In This Issue

Historic Group
On the cover — a 1949 photo of some of the members of the Phage Group lunching at Caltech — from left to right, Jean Weigle, Ole Aaloe, Elie Wolman, Gunther Stent, Max Delbrück, and G. Soli. The Phage Group was a circle of molecular biologists under the informal guidance of Delbrück. It was formed one summer at the Carnegie Institution's genetics research laboratory at Cold Spring Harbor, New York, where for a number of years Delbrück taught a summer course in phage. Delbrück's pioneering studies of viral genetics — the way strains of the virus bacteriophage infect the bacterium *E. coli* and multiply there — led to his receiving the Nobel Prize in 1969 (sharing it with his colleagues Salvador Luria and Alfred Hershey)

His work on phage was largely done between 1937 and 1952, and Delbrück then turned to studies of the nervous system, using the simple *Phycomyces* fungus — whose growth is affected by light — as a way of understanding sensory processes. A *Phycomyces* Group formed too, and Delbrück also taught a summer course on that topic at Cold Spring Harbor.

Delbrück's influence has, of course, been broader than molecular biology. Now Board of Trustees Professor of Biology, Emeritus, he is still — as he always has been — a warmly humanitarian member of the community of scholars. "Max Delbrück — How It Was" on page 21 is the second of two installments adapted by *E&S* from the Oral History of his life compiled by the Caltech Archives.

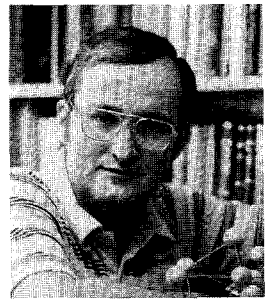
Victor Wouk

Hybrid Helper
Alumnus Victor Wouk (MS '40, PhD '42) is a man with a mission to convert as many vehicles as possible to electric or hybrid automotive systems. He is also a man with a realistic, long-term outlook on the slim likelihood of short-term success — a likelihood that could be improved by the impact of the petroleum shortage. For the last 20 years or so, Wouk has put his time, energy, and money where his convictions are, investing his considerable engineering expertise in several corporations that he developed into successful enterprises. The most recent of these was PetroElectric Motors, Ltd., which developed a low-emission, good fuel economy, hybrid vehicle that is still waiting for a far-sighted manufacturer to put it on the market.

Wouk also teaches, consults, and lectures, and he has about 75 publications — 30 in the area of electric and hybrid vehicles. Since 1970 he has been a member of the International Electrotechnical Commission and U.S. representative to its "Electric Road Vehicles" committee meetings in Stockholm, Stuttgart, Brussels, Ljubljana, Düsseldorf, and Florence. He was chairman of the working group on "Standards of Terminology and Testing."

Not long ago, Wouk volunteered to write a combination retrospective and look-ahead article on his area of expertise for *E&S*, and we were happy to accept. "From Horsepower to Shanks' Mare Power: Is the Automobile Doomed, or Is It Just Us?" on page 6 is the result.

Another result is the montage of photographs we assembled to accompany the article — a mostly tongue-in-cheek look at some of the ways Caltech people have dealt with transportation problems. Wouk may well have an even better idea.



William Johnson

Metallic Glass
Glassy metals are not a contradiction in terms but the result of altering atomic structure — research pioneered 20 years ago by Caltech's Pol Duwez, now professor emeritus. Duwez's work in producing amorphous metal alloys, with atoms arranged not as in a crystal but more like glass, opened up a whole new field of materials research, now being continued by Caltech's William L. Johnson, assistant professor of materials science.

After receiving his BA from Hamilton College in 1970, Johnson earned his PhD at the Institute in 1974 and then did some postdoctoral work. After a couple of years at IBM's Thomas Watson Research Center, he returned to Caltech in 1977, and in a relatively short time has made significant impact in research concentrated on the superconducting properties of metallic glasses and on the relationship of their atomic-scale structure to their electronic and magnetic properties.

In an article on page 13, "New Materials: Atomic-Scale Architecture of Metallic Solids," adapted from his recent Watson Lecture, Johnson explains how the atoms of metal crystals are realigned to create materials with unique properties and discusses some of the current industrial innovations in manufacturing these materials.

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