

Science Faring Well in Budget Paring

Panic — which surfaced in research circles after the March 14 announcement by President Jimmy Carter of his proposed five-point inflation-fighting budget revision — is finally calming after briefings last week acknowledged that science, particularly basic research, would fare comparatively well. The announcement confirmed Carter's attitude that a strong commitment to R&D is an important investment in revitalizing the nation's long-term economic growth and productivity.

Against an 8.4 percent decline for the controllable portions of the federal budget — those that Carter can change without seeking new legislation — basic research suffered only a 2.5 percent cut since the original fiscal year 1980 and 1981 figures were released in January (SN: 2/2/80, p. 70). Basic-research outlay reductions amount to \$6 million in fiscal year 1980, \$117 million in FY 1981.

Though the revised figures are lower than those proposed in January, they preserve an increase in the support of basic research of \$368 million between FY 1980 and 1981, equal to about 8.2 percent. Excluding the National Aeronautics and Space Administration, with several major budget deferrals — or stretching out of expensive space-science missions — basic research would increase 9.4 percent between 1981 and 1982. That makes the 1981 revision less than 3 percent lower than the budget figures proposed in January.

For applied research and development, Carter's new 1980 proposed budget reductions total only \$355 million, or about 1.1 percent; the 1981 decrease is slightly higher, about \$1,054 million or 2.9 percent. This represents an increase of nearly \$3.5 billion for R&D between 1980 and 1981, for a growth of more than 11 percent.

National Science Foundation Director Richard C. Atkinson admitted that deciding how and where to cut NSF programs — all of which were affected — “presented some extremely difficult choices.” Among programs seriously affected is the Ocean Margin Drilling Project, cut by half from \$10 million for its initial year; both the government and private oil companies were to have put up matching funds for the research. Similarly, a joint automotive-research program to have been funded 50:50 by government and industry was cut from \$20 million to \$12 million for its first year of funding. And design funds for a 250-millimeter wave telescope expected to have cost \$1.7 million this year have been eliminated from the revised budget altogether. Money to upgrade special facilities and instruments at universities was largely deferred in the latest round of budget talks, leaving only 30 percent of the funding proposed in January.

NASA received the largest cut for basic research in the current revision: \$61 million, reflecting the deferment or stretch-out of two major programs — the solar-polar mission and equipment acquisition for the Spacelab. While the space shuttle program received little shearing, the space-science budget lost 16 percent of its funds. Unaffected by this recent round of cuts were the Galileo orbiter and probe of Jupiter, Space Telescope and initial funding of the Gamma Ray Observatory.

The Environmental Protection Agency's nearly \$5.1 billion budget for FY 1981 would be cut \$102 million, with the largest bite — \$95 million — coming out of the agency's

construction-grants program, used to help pay for sewage-treatment plants.

At the Interior Department, proposed funding for the endangered-species program emerged unscathed. In contrast, a proposed \$10 million 1981 expenditure on migratory bird conservation was scuttled altogether. The agency's U.S. Geological Survey suffered across the board cuts in its survey and research branch averaging about \$500,000 per program.

Similar across the board cuts bit into the Energy Department's R&D program, especially into several coal liquefaction and gasification projects approaching near-commercial-scale trials. □

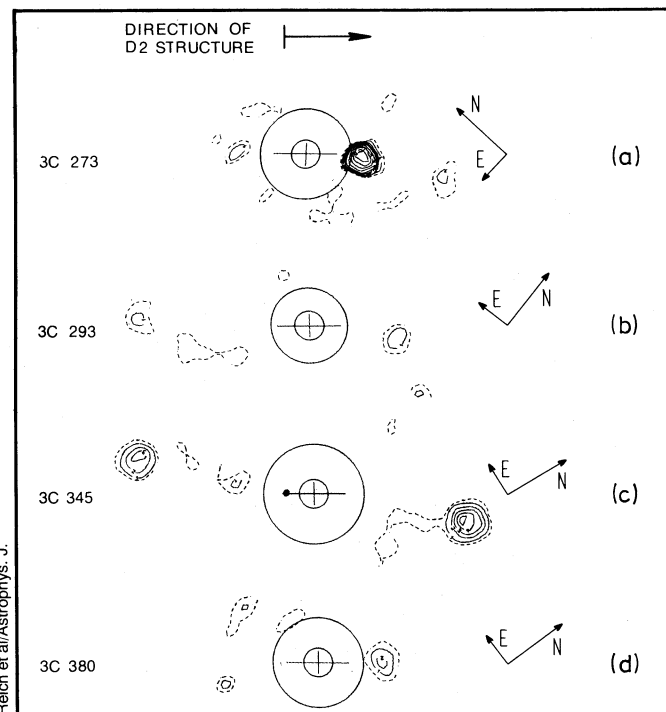
3C345's wings: 'Largest known object'

The smallest things in the universe come under the professional attention of particle physicists. The largest things are the objects of astronomers' investigation, particularly radio astronomers'. In the *ASTROPHYSICAL JOURNAL* (Vol. 236, p. L61) five astronomers working with the E-felsberg radiotelescope in West Germany report evidence for giant radio sources associated with four well-known quasars.

The observers are W. Reich, U. Stute and K. Reif of the Radioastronomical Institute of Bonn University, P. M. W. Kalberla of the Max Planck Institute for Radioastronomy in Bonn and P. P. Kronberg of the University of Toronto. If these four strings of observed radio sources, one associated with each of the four quasars, do represent the ex-

tended sources they appear to represent, one of them, the one associated with the quasar 3C345, would be “the largest known object.” Assuming that the redshift of 3C345 gives an accurate measure of the quasar's distance from earth, this extended source stretches across the sky for 24 megaparsecs. That's about 78 million light-years or 72×10^{19} kilometers. Long.

The results come from a survey of 23 strong radio sources outside our galaxy, including both quasars and galaxies. The observers indicate that they decided to search around these objects for evidence of extended radio sources, because of the abundant evidence of explosions and similar disturbances in quasars and the centers of galaxies. Such activity is likely to



Neighbor radio sources associated with four quasars. Cross locates quasar core with its long arm on quasar jet axis. Jets lie to right of cores.