PHYSICS TODAY. It is encouraging that this problem is not world-wide. Recently, the Soviet Union has indicated its need for Doctor of Science degree holders by refusing to part with them unless a payment of \$39 000 is made. I propose that holders of PhD or equivalent degrees in physics investigate the possibility of immigration to the Soviet Union, to take advantage of the twin benefits of guaranteed employment and a \$39 000 bonus to pay for their privately financed educations.

JEROME W. ELBERT
Salt Lake City, Utah

Like many fellow scientists I have been stirred up by the Levich case and feel that some effective action should be taken by the scientific community to stop this atrocious repression. The professional societies seem to be slow and reluctant to act on this matter, and the effectiveness of a protest letter to the USSR Academy of Sciences with an appended list of signatures is somewhat doubtful also. I would like to suggest a course of action that can be taken individually and might have some impact. Many of us receive reprint requests from Russia and other East Block countries. If the professional societies could supply us, on request, with reprints or copies of reports and reactions dealing with the Levich case, this material could be included with or substituted for the reprints requested by the other side. Such an information campaign would be quite

unpleasant for the Russian authorities and might carry some weight towards changing their minds.

H. E. HUNZIKER
Saratoga, Calif.

Hippocratic oath

In reading over the comments of various physicists (The APS Amendment on Professional Responsibility, November, page 42), I was struck by the overall misunderstanding of the purpose of the amendment. My understanding of the rationale behind the amendment was that some physicists desired an equivalent of the physician's Hippocratic Oath. They wanted to tell the people of the world where physicists stood *vis-a-vis* society's needs. This amendment was not meant as a rule or law, to be enforced as such, but it was meant as a general statement of what was in physicists' hearts. Each individual was to be his own judge as to what was "humane" and what was "harmful."

So let us consider the amendment in the light of what it says about our desires and motives, and not in the darkness of paranoia and distrust of officials.

RICHARD ROTHCHILD
University of Arizona
Tucson, Arizona

Metric-time history

The "metric time" suggestion of N. R. Kunchur in his letter (June, page 13) is a great idea. As with many great ideas this one has actually been tried before—179 years ago!

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