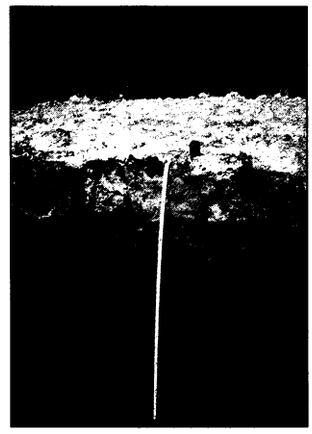
EARTH SCIENCES

Job Prospects on Shaky Ground

Earth sciences in the United States are in upheaval. The economic heart of the discipline—mining and oil drilling—has shrunk drastically. The Cold War is over, and with it has gone the drive for "critical minerals" for defense and national economic security. Corporate employers in the United States are increasingly looking for geologists abroad, where most of the mining and drilling action is these days. Environmental remediation seems to have plateaued. And the new Republican leaders in Congress have said they want to get rid of the U.S. Geological Survey (USGS).

These trends were all explored and bemoaned last week at the National Academy of Sciences in a meeting on "Education and Employment Trends for Earth Scientists." USGS Director Gordon P. Eaton pointed out that, as in physics, the Cold War and energy needs "kept earth sciences very high on the national agenda." But predicted minerals shortages have not materialized, he said, fossil fuel is cheap, and priorities have been turned upside down. In 1983, for example, the Geological Society of America's yearly list of its members' interests was topped by petroleum geology. Environmental geology was at the bottom. Now, said Eaton, environmental geology and hydrology are riding high: Water has replaced oil. Someone who can read the strata of a toxic waste dump is far more in demand than someone who understands the history of the planet.

The decline in demand for traditionally trained geoscientists has created an employment picture that ranges from flat to grim. In academia, Marcia McNutt of the Massachusetts Institute of Technology predicted that as in many other fields, faculty jobs will "at best" hold at a steady state. Government jobs are faring no better, with cutbacks in state geological surveys and retrenchments at national labs. And in the private sector, a lot of jobs are drying up or moving abroad. Chief geologist Frederick Graybeal of the mining company ASARCO said that of the seven geologists he is currently seeking to hire, five will be natives of Chile, Peru, or French Guiana, where the company's operations are located. "Five years ago 60% of our budget was spent in the U.S.; now it's 25%, and next year it will be less," said Graybeal. The story is similar in oil.



USGS

Geology for the 21st century. This section of the nation's biggest Superfund toxic waste cleanup site in Montana shows the type of work waiting for the next generation of geologists.

News from the environmental front was better, but not by much. Russell Slayback of the American Institute of Professional Geologists said hydrology and environmental geology are "no longer a go-go sector." The industry—which is driven by federal laws rather than by scientific or economic interests—is now "mature," he said. And competition is fierce, because the ranks of environmental geologists have been swollen by refugees from other earth science areas.

What does this mean for the earth scientist in training? It means, speakers said, that education has got to change—and fast. "Today's curriculum," said Eaton, has been "modified very little during a century-long era" in which the great bulk of graduates went on to the extractive industries. Now geologists need to know much more than geology. They must be in touch with chemistry, biology, and computer science, as well as economics, statistics, and public policy. And this change, speakers warned, can't proceed at a geologic pace.

–Constance Holden

GERMAN SCIENCE POLICY

Science Loses Its Own Ministry

Last week, fresh from his narrow re-election by the Bundestag as Germany's chancellor, Helmut Kohl merged the ministry of research and technology with that for education, and appointed a politician with no practical experience in science to head this new "ministry of the future." Surprisingly, the country's researchers seem pleased with this turn of events. One reason: Kohl's choice, Jürgen Rüttgers, the parliamentary whip in the previous government, is seen as one of the key players in the new cabinet. Scientists feel that he gives their new ministry added gloss. "This is the right signal at the right time," says Wolfgang Frühwald, president of Germany's basic research funding agency, DFG. "With this move, Chancellor Kohl makes good his promise to pay special attention to research. Jürgen Rüttgers is knowledgeable about the topic and is trusted by the chancellor and his party alike."

Kohl's coalition, made up from his Christian Democratic Party (CDU) and the smaller pro-business Liberal Democratic Party (FDP), lost votes in the general election a few weeks previously, but its majority in the Bundestag was just enough to secure Kohl's re-election as chancellor last week. A reduction in the number of ministries from 18 to 16 had long been predicted, and when the cabinet was announced on 17 November one of those economies was achieved by merging the research and education ministries.

With an annual budget of some DM 16 billion ($10 billion), Rüttgers' new Federal Ministry for Education, Research, and Technology (BMBFT) is no more wealthy than its predecessors combined. Nevertheless, Rüttgers is likely to be more influential for several reasons. The 43-year-old lawyer and historian has close ties to the director of the chancellor's office, Friedrich Bohl, and other key government figures. "Rüttgers has been one of the decision-makers for a long time," commented the newspaper *Frankfurter Allgemeine Zeitung*. The new minister is also reasonably well liked among members of the main opposition party, the social democratic SPD, and bipartisan support may prove helpful in passing new legislation, as Kohl's government holds a majority of only 10 seats.

FRITZ REISS/ASSOCIATED PRESS

Good connections. Education and science minister Jürgen Rüttgers *(left)* with Chancellor Kohl and other new cabinet members.

Although not a scientist, Rüttgers does have some science policy credentials. When he joined the Bundestag in 1987, he took over a parliamentary commission on technological development which led to the establishment of an office for technology assessment. Rüttgers also monitored Germany's activities in space for the CDU before he was voted parliamentary whip.

–Michael Simm

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