Aerospace

Superwing for general aviation

A newly designed wing for general aviation aircraft will be flight tested beginning late this month, following wind tunnel tests that have indicated the possibility of as much as a 30 percent increase in maximum lift over present general aviation airfoils.

Developed at the National Aeronautics and Space Administration's Langley Research Center in Virginia, the wing, called GAW-1, was derived from the supercritical airfoil (SN: 11/17/73, p. 315), which won the National Medal of Science for its designer, Richard T. Whitcomb. GAW-1 tests have shown an improvement of about 50 percent in lift-to-drag ratio.

Besides its modified supercritical profile, the technology-loaded wing design uses about 25 percent less surface area than its conventional counterparts. It has a tapered planform (the leading and trailing edges converge toward the wingtips), full-span Fowler flaps (extensible trailing edge flaps that vary both the camber and the area of the wing) and spoilers rather than conventional ailerons for roll control.

The wing will be flight tested on a Piper Seneca aircraft, where it will replace the plane's standard wing. The promise of improved cruise efficiency and the seemingly drawback-free performance of its supercritical predecessor have apparently generated optimism about the new wing among the usually conservative general aviation community. "Industry enthusiasm," says Robert Winblade, manager of the NASA General Aviation Technology Office, ". . . is high."

Full-time sunwatch by Air Force

A global network of radio telescopes designed to monitor the sun 24 hours a day is being planned by the U.S. Air Force as a source of data to be used in compensating for communications blackouts and disruptions in satellites and warning systems.

The network will consist of four installations, each equipped with three semi-automatically tracking antennas. The antennas will be 3 feet, 8 feet and 28 feet in diameter. Equipped to monitor selected frequencies of solar emissions between 245 and 15,400 MHz, the stations will provide real-time alerts, as well as analyses and forecasts, to Air Force Global Weather Control Central at Offutt Air Force Base in Nebraska. The installations are being modeled after the Air Force Cambridge Research Laboratory's Sagamore Hill Radio Solar Observatory at Hamilton, Mass., which also does occasional double duty in solar research.

The first installation will be at Pelahua, Hawaii; selection of some of the other sites may depend on future political developments. Operational testing is to begin in 1976, with the network to be fully operational by 1979.

Skylab astronaut to private scientist

Edward Gibson, who was resident solar physicist during the 84-day final Skylab mission, will leave the astronaut corps and NASA on Nov. 30 to continue his research with a private company.

During the mission, longest in the history of manned space flight, Gibson made the lion's share of the 338 hours of solar observations compiled with the Apollo telescope mount. As a senior staff scientist with The Aerospace Corporation in Los Angeles, he will be specializing in the interpretation of solar data, most of it gathered during Skylab's three missions, including his own.

Science Education

The English doldrums

Declining applications for science and engineering courses, together with the effects of inflation, have so shaken Britain's academic establishmentarians that they recently held a conference at the University of Manchester on "The Crisis in Engineering and Science Education in the West." The normally staid journal NATURE, in its Aug. 2 issue, described the conference mood as one of "gloom and impending disaster."

The principal of the university's Institute of Science and Technology, Lord Bowden, predicted bankruptcy within 18 months unless government policies are changed. Applications from English students have fallen dramatically, he said, and science classes contain an ever increasing proportion of foreign students. Ironically, as demand for scientists rises, science teachers are drawn off, forming a vicious circle of disillusionment among students who judge science by their own bad experiences in school.

Sir Frederick Dainton, chairman of the University Grants Commission, said a possible solution to the disenchantment would be to teach science more like a humanity—stressing its interest to the enquiring mind and passing up some specialization in favor of skills like thinking clearly about problems and transmitting ideas lucidly.

Though decisive action is clearly needed, NATURE concluded the conference produced neither decision nor even guidance to teachers who need to know whether to advise their students to continue studying science: "Half-hour discussions with 450 people all facing in the same direction rarely produce anything of substance."

U.S. science grads decline

Though not yet worried about a "crisis" like the British, American graduate schools are also suffering a steady decrease in enrollment for scientific and technical degrees. According to figures just released by the National Science Foundation, graduate science enrollment went down another two percent last year, continuing a trend begun in 1969. The cumulative decline since then was nine percent.

The rate of decline in the number of students receiving Federal assistance is even more dramatic. The number of such students was 14 percent less last year than the year before, following, in turn, a 10 percent drop-off from the previous year.

Bronowski's Bicentennial exhibit

One of the last major projects of Jacob Bronowski, who wrote and narrated the TV series *The Ascent of Man*, was to plan a Bicentennial traveling exhibit, "Innovation and Diversity in American Culture." The exhibit shows the influence of science and technology on United States history, and is sponsored by the Association of Science-Technology Centers under a grant from the National Science Foundation.

When he died (SN: 8/31/74, p. 119), Bronowski had finished designing the project's conceptual plan, which will be carried into production by his daughter, Judith Grant. The core of the exhibit will be four major components, oriented toward the solution of problems resulting from rapid communication, mass production, new resources and population diversity. Supplemental materials for use by communities will also be developed.

The Association of Science-Technology Centers is an organization of museums founded last year to facilitate cooperative projects.