

what they call the Goldstack interferometer, a combination of telescopes in Goldstone, Calif., and Tyngsboro, Mass. The work is published in the May 1 *ASTROPHYSICAL JOURNAL LETTERS*.

This observation serves to make more general the occurrence of this phenomenon of rapid change, whatever it is. It underlines astrophysical and evolutionary relationships between quasars and Seyfert galaxies and increases the difficulties of explanation.

One of the ways by which the problem of superlight velocity in the quasars was avoided was to use the suggestion that quasars are not as far away as the redshifts in their light make them appear to be. (That is, something besides expansion of the universe is contributing to their redshifts.) If the quasars were closer than supposed, their components would not need to be separating as fast.

But 3C 120 is a galaxy with a better established redshift-distance relationship. One of the important effects of finding the same rapid-change effect in it, says Kellermann, is that it tends to undermine the argument that the quasars are nearer than they seem to be.

In 3C 120 the two-component argument can fit without a violation of physical law because the apparent separation velocity of the components is about twice the speed of light. This could be accomplished if each object had nearly the speed of light and they were moving apart along a line perpendicular to the line of sight. If that is so, something else follows from the observations: The two components are expanding more rapidly than they are separating. Eventually their edges should overlap, and something violent is likely to happen. The radioastronomers are watching for it. □

Viking payload cut; One experiment added

In 1976 two Viking spacecraft are scheduled to reach Mars, each carrying an orbiter and a lander. The craft will be the first U.S. attempt to soft land on a planet. Russia's Mars 2 landed in November.

It has not yet been announced, but, due to other budgetary priorities, NASA, as expected (SN: 2/26/72, p. 134), has now trimmed the Viking payload by simplifying most of the instruments, cutting one off completely, and (because of scientific pressure) adding one.

There were four biology experiments planned—each one a different test for changes in retrieved Martian soil due to the metabolism or growth of living organisms (SN: 7/24/71, p. 64). One of the four—a light-scattering experiment—has been deleted. Its purpose was to detect optical changes in a medium of distilled water due to growth of organisms. NASA contends the experiment wasn't really needed, since the other three biology tests will see similar characteristics (an excuse NASA often gives when cutting science).

Other instruments in both the orbiters and landers were trimmed. The orbital camera was simplified by taking off the equipment for image-motion compensation and image intensification. The resolution was reduced from the planned 25 meters to 100 meters (comparable to the high resolution camera on Mariner 9). "The system on the whole is better now," says one NASA official. "By simplifying it, we have increased its reliability."

Two other instruments felt the money crunch. A gas chromatograph that was to analyze eight soil samples now will analyze only three. The humidity detector was eliminated from the meteorology instruments. Said one scientist of the cuts: "We wonder what we have been doing for the last ten years. Back to Square One." The real fear of most of the scientists working with Viking, however, is that the payload cuts have only begun. The launch date is still three years off. "Who knows what else will be cut," said one.

The one addition to Viking was an X-ray fluorescence instrument to investigate the inorganic chemical properties of the soil. Two scientists vied to get their instruments on board—Anthony L. Turkevich of the University of Chicago and Benton C. Clark of Martin Marietta (the prime contractor for Viking). Turkevich's alpha particle scattering device that flew on Surveyor moon landers lost. A NASA official says the decision "was made on the basis of cost and weight differences, flexibility and science yield." Others disagree. □

NAE: Election of engineers curtailed

The National Academy of Engineering finally announced a foreshortened list of newly elected members last week, three weeks after its annual meeting. New members, elected by mail ballot, have in the past been announced some days prior to the annual meeting. The curious delay this year, and the small number elected (11), is related to a change in election procedures that was designed to give the members more of a say in who is chosen to join the NAE. That change in procedure, in turn, although no one is saying so officially, was intended at least in part to avert past criticisms that the NAE was more intent on electing highly placed corporate and government executives than engineers who had made noteworthy technological achievements.

The primary qualifications for election to the NAE are "important contributions to engineering theory and practice . . ." or "demonstration of unusual accomplishments in the pioneering of new and developing fields of technology." But a loophole states, "Effectiveness and efficiency in leadership of organizations that have conducted pioneering or complex programs . . . should be weighed as supplementing the primary qualifications."

In an acerbic article last spring, *NATURE* excoriated the NAE for apparently giving more weight to the prestige of a nominee's administrative position than to his engineering merit. To drive home its point, the article listed merely the titles of the 29 persons elected in 1971, saying their names were not important. "It is hard to understand," said that article, how the NAE "can exhibit so little imagination as to draw its new membership almost exclusively from the top brass of the Defense Department, Ford, General Motors, General Dynamics, Lockheed and so forth."

Whatever the connection between such criticisms and the revised election procedures, it is a fact that for this year's election a limit was placed on the number of "no" votes a nominee could receive without being eliminated. This resulted in the outcome announced last week: The 11 members chosen were the smallest number of new electees since the first election in 1965. The previous six elections had brought in 29, 51, 44, 50, 93 and 27. Last year 22 of the 29 new members held high positions in government and industry; this year 7 of the 11 are from universities.

The NAE understandably is sensitive about the whole issue. NAE President Clarence H. Linder acknowledged to *SCIENCE NEWS* that 11 is probably a smaller-than-desirable number of new members. But he pointed out that with the university people chosen this year, more than 30 percent of the organization's 363 members now come from the academic world, while only about 6 percent of the entire engineering community is in academia. He also observed that a not-always-understood factor in NAE elections is that an attempt is made to select persons who will participate in the activities of the organization when asked. How this affected this year's election was not clear.