

dom, political stability, a strong diversified research and development program in government, universities and industry," he says. And, they are sometimes "pushed" out by their own countries. Economic incentive and strong research programs are not always a sufficient lure, Dr. Kidd says, citing the fact that immigration from stable nations like Venezuela and Brazil is low. "Push" forces such as political instability, rigid institutional structures in universities, low salary scales because of an unwillingness to promote scientists on grounds of ability, and a dearth of intellectual colleagues are seen as equally related to the exodus of talent. The solution rests with reform within more than with changes in U.S. immigration policies, he believes.

Senator Kennedy summarizes his view, saying the "brain drain" issue is "festering with little joint concern and action within the international community. For this reason, I want to suggest that our Government take the initiative—preferably through the United Nations—in calling for an international conference of interested governments to explore, in depth, the international migration of talent and skills, and the problem of brain drain from the less developed areas of the world." Such a conference is the likely outcome of the hearings which are expected to continue for another three or four weeks. It's too early to predict the likelihood of new legislation.

In spite of its inevitable international nature, the problem is of prime importance to the U.S., Frankel says, because in the long run this country cannot bear the burden of a world in which most countries have inadequate intellectual resources and technological skills and, therefore, have to rely on the U.S. or one of the other big nations for their well-being.

Science Deferments Under The Gun

For the last three years, a major effort of key science policy makers in Washington has been to increase the flow of scientific and technical manpower into the nation's scientific arsenal. And science students, and scientists, considered to be in "critical or essential occupations," were offered draft exemption in the national interest.

Now there is new national need, apparently more critical: The need for a "fair and equitable" draft system.

And the exemptions scientists and students in the sciences were once offered are in danger of being washed away.

The National Advisory Commission

on Selective Service balanced out in favor of individual fairness in its recommendations to President Johnson proposing a new lottery system for drafting men into the military. And President Johnson last week passed most of the Commission's recommendations on to the Congress, coming down hard for "fairness," rather than draft deferments.

A fair and equitable draft means, in essence, that young scientists lose the privileged position they have held since the second World War.

Until now deferments have been granted to students, both graduate and undergraduate, and to men in critical occupations. These include a long list of scientists, technicians, engineers and even laboratory glassblowers. What happens, says the National Advisory Commission on Selective Service, in its report is that deferments pyramid into actual exemptions from service. Men go from college to privileged occupations to marriage and finally from draft age, leaving military service to the non-collegiate—an increasingly sore point.

As of January, despite Vietnam, there were 237,000 men deferred for occupation, plus all the full time students. In contrast, only 19,000 were deferred during the Korean War during which regulations on deferments were tightened.

Thus, the fundamental issue before the Commission was one of fairness and ethics, says executive director Bradley H. Patterson. Fifteen years ago, military service was taking millions of men and the major problem was "Whom should you spare?" says Patterson. Now the service takes very few and spares millions. The problem is to find an equitable way to select those few.

Consequently, the Commission recommends and President Johnson proposes that no more deferments be granted to postgraduates, excepting dental and medical students. Though the President did not mention critical occupations, no such deferred category would exist under the new system.

In the President's words, the governing concept for selection should be "one of equal and uniform treatment for all men in like circumstances."

All of which has lead Mrs. Betty Vetter, executive director of the Scientific Manpower Commission, which represents scientific societies, to term the proposed system "terrible."

It considers only individual fairness, not national interest, she says. Science, in fact, needs many more people than are now available, says Mrs. Vetter.

Actually, occupational deferment under the new system would amount to a non-issue. By dropping the critical draft age to 19, the President can,

in effect, flank the problem. Few 19-year-olds are in critical occupations.

But many are in mathematical studies requiring continuity, says Mrs. Vetter, and a two-year interruption at any point in the sequence could be "deadly."

The belief that men return to college after service is based on experience with students in other disciplines, such as the humanities, she points out. But students in sciences requiring mathematics may have a difficult time recouping their losses. "Once you lose that batch, they are too hard to recover," she says.

Mrs. Vetter maintains the present regulations based on national interest are much superior to those stressing fairness, and should moreover be broadened. They need updating to include people such as computer experts.

Russians Want a Piece Of U.S. SST Market

Last spring, the Soviet Union dropped a public relations bomb on the rest of the world by introducing a huge jet transport plane called the AN-22, years ahead of the Lockheed C-5A and Boeing 747 super-haulers now being built in this country. They made their grandstand play by flying the plane unannounced to the Paris International Air Show, where it grabbed headlines from a variety of exotic jets, helicopters and other aircraft.

Last week, the Central Intelligence Agency reported that the Russians are going to try it again, this time in even more dramatic fashion, by turning up at the Paris Show opening in May with the world's first supersonic transport, the Tupolev 144. The British-French Concorde will not be ready to fly for a year, and the U.S. version, the Boeing 2707, not until 1971.

While such an SST coup would be valuable as a prestige victory, it would have no effect, as things stand now, on the sales of the U.S. plane, since airlines here could not buy a Russian aircraft even if they wanted to. But the Soviet Union is trying to change all that—it is after a piece of the U.S. market. This would be a rich prize, since potential sales figures for the U.S. SST have been estimated as high as 1,500 aircraft, though half that amount is a more reasonable figure, compared to as few as 20 planes for the Soviet version.

Russia has requested that the U.S. consider the possibility of reciprocal marketing arrangements for commercial aircraft, according to the Federal Aviation Agency. The initial overtures were made in New York City in Janu-

ary, at a series of U.S.-USSR meetings to discuss the controversial establishment of air routes between New York and Moscow. Though buying and selling planes to the Soviet Union is at present "illegal and impossible," the Russians may have a more-than-three-year development jump on the U.S., during which time negotiations could be pushed.

Airlines in this country, however, have a strong tendency to "Buy American," which means that they would be unlikely to make use of such arrangements even if they are made—an unlikely occurrence, says the FAA.

If, despite all the obstacles, the U.S. and Russia still wanted to establish reciprocal aircraft trade, they would have to hammer out a "bilateral airworthiness agreement," which would be signed on the basis of examination of each country's aircraft structural designs, flightworthiness specifications and safety standards. Another desirable feature, though not a definite FAA requirement, would be first-hand inspection of manufacturing facilities to make sure that they could keep production aircraft up to the standards of the prototype. Foreign inspectors are not the Soviet government's favorite people.

It is not always necessary to actually fly the other country's aircraft in bilateral agreements, says the FAA—they could be simply "rubber-stamped" through—but such cases are the exception.

Presently, officials from the U.S.

and Britain are trying to work out a mutual set of airworthiness standards for unrestricted commercial aircraft trade, although several British planes, such as the BAC-111, are already in service with airlines here. Other countries with aircraft marketing agreements include France, whose Nord 262 is the only aircraft roughly filling the shoes of the venerable DC-3; Japan, maker of the Naihon YS-11 now in service with Hawaiian Airlines; and Italy, whose Piaggio 108 executive jets is experiencing an unfortunate series of distribution problems. Germany and Sweden are both preparing to enter the U.S. market with executive jets of their own, and these have been "overtures by Czechoslovakia to get something into the country," the FAA reports. A unique arrangement for the purchase of gliders from Poland came about simply because "they're great—they have no competition."

Working out a bilateral agreement with the Soviet Union could be a time-consuming process if it ever comes to pass, since once it is signed, the State Department steps back into a "passive role" and trade is allowed to proceed, limited only by restrictions stated in the original agreement. In addition, the entire deal could be cancelled if Russia were to begin purchasing any parts for U.S.-bound planes from countries with which the U.S. has no diplomatic relations. These include Communist China, Albania and Cuba.

Atom Smasher Called Omnitron Accelerates Wide Range of Particles

A new atom smasher, now being designed at the University of California, will create super-heavy atoms.

Scientists believe that element 114, and/or element 126, would be relatively stable if they could be synthesized. The elements beyond uranium, number 92, the heaviest natural element, and up through 103, the last positively discovered, have lifetimes of decreasing length. The shortest is measured in minutes.

The proposed accelerator, called the Omnitron because of its wide range of uses, was described in detail at the 1967 National Particle Accelerator Conference in Washington. The Omnitron will accelerate nuclei of all 92 natural elements, from lightweight hydrogen to uranium.

The ability to produce beams of heavy particles is valuable not only to physicists but also to physicians, since such beams offer a possible future way of killing cancer cells and thus saving lives.


Dr. Albert Ghiorso of the University of California cited the medical use as a possible application of the Omnitron. In effect, the Omnitron is a machine that will, in one package, extend the capabilities of most conventional accelerators.

Dr. Ghiorso said that nuclei of argon atoms could be accelerated and then beamed to the pituitary gland, knocking out a cancer in this location.

Ultimately beams of pi mesons, basic nuclear particles, could be produced by the Omnitron in sufficient intensity for possible use in human patients. This technique has shown promise in preliminary trials with the 184-inch cyclotron now used for biomedical research at Berkeley.

Radiation treatment of disease, sometimes called atomic surgery, has been successful against such serious ailments as acromegaly and Cushing's disease.

The Omnitron is estimated to cost \$25 million. Construction should take about four years. Co-inventors of the

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