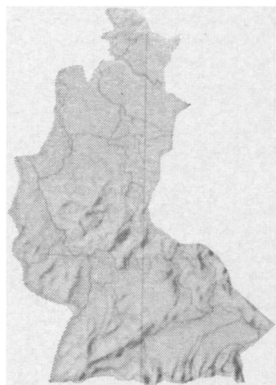


LETTER FROM FRANKFURT



Doubling science research

Germany's science budget
reflects the drive to
shed the catch-up status

by Ted Shoemaker

If money is any indication, German science is growing explosively. The 1969 Federal budget provides twice as much for research as did the 1965 one. And according to a newly released four-year plan, the budget will double again by 1972. Only the Transport Ministry, builder of the beloved autobahns, was more generously treated than the Science Ministry.

The chances are good that the plan will be carried out, barring unexpected political or economic developments. The German parliament follows Government fiscal recommendations much more obediently than does the United States Congress. The budget for 1969 amounts to \$545 million, up 13 percent over 1968.

About half this sum (\$259 million) goes for general research. This includes a big and growing oceanography program, with several research ships. Most of the remaining general research funds go into non-government hands, particularly to the Max Planck Society, the German Research Association and the universities.

The Max Planck Society operates 52 institutes in as many fields, but less than half of its budget comes from the Federal Government. The remainder comes mainly from the state governments, with a small amount from private sources.

The German Research Association gives grants to promising scientific programs, and also gets only a part of its funds from the Federal Government.

The rest of the Federal research budget goes to nuclear, aerospace and data processing programs directly under Bonn's control.

The biggest slice, \$182 million, is for nuclear programs, in which Germany is making remarkable strides after a late start. The nation was not permitted to do any work in the field until it regained full sovereignty in 1955. Yet it now has two big research centers, at Karlsruhe and Jülich. It is doing important work in the development of breeder reactors, and recently launched Western Europe's first atom-powered ship, the Otto Hahn.

Aerospace projects get another major bite of the 1969 budget, \$92 million. Germany was also barred from this field until 1955, and definitely has a long way to go. The four-year plan reveals an effort to close the gap, at least with such comparable countries as France and Britain. As an encouraging first step it streamlined its research structure in mid-1968. Three

disparate organizations were combined into the German Test Establishment for Aeronautics and Space Flight, (DFVLR).

So far, Germany's space contributions have been largely limited to building rockets and satellite parts for Pan-European projects such as ESRO and ELDO. In these cooperative ventures, Germany has specialized in upper-stage rockets, and has built Europe's most modern test stands for experimenting with such rockets at Lampoldshausen. Because rocket behavior in space's vacuum is different from on earth, the test stands include vacuum pumps which test rockets at low pressure.

The 1969 budget also signals the start of an effort to catch up in data processing and computer technology. It sets aside \$17 million, almost double what was spent in 1968.

Federal expenditures represented less than a third of the total funds spent on German research during 1968. The national and state governments, industry and other private sources spent about \$3.5 billion between them. This was 2.6 percent of the gross national product, not much under the U.S. percentage in recent years. Germany aims to keep the figure at around three percent.

The states (*Länder*) play a much bigger role in research than they do in the U.S. They match Federal grants to the Max Planck Society, and are the main support of the universities. This is a holdover from occupation days, when governmental functions were purposely decentralized.

The new stress on research comes partly because Germany has pretty well finished its postwar rebuilding and now can divert funds elsewhere. Also, it has begun to register on Germans that a catch-up nation like theirs must run hard scientifically or lose its place in the world.

There still are bureaucratic hurdles to be overcome. There was a security flap last year after some uniformed Russian officers drove up in an official car and photographed the outside of the Lampoldshausen rocket facility. They were members of a "military mission," authorized to travel freely in West Germany under an old occupation agreement. The facility's director, Walter Luksch, could only grumble: "money is available for the test bunkers, a single one of which costs up to seven million marks. But if we want money for a fence, officialdom goes up in arms."