structure changes, with the base narrowing and salary costs per scientist rising. Building costs go up, from the necessity to house new equipment, but there is also a demand from staff for more space and better accommodations, which suggests that there might be something like an "amenity factor" to consider.

The study's conclusion is that there is no uniform residual growth or sophistication factor. Patterns of growth in salaries, buildings, and equipment differed substantially in different laboratories over the 10-year period. Where the intake of young scientists was fairly constant, typical average annual growth rates appear to have been about 2 to 5 percent (in terms of "real prices" computed in noninflating currency). About half this annual growth appears to be due to the effect of incremental increases in salaries. In laboratories in which costs per researcher were low at the beginning of the period and in university departments getting new research support, the typical figure was higher.

One interesting finding was that, where investment in instrumentation was heavy, the number of supporting staff per scientist had not declined. The authors say they can only guess at the reasons, but they suggest that the volume of data gained with new instrumentation increased the need for help in processing such data. The march of big science doesn't seem to bring technological unemployment in its train.

The study makes clear that major equipment costs are worth watching—that this is a true sophistication factor and the fastest-growing item in the budget. So far, equipment costs represent a small part of the budget, but if, as seems probable, the increase in the capacity and cost of instruments continues to rise, it won't be long before the demand for increased funds for equipment puts pressure on the proverbial 5 percent.

The authors of the study stress the fact that their sample was limited and their conclusions tentative, but they think their methods can be applied profitably to a larger number of laboratories.

It must be noted that only money inputs were considered, not outputs in terms of volume or quality of work done. And the past is not necessarily a good guide for making future science policy. Policy makers still have to judge the performance of laboratories, but by looking at patterns of development in good and bad labs they may well be able to estimate the inputs which will encourage something like an optimum rate of growth in a particular kind of research organization.

—JOHN WALSH

CERN II: Still Not Past the Starting Line

Geneva. Not enough backers have yet been enlisted to start the project for a European 300-Gev accelerator. There were hopes that when the council of the European Nuclear Research Organization (CERN) met here in mid-December the project would have a quorum which would include CERN's three major contributors—Britain, France, and West Germany. But, at the meeting, letters of intent were on hand only from Austria, Belgium, and France.

British and Italian delegates to the meeting reported attitudes favorable to the project among science advisory groups at home, and there were indications that the British decision had been delayed by devaluation. It was devaluation and the need to assess its implications that made Britain and Spain abstain on a vote on the CERN budget.

The council did pass a budget for 1968, of some $63 million, but, because of the British and Spanish predicament, estimated budgets for the following 3 years were not acted on. This failure was regarded as serious, since forward planning based on such budget estimates has been one of CERN's strong points. A special council meeting is scheduled for March, when, it is hoped, Britain will be able to declare itself on both the 300-Gev project and the 3-year estimates.

The 300-Gev project did get something of a vote of confidence when the council unanimously voted nearly $1 million to carry on preparatory work for the project during the coming year. A revision of the CERN convention, making it possible to set up a laboratory for the 300-Gev machine under the CERN organizational umbrella, was approved by the council and referred to the member states.

CERN's boat was rocked most vigorously during the council meeting by the German scientific delegate's discussion of a resolution, passed in November by the Federal Republic's Atomic Energy Advisory Committee, raising several sharp questions about the 300-Gev project.

Main points of the resolution were that "it would seem appropriate to use as much new technical know-how as possible in construction of the accelerator," and that "an advanced design and close cost calculation may help to cut construction costs on the accelerator." On both counts the resolution referred to the achievements of the design team working on the American 200-Gev accelerator project.

Reservations some European scientists have had about the design of their own 300-Gev machine seem to have been crystallized at the Cambridge accelerator conference in September by a talk R. R. Wilson, director of the National Accelerator Laboratory, gave on the design study for the big American machine.

The view is apparently spreading among European high-energy physicists that the Americans working on the 200-Gev design have been able to pare costs deeply while, at the same time, coming up with promising innovations in accelerator design. Some Europeans are nagged by the possibility of the American project's meeting its deadlines and putting into operation, perhaps in 1973, a 200-Gev machine which for a comparatively small outlay can be boosted to 400 Gev. While no slippage is likely to occur in the CERN project if the go-ahead is given by March or even June, the present timetable calls for the 300-Gev machine to go into experimental use in 1976 and

then offer the potential for doing essentially the same work in physics as the American machine.

Concern here now seems, however, to focus on the design process. The Germans appear to have been seeking assurance that the design for the 300-Gev machine is not frozen. What emerged from the council meeting was, in effect, a statement of position which said that the design in its latest form is acceptable, but the matter will not be closed until after a director general for the new lab, CERN II, and his construction team have been appointed and a site has been selected. Since a site will not be selected until enough participants have joined to float the project, it looks as if there will be time for second thoughts on design.—JOHN WALSH

APPOINTMENTS

Lucius P. Gregg, associate dean of sciences, Northwestern University, to board member of the Universities Research Association, the organization that will operate the National Accelerator. . . . **David E. Rogers**, chairman of the department of medicine, Vanderbilt University School of Medicine, to vice president (medicine) and dean of the medical faculty, Johns Hopkins University, and medical director of the Johns Hopkins University Hospital. He will be succeeded by **Grant W. Liddle**, who is professor of medicine at Vanderbilt. . . . **Julius Schultz**, research professor of biochemistry, Hahnemann Medical College, to director of the Papanicolaou Cancer Research Institute, Miami . . . . **Graeme C. Bannerman**, assistant secretary of the Navy (installations and logistics), to vice president for business and finance, University of California. He succeeds **Frederick E. Balderston**, who will become vice president for planning and analysis at the university . . . . **Harry Sparks**, superintendent of public instruction, Kentucky, to president of Murray State University, Kentucky. He succeeds **Ralph Woods**, who will go on terminal leave. . . . **H. F. Robinson**, research dean, North Carolina State University, to vice chancellor, University System of Georgia . . . . **J. A. Colin Nicol**, experimental biologist, Plymouth Laboratory of the Marine Biological Association of the United Kingdom, England, to director of the Institute of Marine Biology, University of Oregon . . . . **Bernard Berelson**, vice president of the Population Council, to president, succeeding **Frank W. Notestein**, who will retire in April . . . . **Winston M. Decker**, deputy and acting director of the Office of Research and Development, Bureau of Disease Prevention and Environmental Control, U.S. Public Health Service, to director of the office. . . . **Abraham J. Siegel**, professor of industrial relations, in the Alfred P. Sloan School of Management and in the Department of Economics, School of Humanities and Social Science, MIT, to associate dean of Alfred P. Sloan School of Management, MIT. . . . **John T. Kalberer, Jr.**, grants associate, Division of Research Grants, NIH, to special assistant to the associate director for extramural activities, National Cancer Institute . . . . **Harold T. Byck**, chairman of the Oak Ridge Associated Universities Information and Exhibits Division has retired . . . . **Robert S. Roe**, associate director, Bureau of Science, Food and Drug Administration has retired after 41 years of service. . . . **Ian Campbell**, state geologist, California Division of Mines and Geology, to president of the Geological Society of America . . . . **Donald C. Kruper**, research associate, psychobiology laboratory, Montefiore Hospital, to head of the department of dental behavioral science, School of Dental Medicine, University of Pittsburgh. . . . **Roland F. Smith**, chief, branch of shellfisheries, Bureau of Commerical Fisheries, to assistant director for biological research at the bureau. . . . **Edward J. Cafruny**, professor of pharmacology at the University of Minnesota, to chairman of the department of pharmacology and experimental therapeutics, Toledo State College of Medicine. . . . **John B. Dunbar**, assistant dean of the Medical College and School of Dentistry, University of Alabama, to program director of the Health Sciences Advancement Award program, General Research Support Branch, Division of Research Facilities and Resources, NIH. . . . **Douglas M. Warschauer**, manager of the physics laboratory, Itek Corporation, to chief of the component technology laboratory, Electronics Research Center, NASA, Cambridge. . . . **Lawrence M. Klainer**, assistant to the dean, Harvard Medical School, to assistant dean for clinical affairs and medical director of the Stanford University Clinics. . . . **Oakley J. Gordon**, professor of psychology and acting dean of general education, University of Utah, to dean of academic counseling at the university. . . . **Donald F. Moore**, deputy federal coordinator for meteorological services and supporting research, ESSA, to assistant administrator for plans and programs, ESSA. . . . **Hubert LaVon Hunzeker**, chairman of the department of mathematics, University of Omaha, to head of the department of mathematics, Michigan Technological University. . . . **Herman Postma**, associate director of the thermonuclear division, Oak Ridge National Laboratory, to director of the division.

RECENT DEATHS

Francis A. Arnold, Jr., 57; coordinator of research, School of Dentistry, University of the Pacific, and former chief dental officer and assistant surgeon general, U.S. Public Health Service; 1 December.

William W. Bauer, 75; retired director of the Bureau of Health Education, American Medical Association; 25 December.

Oscar Creech, Jr., 51; dean of the School of Medicine, Tulane University; 22 December.

George Z. Dimitroff, 66; professor emeritus of astronomy, Dartmouth College, and former superintendent of the Harvard Observatory; 1 January.

David L. Falkoff, 46; professor of physics and former chairman of the department of physics, Brandeis University; 19 December.

John E. Murdock, Jr., 43; senior director of research and development of guided missiles, Johns Hopkins University Applied Physics Laboratory; 30 December.

John L. Savage, 88; former chief design engineer for the Bureau of Reclamation, and the designer of Hoover and Grand Coulee dams; 28 December.

Harry Steenbock, 81; professor emeritus of biochemistry, University of Wisconsin, and discoverer of vitamin D; 25 December.

Arthur P. Stout, 82; former professor of surgery, Columbia University, and former professor of pathology and surgery, Columbia-Presbyterian Medical Center; 20 December.

Hwa-Lung Wang, 70; dean of the faculties of Fu Jen Catholic University, Taipei; 30 December.