

so small, and the atoms so short-lived, and because the possibility existed that other atoms might have produced the same results, confirmatory experiments were needed.

Rather than try to reproduce the Soviet work exactly, however, the nuclear scientists at Berkeley used a starting material (einsteinium) more likely to give element 104 than the plutonium the Russians used. They were unable to get any activity indicating the presence of element 104.

In 1968 and 1969, Dr. Ghiorso and his colleagues set out on their own. They took a two-millionth-ounce sample of the element californium and bombarded it with carbon ions. (The Russians had bombarded plutonium with neon ions.)

Since isotopes are separate atomic species of an element, they occupy characteristic energy-niches by which they can be identified. Two isotopes produced by the bombardment of californium in a high-intensity linear accelerator (HILAC) fell into the energy range that would be expected for element 104. So Dr. Ghiorso's group concluded that it had made the discovery it was searching for.

A little atomic bookkeeping provided proof. The two isotopes decayed by emitting alpha particles. Using simple addition and adding an alpha particle back to the decayed product, the investigators obtained the values for the atomic weight and number of element 104.

The two isotopes have atomic weights of 257 and 259. A third isotope, atomic weight 258, was believed to have been observed. But the Berkeley team is not positive. The Soviet report was of isotope 260.

The Berkeley team consisted of Dr. Matti J. Nurmi, Dr. Kari A. Y. Eskola, and his wife, Pirkko, all from the University of Helsinki in Finland, and James A. Harris, a nuclear chemist.

Placing the new element in the periodic table, Dr. Seaborg said, "It's beyond the actinide series. It's what I term the transactinide series, which will extend from 104 to 112." Follow-up experiments of bombarding another isotope of californium should show if the Russians were right or wrong in their 1964 claim, says Dr. Ghiorso. But, he points out, the experiments will take a few months. ◇

A token increase of \$5 million is proposed in medical and dental special educational improvement grants, to be added to the January budget of \$96.4 million. Although this will not be a great deal of help in the shortage of physicians, estimated at some 50,000, it calls attention to the need. Last year fewer than 8,000 physicians were graduated from the country's 91 medical schools.

The Atomic Energy Commission appropriation request is down more than \$78 million from President Johnson's, which in turn was already almost \$133 million below the fiscal 1969 level. At least a third of the latest cut is due to President Nixon's decision to deploy a limited Safeguard system of antiballistic missiles around missile installations, rather than a full-scale Sentinel system. One potentially significant increase is a \$10 million boost, to \$22.7 million, for what an AEC military affairs official says is "to support a readiness to resume atmospheric testing if necessary." An across-the-board slowdown in operations accounts for a \$30 million reduction, with \$10 million trimmed from the light-water breeder reactor program sought by Admiral Hyman G. Rickover for future nuclear naval ships. The only program entirely dropped, however, is research in food irradiation (SN: 3/22, p. 287).

The 200 GeV particle accelerator at Batavia, Ill., remains unchanged at \$12.9 million, while \$2.6 million is added in the new budget to modify the heavy-ion linear accelerator at Lawrence Radiation Laboratory in Berkeley, Calif. This replaces never-funded plans to build an entire new facility, an omnitron (see p. 406), which would have cost at least 10 times as much.

One of the few agencies to survive intact from Johnson to Nixon is the National Science Foundation, whose \$497 million request stands untouched.

In the Interior Department's budget, \$5.9 million has been trimmed from research and study programs, including complete deferral of a \$2 million study of underground power transmission and a similar cut in mapping, oil shale and water resource studies of the U.S. Geological Survey. One of the few additions is \$400,000 for tighter policing of off-shore oil drilling sites and enforcement of safety regulations, prompted by the leak in the Santa Barbara channel.

One of the most significant items in the Transportation Department's budget—and indeed in the whole budget—might have been the supersonic transport. Except that it isn't there. This does not mean that the project has been shelved, but merely that the decision is still being avoided. A potentially controversial item is a \$97 million Johnson-

NIXON'S BUDGET

Down and down some more

The ink was hardly dry on President Nixon's version of the budget for fiscal 1970, submitted to Congress last week, when critics began claiming that it would have to be substantially cut. Programs in science and technology were not heavily affected overall, but key areas, some involving university research support, were cut.

The \$192.9 billion Nixon budget is \$4 billion below that offered by President Johnson in January (SN: 1/25, p. 87), but House Ways and Means Committee Chairman Wilbur D. Mills (D. Ark.) maintained that Congress ought to trim another \$5 billion, particularly if the proposed 10 percent surtax is to survive. "There's no doubt there will be a ceiling somewhere between \$187 billion and \$190 billion attached to the surtax," Mills says.

The National Aeronautics and Space Administration's appropriation is down about \$45 million from President Johnson's budget, although a boost of \$125 million is included for lunar exploration with an increased number of Apollo landings, together with Saturn 5 boosters to handle the flights.

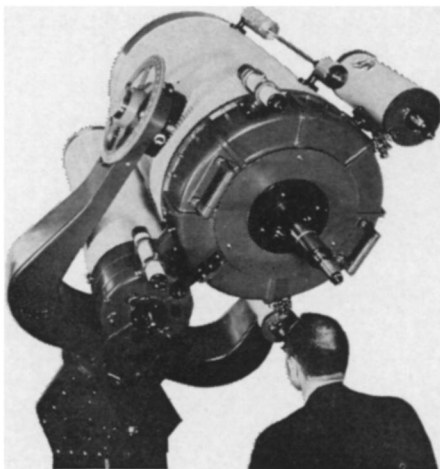
To offset this, the Apollo Applications Program has been trimmed by \$57 million, which NASA officials say will slow the program by about five months but will not cause cancellation of any now-scheduled missions. A variety of satellites and interplanetary

probes have also been eliminated or postponed, for a total offsetting reduction of \$131 million. One item that significantly remains unchanged is the \$36.5 million request for nuclear rocket research and development (SN: 4/12, p. 351). The nuclear rocket represents NASA's hope for large interplanetary missions in the mid and late 1970's.

The shrinking Sustaining University Program, which supports space-related university education and basic research, remained at President Johnson's requested level of \$9 million, although a House subcommittee has already hacked the sum by two-thirds once, and could do it again. Some NASA officials fear that the program, once funded at a \$40 million annual level, may disappear altogether, though Administrator Thomas Paine says it "definitely will not."

The National Institutes of Health took a cut of approximately \$35.5 million from its original request of \$1.5 billion. The reduction is mainly in research manpower development, competing research grants and collaborative research. But this will allow an increase of \$5 million over 1969, principally for research on human reproduction and family planning. Increases also will be provided for the recently established National Eye Institute and the National Institute of Environmental Health Sciences.

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to-Nixon reduction in funding for airport development.

President Nixon left intact the money for the new Consumer Protection and Environmental Health Service, but his personnel squeeze hit the agency hard. Fifty jobs are going down the drain. The bulk of those are out of the Aedes aegypti mosquito control program, which Johnson did not finance.

But where President Johnson had asked for 123 more officials for the Food and Drug Administration and 138 new air pollution control agents, Nixon proposes to stand pat, while he levers over 100 jobs out of the variety of health agencies that come under the Environmental Control Administration.

The FDA comes in for little more than half of the \$2.3 million increase Johnson had proposed; the new total is \$72 million. And Air Pollution Control Administration is in for the same \$96.8 million Johnson had requested.

The National Bureau of Standards, down to \$39.2 million from the \$41.6 million Johnson figure, will have only \$700,000 to spend on its metric system study (SN: 7/6, p. 10), about half of the earlier proposal. ◇

POVERTY WAR

Job Corps, Headstart reassigned

Ever since it began during the Kennedy years, the Federal campaign against poverty has been beset by internecine strife among its own dedicated warriors.

The goal—the elimination of want from American life—has been widely shared, but the methods of achieving it have differed just as widely.

The Nixon Administration has accepted the torch of the anti-poverty crusade from its predecessors. But in keeping with the perceived conservative drift of the electorate, the White House has sought to reorganize the main anti-poverty agency, the highly controversial Office of Economic Opportunity. In doing so, it has run against OEO's powerful and impassioned defenders among the moderate and liberal Democrats in the Congress.

Two crucially important segments of the OEO, the youth-training Job Corps and the Headstart program, designed to give deprived preschoolers an enriched foundation of experiences, have been severed from the parent agency and re-assigned to the Labor and Health, Education and Welfare Departments respectively (SN: 3/8/69, p. 232).

Both the Job Corps and Headstart have come in for scorching criticism in evaluations conducted by outside agencies. The Job Corps was severely dealt with by the General Accounting Office

(SN: 4/5/69, p. 328), while Headstart was badly deflated in a report last week by investigators from the Westinghouse Learning Corporation and Ohio University.

The survey said that poor children who participated in Headstart were not appreciably better off than equally disadvantaged children who did not. It also concludes that there is no improvement in the slum child's sense of personal worth.

The survey did not measure Headstart's effect on health, diet or family-community relationships, however, although the program's impact in these areas may have been significant. The investigators also strongly urged that their criticism of Headstart not be used to condemn the idea of such a program.

The Administration is forced to come to Congress for authority to revise some of the statutes governing the Job Corps. The original Job Corps act specifies that 40 percent of all male trainees must be in conservation work, but under the realignment and closing orders being carried out by Labor Secretary George P. Shultz the percentage will drop to about 32. Congress must give permission for such a change, and it is in this forum that the Democratic critics are expected to challenge the Administration.

The President is reported to be looking for a Congressman to direct OEO, possibly to blunt the cutting edge of Congressional criticism. The heavy favorite is Representative Donald Rumsfeld (R-Ill.), a 36-year-old who may be a future Senatorial candidate should 73-year-old Everett Dirksen (R-Ill.) decide to retire in 1974.

The closing of the 59 Job Corps centers, with its corollary of returning some 13,000 unemployed and disenfranchised youths to jittery urban slums, has upset many Congressmen. So has the manner in which the centers were closed. Numerous political leaders were caught napping and had to learn about the phase-outs from irate constituents or OEO staffers.

Shultz feels strongly that much greater economy can be obtained in the existing centers and through other Federal job-training programs. He wants to cut the cost-per-year for each trainee from \$8,000 under the present system to about \$5,250 in the more urban-oriented centers which have been left open, where young people can stay close to home during training.

Shultz contends that requiring the youths to leave home increased the dropout rate and limited the possibilities for on-the-job training. He emphasizes further that the Job Corps is now only a small part of the Government's manpower retraining program. When