

pians—much of it going to Semaw. As for credit, Kimbel says, the IHO is currently supporting fieldwork at Hadar by an Ethiopian graduate student—Tefaye Yemane of Iowa State University—who was co-author of two papers given at the fall meeting of the Geological Society of America.

A number of anthropologists felt that these simmering resentments toward Johanson had personal, not professional, roots and

were out of place at the meeting. Says John Fleagle of the State University of New York, Stony Brook: "You don't submit a paper on a new site or a new jaw and use it to settle a personal dispute."

Asfaw, who insists there is no danger that scientific work in Ethiopia will be restricted by this outbreak of hostilities, makes no apologies for raising these issues at a public meeting of anthropologists. A meeting of a profes-

sional society, he says, is an appropriate place to discuss proper professional conduct. "Unless we stand up and enlighten our scientific colleagues, this will never change," says Asfaw. "Where else can we do this?" One anthropologist, who said he was disgusted by the childishness of the whole affair, had a suggestion: "They should all be locked in a room and left there until they resolve it like adults."

—Ann Gibbons

GREENHOUSE GASES

Rio Signatories to Negotiate New Goals

BERLIN—When representatives of more than 150 nations hammered out the world's first climate treaty in Rio de Janeiro in 1992, they went home believing they had laid the groundwork for stabilizing atmospheric concentrations of greenhouse gases in the next century. Last week, however, when delegates from most of those countries—including the 116 that have ratified the Rio agreement—met here to review their handiwork, they agreed that the commitments made at Rio are "not adequate" to achieve that goal. But when it came to deciding what steps to take to further limit emissions, the Berlin delegates couldn't agree on specifics, but pledged to keep talking.

After 11 days of intense discussions, including presentations from climate-change researchers, the delegates approved what U.N. officials call the "Berlin Mandate": an agreement to negotiate a new set of targets for reducing greenhouse-gas emissions. In Rio, developed nations had pledged to reduce industrial emissions of greenhouse gases to 1990 levels by 2000. Last week, they agreed to try to set specific longer range targets "within specified time frames, such as 2005, 2010, and 2020." These new targets will be negotiated over the next 2 years.

The delegates also moved to set up a pilot program of "joint implementation"—a concept that eventually might allow nations with advanced technology to offset some of their own emissions-reduction quotas by helping less developed nations lower their own emissions. And they decided to establish the U.N. climate-change conference's permanent secretariat in Bonn, Germany, starting next year.

Environmental groups and some delegations—especially those from small-island nations concerned about rising sea levels—pushed for stronger action at the Berlin meeting: a commitment by industrial coun-

tries to cut emissions 20% below 1990 levels within 10 years. But political consensus on setting strict limits proved unattainable. Most oil-producing countries tried to block stricter limits, and cautious U.S. delegates—concerned about reaction from Congress—mainly pushed for "joint implementation" and further negotiation. Undersecretary of State Tim Wirth, who led the U.S. delegation, said, "Frankly, we were worried that the process might fall apart." In the end, he said, the Berlin meeting "came out better than we thought it would."

The 2-year timetable for negotiating new targets will give delegates an opportunity to review the massive scientific analysis being conducted by a multinational team of scientists, called the Intergovernmental Panel on Climate Change (IPCC). In 1990, the IPCC's first major report had confirmed the scientific basis for climate change; last year, its special report noted that atmospheric concentrations of greenhouse gases would continue to rise even if the Rio goals were achieved—a conclusion generally accepted by the Berlin delegates.

At a meeting in Rome in December, the IPCC will issue its second major assessment report evaluating scientific evidence linking greenhouse gases to climate change and analyzing how global warming might affect the environment, health, and agriculture. The report—which is being reviewed by scores of scientists—will

also examine options for mitigating these problems. Some of the report's authors attended the Berlin meeting to offer advice on science questions.

Daniel L. Albritton, director of the National Oceanic and Atmospheric Administration's Aeronomy Lab in Boulder, Colorado, and a lead writer on the upcoming IPCC report's chapter on the potential for global warming, outlined the current scien-

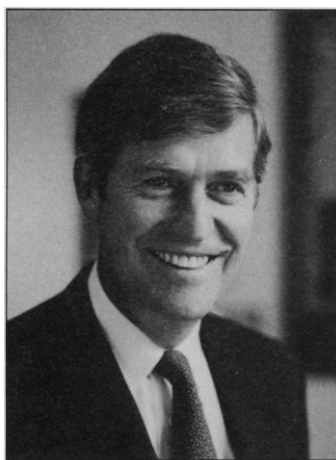
tific consensus: "Mainline scientists generally agree that, if the greenhouse gases continue to increase in the atmosphere, then there very likely will be a surface warming in the range of 1.5 degrees to 4.5 degrees centigrade by the end of the next century." Albritton, an adviser to the U.S. delegation, quickly added: "What should be done about that—where it should be mitigated or tolerated—is a political decision, not a scientific one."

G.O.P. Obasi, secretary-general of the U.N.'s World Meteorological Organization—the IPCC's umbrella organization in Geneva—provided a more controversial viewpoint. Although "there are still some uncertainties about climate change attributable to human activities," Obasi told delegates, "there are many signals of possible climate change reflected in an increasing number of extreme-weather-related natural disasters that are occurring more frequently, some with increased intensities." As examples, Obasi mentioned the increased frequency of cyclones in the southwest Indian Ocean and the Pacific in recent years, the severe floods in Europe this winter and in the U.S. Midwest in 1993, and the observation that the ozone hole over Antarctica last October "was the severest ever recorded" in 35 years. But Albritton cautioned that "the jury is still out" on linking specific extreme-weather events to greenhouse gases. Most climate models are unable to predict with confidence the impact of global warming on regional weather events, Albritton said, although scientists are now developing more sophisticated models.

The IPCC's analysis on these issues will be available to delegates before they complete the intensely political task of negotiating new emissions limits. But both Wirth and Angela Merkel, Germany's environment minister and president of the Berlin conference, said they are already convinced that the scientific evidence so far shows the need for further action on greenhouse-gas emissions. "I don't think the question is any longer if we are experiencing, or are going to experience, climate change. The questions are: How much? How fast? And where?" Wirth told *Science* in an interview.

—Robert Koenig

Robert Koenig is a journalist in Berlin.



Steered middle course. U.S. delegation leader Tim Wirth.