Finally, there is the potential explanation, offered by an aerospace industry official, that the Air Force dislikes Big Bird "because they want things to go fast. A plane that travels only 150 knots is antithetical to the culture that Air Force officials grow up in." Woolsey mentions a similar concern, although he says it does not pertain specifically to the Air Force. "We are used to our strategic systems being at the cutting edge of our technology: flying higher, farther, and faster," he says. "It is a bit of an emotional shock to many in the strategic business to consider designing merely a fuel-efficient cargo plane to fly around randomly over oceans or southwestern deserts. It would also be difficult to imagine wearing a white silk scarf while lumbering about in a modern version of Howard Hughes' Spruce Goose. But however psychologically and institutionally interesting such reactions may be, they are negligible considerations, at best."

The chances of Big Bird taking off, either with missiles or military surveillance and communications equipment, are slim. Last December, the House and Senate Armed Services Committees barred the Air Force from spending any money on it in fiscal 1982. Several weeks ago, the House committee voted to extend the ban to fiscal 1983. According to a committee aide, it did this because of assiduous behind-the-scenes Air Force lobbying. "I know of no one outside of Weinberger and maybe some members of the Townes panel who support this idea," the aide says. Part of the problem is general confusion about the dissimilarity of Big Bird to air-mobile options considered and rejected in the past. The Air Force has campaigned against those, and for sound reasons. It has also failed to advertise the novelty of Big Bird. They will come up here like good soldiers and ask for the study money, and then admit that the idea is flawed," the aide says. "One person said that you'd have to make the planes out of non-obtainium."

A Pentagon official who has been following Big Bird says that there are still some important questions to be addressed. The ability of its composite structures to withstand severe weather needs further examination, as does the ability of its engines to hold up in the dust raised by a nuclear blast. Kerem advises more evaluation of the diesel. "I know that the average reaction to 'going back to propellers' is negative, and that the reaction to piston engines on transport aircraft is very negative, so that when I mention the turbo-diesel the reaction is 'let us leave it to cars, ships, etc.' But when I evaluated it for Big Bird, it did considerably better than the advanced turboprops." More analysis is also needed to determine whether the Soviets might somehow threaten the planes between now and the year 2010.

The answers will probably favor the plane's development. Three large aerospace firms—Lockheed, McDonnell Douglas, and Rockwell—think highly enough about it to have designed similar planes of their own in recent months. Boeing has formed an alliance with Kuhn and Kerem and is spending some of its general research funds on refinements of the design. A recent report by the Office of Technology Assessment suggests that air-mobile could easily be made invulnerable to attack.

Officially, the Pentagon wants to spend $83 million to examine Big Bird between now and July 1983, when the Administration is due to select a permanent place to put the MX. Unofficially, it does not look as if Weinberger and Reagan are going to get the chance to put the missile in the air.—R. JEFFREY SMITH

Accident Stalls Test at CERN

An accident at the European Organization for Nuclear Research (CERN) has delayed, possibly until this fall, a key experiment that physicists hoped would verify a central theory of elementary particles.

Everyone involved calls the development a disaster. The most sought after particles in high energy physics right now are the three intermediate vector bosons (the W^+, W^-, and Z^0), verification of which, with their expected properties, would be the key to the recently popular unified theories of elementary particles. These theories attempt to explain, in principle, the entire physical universe within one mathematical framework. CERN's SPS, a proton synchrotron that was modified last year to permit collisions between oppositely circulating beams of protons and antiprotons, is the only accelerator in the world with enough energy to create the vector bosons. CERN's two detectors designed to catch these particles are run by large European groups headed by Carlo Rubbia (the UA1 detector) and Pierre Darriulat (UA2).

The accident happened in UA1 late in March, when the detector was about to be moved into place for the experiment. Prior to moving the UA1 detector, a section of vacuum pipe, which runs through the detector and through which the particle beams travel, must be heated to 150°C to drive away contaminants which can lower the vacuum. To keep the sensitive electronics of the detector cool, a stream of compressed air is blown through perforated tubes in the space between the vacuum pipe and the inner surface of the detector. As luck would have it, the SPS compressed air system had been drawing unusually heavy loads and an engineer decided to link this system with a second one located elsewhere at CERN in order to get more pressure. The linking, as near as anyone can tell for the moment, resulted in a sudden surge of air which dislodged years of accumulated dust and dirt in one or both of the systems. This dirt has coated the central part of the UA1 detector, which is an assembly of six drift chambers for tracking the paths of electrically charged particles created in proton-antiproton collisions. The UA1 drift chambers contain almost 23,000 wires, most of which carry 3000 to 30,000 volts. Depending on how extensive the cleaning operation must be, it may take 44 to 64 days to put UA1 back into operating condition, Erwin Gabathuler, CERN's director of research, said last week.

But the delay could be longer than that. Work on the SPS is divided into discrete periods of time. During period 1, SPS is being operated in its fixed target synchrotron mode, and the proton-antiproton run was scheduled to begin on 26 April in period 2. CERN considers the UA1 experiment important enough to delay the collider run, and Rubbia suggested simply reversing periods 1 and 2, with fixed target operation continuing in April and May and colliding beam operation commencing in June. Some of the large fixed target groups who have been having their own problems with breakdowns find this schedule inconvenient and are pressing to delay the collider run until September. CERN management promises a decision by the week after Easter.—ARTHUR L. ROBINSON

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