

of the Zond 5 spacecraft to unmanned planetary flights comes from the description of the spacecraft in the same article, and from the drawing that accompanies the article. For example, the spacecraft is reported to have solar power unlike that of any other lunar probes so far launched. The drawing shows large solar panels of the same general configuration as those of planetary spacecraft of the Mars 1, Zond 3, Venus 2, Venus 3, and Venus 4 type. Indeed, the overall configuration is very similar to that of Venus 4 except that Zond 5 is much larger.

The spherical compartment presumably used for manned reentry is located at one end, as was the spherical capsule of Venus 4, and the midcourse motor is at the opposite end of the cylindrical spacecraft body. Housekeeping functions are carried out in the middle section (the "orbital compartment" of the previous planetary spacecraft). In addition, Zond 5 is shown with a very large high-gain antenna mounted on one side of the middle of the cylinder, parallel with the solar panel, as is the case in all previous planetary spacecraft. Indeed, the antenna shown seems unnecessarily large for any lunar mission.

Thus, the Soviet descriptions of the Zond 5 not only state that it is a precursor to their next step in unmanned planetary exploration but supply technical details which support that view.

In conclusion, we make these points:

1) Testing of the Zond 5 system at this time suggests that the Soviets may intend to launch such a system at the coming Mars launch opportunity, in late February or early March 1969.

2) The Soviet news release of 25 September suggests that Zond 5 had a recoverable film system for procuring lunar photographs. The Luna 3, Zond 3, and Luna 12 film-readout system was not improved significantly between 1959 (Luna 3) and 1967 (Luna 12). The Soviets need a new and better photographic system. Thus, we speculate that they may be planning a flyby-and-return mission to Mars with film recovery.

3) The Soviets have previously attempted to launch both an entry-capsule spacecraft and a photographic flyby at a single planetary launch opportunity (that is, Venus 2 and Venus 3). Hence, we suggest that it is possible that they plan to launch two systems of the Zond 5 class during the coming winter, one a survivable lander system, possibly with a relay satellite, and the other a flyby-and-return mission with film recovery.

4) Finally, we point out that the Dmitriyev article specifically mentions the need for recovery in the context of studies of chemical composition and search for evidences of life. Dmitriyev's statement implies that the Zond 5 recovery technique may be a significant step in the development of an unmanned sample return system for use in lunar and planetary flights.

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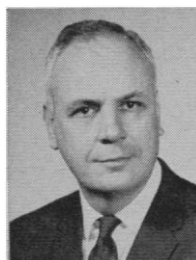
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APPOINTMENTS



F. J. Weyl



K. E. Grant

F. Joachim Weyl, special assistant to the president of the National Academy of Sciences and former chief scientist for the Office of Naval Research, to dean of sciences and mathematics at Hunter College. . . . **Kenneth E. Grant**, associate administrator of the Soil Conservation Service of the Department of Agriculture, to administrator of the service; he succeeds **Donald A. Williams** who will become program adviser on water management and development for the Ford Foundation in India. . . . **Warren S. McCulloch**, a senior staff member of the M.I.T. Research Laboratory of Electronics, to president of the American Society for Cybernetics. . . . **C. Robert Wieser**, deputy director of M.I.T. Lincoln Laboratory is taking leave of absence to become assistant director of Defense Research and Engineering in the office of the Secretary of Defense. . . . **Thomas G. Bowery**, associate director for operations of the Division of Research Facilities and Resources, National Institutes of Health, to acting director of the division; also at NIH, **Shiela C. Mitchell**, a medical officer in the epidemiology and biometrics program of the National Heart Institute, to assistant to the director of the in-

stitute. . . . **Theodore R. Fick**, an administrator in the Boston Naval Shipyard, to director of the Naval Radiological Defense Laboratory. . . . **William H. McLean**, secretary of Stevens Institute of Technology and secretary of the Board of Trustees, to dean of the college and professor of management science; also at Stevens, **Preston R. Clement**, dean of the faculty, to provost of the college. . . . **Raymond L. Bisplinghoff**, head of the department of aeronautics and astronautics at M.I.T., to dean of the M.I.T. school of engineering. . . . **Everett M. Hafner**, professor of physics at the University of Rochester, to dean of the school of natural science at Hampshire College. . . . **H. Edwin Young**, vice president of the University of Wisconsin, Madison campus, to chancellor of the university. . . . **Robert G. Lindee**, assistant dean for administration and assistant to the vice president for medical affairs at Stanford University School of Medicine, to associate dean for administration at the school. . . . **William T. Driscoll**, professor of zoology at the University of Denver, to associate dean of the university's College of Arts and Sciences. . . . **E. B. Howard**, assistant executive vice president of American Medical Association, to acting executive vice president of the association.

RECENT DEATHS

Dinsmore Alter, 80; former director of the Griffith Planetarium in Los Angeles and former chairman of the department of astronomy at the University of Kansas; 20 September.

Lawrence K. Frank, 77; former director of the Caroline Zachry Institute of Human Development; 23 September.

Francis J. Gerst, 86; former dean of the graduate school and chairman of the department of medicine at Loyola University in Chicago; 30 September.

Louis Long, 57; associate dean of students and head of the division of evaluation, research and testing at the City College, The City University of New York; 12 September.

Edward O. Norris, 67; a vice president of the Gyromat Corporation and one of the workers on the first atomic bomb; 19 September.

Robert L. Usinger, 55; professor of entomology at the University of California, San Francisco; 30 September.