

ment, made scarcely a week after the Apollo 11 crew had returned safely to earth, was paradoxically part of his resignation from what ought to be one of the most scientifically desirable posts in the world. Just as man is taking his first halting steps into his mysterious universe, Dr. Hess will step down to direct a dozen research laboratories for the Environmental Science Services Administration in Boulder, Colo., after only two years in Houston.

"We have passed a milestone in the manned space flight program by the recent lunar landing," explained Dr. Hess in his resignation announcement. "We have put the Lunar Receiving Laboratory into operation, and it is performing its mission well."

Just how well is questionable, as witness many technical difficulties, including a vacuum chamber glove leak in which a technician narrowly escaped serious injury. Moreover, other top NASA scientists, who ought just to be reaching the most exciting points in their careers, also are departing the fold.

One such is Dr. Elbert King, curator of the LRL and at present one of the most vital men in the space agency, as he shepherds his elaborate but troubled facility through the first look at pieces of another world. Before Apollo 11 ever took off from earth, he had announced that autumn would find him chairing the geology department at the University of Houston. Mere weeks remain until Dr. King himself joins the brain drain from NASA, yet he warns that "we really need to get more top management who have a better understanding of the need for scientific inputs."

One NASA branch that should finally be sinking its teeth into real meat is the Office of Lunar Exploration. After years of struggling along with earth-based telephotos and television transmissions from unmanned Surveyor and Lunar Orbiter spacecraft, it is finally seeing men on the moon to carry out exploration first hand. However, Dr. Donald Wise, who is the office's chief scientist as well as its deputy director, leaves at the end of this month for a position at the University of Massachusetts.

Future Apollo landings are tentatively scheduled for more scientifically interesting sites than the flat lunar maria (SN: 8/2, p. 92), but the rougher sites could be a while in coming. The landing of Eagle (the lunar module of Apollo 11) in Mare Tranquillitatis was a tense, demanding job that took the full abilities of both Neil Armstrong and Buzz Aldrin and used up two-thirds of the planned fuel safety margin. Thus NASA planners are thinking harder about the risks of such scientist-pleasing sites as the crater-

strewn area around the crater Censorius and the dark, craggy area known as Littrow, scheduled at present for Apollo 14 and 15 respectively.

Besides worrying earthbound scientists, the landing difficulties also suggest a possibly bleaker future for NASA's scientist-astronauts, most of whom have had to learn flying from scratch and none of whom can hold a candle to the test pilots and military aviators comprising their non-scientist colleagues. Prior to Apollo 11, the scientist-astronaut group had already dropped from 17 to 14, largely because of dissatisfaction with the demands of flight training and the small amount of time left for scientific pursuits. This week, Dr. Frank Curtis Michel became the fourth to resign, both to devote more time to his

physics research and because a berth on a spacecraft seemed to be only a distant possibility.

There is considerable disagreement over whether science is the primary justification for sending man into space. National prestige, "man's inherent urge to explore" and other reasons all have their supporters.

But until it becomes profitable to mine minerals on the moon, or to carry commercial passengers to stops on other planets, scientific research is virtually the only thing there is to do out there. So now, with the engineering a demonstrated fact, the scientists just want the science done right.

The mass exit of scientists from the Apollo Program seems to indicate that it isn't.

FAMILY SUPPORT

Action on welfare

Born out of the depression, the U.S. welfare system has seen few significant changes in its 33 years. Those major changes that have occurred involve aid to the disabled and health assistance programs (Medicare and Medicaid). Otherwise, public welfare has gone along getting bigger and more costly. At present, the Federal Government pays out \$4.7 billion to more than 10 million people, with state and local agencies contributing another \$4.2 billion.

But this week President Nixon was to present a proposal to the nation for the first sweeping changes in the public welfare system since its inception. Heart of the Nixon program, which must be approved by Congress, is the Family Security Plan (SN: 6/7, p. 549). It was expected to provide a standardized minimum payment—the first such Federal welfare standard—to a family of four on welfare of \$1,500 a year and \$300 for each additional child, regardless of the state in which the family lives. This is coupled with a provision allowing a working welfare client to retain more of his earnings than he would at present.

Under the present system, welfare recipients are allowed to keep the first \$30 they earn plus one-third of the remainder, the rest of their earnings being deducted from welfare checks.

The Nixon plan is designed to reduce the welfare rolls in the long run by providing an incentive for people to work. In the short run it could add many more people to the relief rolls. Also, it is estimated that the plan will cost the Government another \$2 billion.

On a monthly basis, the standardized Federal payments come down to a little more than \$31 per person for a family of four, a blessing for states that spend little on welfare but worthless or nearly

so for high-paying states. Mississippi, for example, spends \$9.50 per person per month, \$1.50 of which comes from the state, while New York pays \$70, with at least \$35 of that amount coming from state and local sources. Since the states set their own individual welfare payments and since the Nixon plan does not compel them to match the Federal funds, states such as New York, already receiving more than the \$31 from the Government, will get no relief from welfare. Although there is no compulsory provision in the plan, the Government can threaten states who do not match Federal funds with cuts in other federally supported programs if they do not come across.

In a further move to eliminate disparities that exist in welfare payments between states, the Nixon plan was seen to incorporate a \$50-a-month-minimum payment to all adult welfare recipients, including the aged, the blind and disabled.

NUCLEAR POWER

Overselling a dream

This has been a long, hot summer for electric power. Three weeks ago a heat wave caused a power shortage along the East Coast, and this week in New York City equipment failure produced a second dim-out. Voluntary restrictions and rationing and outside purchases of electricity by power companies averted blackouts—this time.

But power planners are not certain about the future when the demand for electricity will stagger the present capacity of U.S. utility companies. It is estimated that the country will need half again as much energy annually by 1980

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as it did in 1965 and almost two-and-a-half times the 1965 level by the year 2000.

Nuclear power, the bright hope of the electric power industry to meet the increased demands, has dimmed—at least for a while. An indication of the disenchantment with nuclear power is the decrease in the number of orders for nuclear power plants. The figure rose from 7 orders in 1965 to 20 in 1966 and 31 in 1967. But it dropped to 17 in 1968 and so far in 1969, only one nuclear power plant has been ordered, with a possible second in the offing.

There are several reasons for the downturn, some of which are interrelated. For one thing, the four major companies, General Electric, Westinghouse, Babcock and Wilcox and Combustion Engineering, Inc., that design and construct the power plant reactors have found they could not live up to promised delivery dates, which in many cases will be pushed back by many months and even years. Hence, many utility companies, hungry for electric power plants, are temporarily abandoning the idea of nuclear facilities and settling for fossil-fuel plants.

One reason for the overcommitment was that reactor manufacturers didn't have enough capacity and skilled personnel on hand to construct the highly complex facilities. The situation was further aggravated by a boom in the construction industry in general that held up construction of buildings and turbines.

The ensuing competition between the nuclear power industry, which had already upped the costs of its plants, and the rest of U.S. industry invoked the law of supply and demand in the construction field. The result was higher capital costs in skilled labor and equipment. These higher costs, in some cases, erased any financial advantage from the lower operating costs of nuclear plants.

Another important reason for the downturn in orders is the wait-and-see attitude adopted by utility companies. To date, the largest nuclear power plant in terms of power output is the 562-megawatt Connecticut Yankee Facility near Hartford. But plants presently under construction call for operating capacities of over 1,000 megawatts, and the utility companies are sitting out the next dance to see what kind of performance they can expect before they rush in and buy.

Nevertheless, Angelo Giambusso, assistant director for project management of the AEC's division of reactor development and technology, is optimistic about the future of nuclear power plants. "The industry will continue to grow," he says. "This dip is temporary and will pick up in time." ◇

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