

99.95 percent pure tungsten were irradiated for about a year in the Proton Synchrotron at the CERN laboratory in Geneva with protons of 24 billion electron-volts (GeV) energy. Then they were taken to the Rutherford Laboratory for analysis.

Microchemical separation techniques were applied to the samples to separate traces of the elements osmium, platinum, gold, mercury, tantalum and lead. This was done because the elements from 110 to 114 are positioned directly below the last five of these on the periodic table and are expected to have similar chemical properties. The superheavies are designated by the prefix eka, from eka-osmium to eka-lead, and each eka-element is expected to be identifiable in the chemical analysis along with its namesake.

The mercury samples derived by this analysis, say the researchers, give evidence of the existence of eka-mercury, element 112. The first datum is a long-lived emission of alpha particles at 6.73 million electron volts (MeV). This, they say, is hard to explain on the basis of known radioactive elements. Though contamination by thorium might produce alpha particles of this particular energy, they point out, it should also produce alpha activity at other energies, and these energies are not seen.

The second datum, considered more telling, is the observation of spontaneous fissions in the mercury sample. Since mercury does not fission spontaneously, something else must be doing it. "But we do not believe that the spontaneous fission events observed in the mercury source can be ascribed to contamination," the investigators conclude. This leaves element 112. On the basis of observed fissions they suggest that its half-life for fission is about 500 years.

In an editorial comment in the same issue, *NATURE* takes the claim cautiously but without disparagement. "In the long run," the journal comments, "the belief that element 112 has indeed been manufactured in the CERN accelerator will be best of all sustained by a thorough characterization of the isotopes concerned."

"I think it's fascinating, and I hope it's true," says Dr. Albert Ghiorso of the Lawrence Radiation Laboratory at Berkeley, who has participated in the discovery of most of the elements heavier than uranium. He feels it will have to be studied further. Some of the data appear a bit marginal.

However, "if it's true," he says, "then with the superhilar [a heavy-ion accelerator now being built at LRL] we can produce much more of it. We can make large quantities of superheavy elements and map out the whole region." □

SWORDS TO PLOWSHARES

Thorny shifts in priorities

As defense and aerospace budgets decline, the critics of military and space spending have come face to face with the thorny problem of what to do with the casualties: The individuals and companies who have been thrown into unemployment or bankruptcy as a result of the cutbacks.

It is clear that as long as there are no mechanisms for conversion of the displaced persons and industries, the nation's flexibility for establishing new priorities is severely limited. One of the strongest arguments of proponents of the supersonic transport, for instance, was that terminating the SST prototype program would add to already high unemployment in the Seattle area.

Last week Rep. John W. Davis (D-Ga.), chairman of the House Subcommittee on Science, Research and Development, held a press conference in an effort to gain support for a bill he and Rep. Robert N. Giaimo (D-Conn.) introduced to establish a three-year, \$450 million program for research into problems of conversion from defense to peace activities, for reeducation of scientists, engineers and technicians and for assistance to small business firms in converting their activities. Davis called for a "national outcry of protest" over the plight of the highly trained workers and their loss to the national economy.

There is no doubt that the situation is serious for many professional persons. Nationwide, unemployment among professional and technical workers rose from 1.2 percent in 1968 to 2.5 percent in January 1971; among engineers it quadrupled from 0.7 percent to 2.9 percent in the same period. Exacerbating the problem is the decline in academic employment, which, combined with overproduction of Ph.D.'s, has resulted in sometimes startlingly high levels of unemployment among physicists, chemists and biologists.

The Davis-Giaimo Bill, which now has 68 co-sponsors, would give the National Science Foundation and the Commerce Department major responsibilities in conversion efforts. NSF would administer retraining programs for scientists, engineers and technicians and provide grants to state and local governments for conversion planning and for nonprofit Community Conversion Corporations. Commerce would sponsor retraining for management personnel and, through its Small Business Administration, offer conversion grants and loans to small business firms. The emphasis throughout the program would not be "simply to serve civilian, consumer ends," but, rather, toward "reso-

lution of our besetting social ills . . . unemployment, poverty, crime, race relations, pollution, nutrition, housing, health care, transportation, education and social alienation."

Two questions arise in connection with such conversion goals: The first is just how adaptable aerospace and defense industries and their personnel are to such radically different missions. The second is how many jobs and contracts actually exist in the social and environmental areas. Late last year Rep. Henry S. Reuss' (D-Wis.) subcommittee on conservation and natural resources held hearings on possibilities for conversion of aerospace personnel and firms to environmental cleanup. One often-expressed view was that the firms and their personnel could make the adaptation.

"After all," Dr. Ronald F. Probst of Massachusetts Institute of Technology told the committee, "aerospace firms themselves are the best example of conversion, for the technical and scientific employes who make them up were not trained to develop lunar landers or design supersonic transports. . . . Not many among them studied manned space flight problems in the colleges and universities they attended." These men and their firms, he claimed, could quickly reconvert to environmental concerns.

But Dr. Probst's view was by no means unanimous. Dr. Edward E. David, director of the White House Office of Science and Technology, for instance, saw economic obstacles to conversion. These, he said, would result from the fact that aerospace firms operate with few constraints on spending, constraints which must exist in any civilian market, and the companies deal with a single customer instead of with the multitude of customers that would exist in environmental endeavors. Other witnesses expressed doubt about the ability of specialists to make the change-over.

The committee was, in addition, disappointed because of the inability of environmental control agencies and the firms to make even ball park predictions about the number of jobs and contracts that might actually materialize.

As a Reuss committee staff member said, this failure is due partly to the fact that no one yet knows how deeply the Administration and the Congress are committed to environmental cleanup. Despite defense cuts, the gulf between the defense budget and the environmental budget (and budgets for alleviation of social ills) is still immense. Part of the purpose of Reuss, and now of Davis and Giaimo, is to shift the priorities. But the new bill alone will not accomplish this unless the gulf is narrowed. □