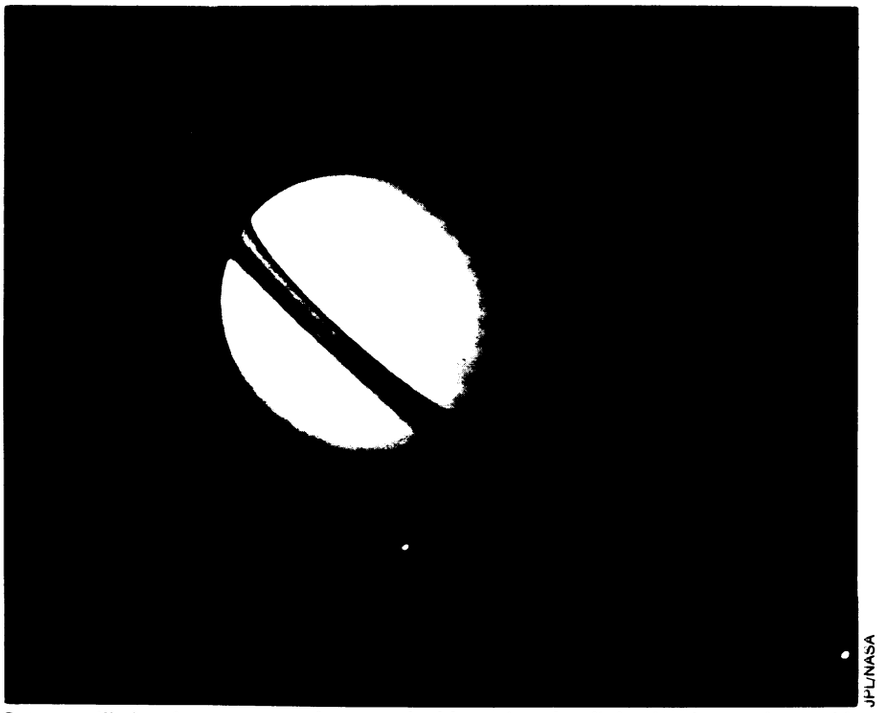
Voyager 1: Homing in on Saturn



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Saturn, still showing an atmosphere marked by stripes but little else, is seen here with three of its satellites — (l to r) Enceladus, Dione and Tethys — just beginning to appear larger than point-sized to the approaching Voyager 1 spacecraft, which took this Aug. 24 photo from 106,250,000 kilometers away. Some details of the planet's ring system are already visible, and far more will show in the weeks and days before the craft's Nov. 12 closest approach, 124,200 km from Saturn's clouds.

Prostaglandins thwart viruses

A decade ago scientists prophesied that prostaglandins—local hormone-like messengers in the mammalian body — would become the miracle drugs of the 1970s. That crystal gazing didn't pan out. However, prostaglandin drugs for three reproduction or antireproduction purposes did reach the market in the 1970s, and several others emerged during that decade as promising treatments for ulcers, arteriosclerosis and high blood pressure (SN: 9/20/75, p. 188; 8/12/78, p. 104). And now that the 1980s have arrived, yet another drug use for prostaglandins is looming large — thwarting viruses.

The first report that prostaglandins could counter viruses came in 1975 when researchers found that a prostaglandin of the E series — PGE_2 — and a prostaglandin of the F series — $PGF_2\alpha$ — inhibited the multiplication of parainfluenza virus in cells. The second report of prostaglandins' value against viruses came in 1978 when other investigators found that large doses of $PGF_2\alpha$ decreased yields of herpes-simplex virus in cells. And now a third report of prostaglandins' potency against viruses has been published in the Aug. 29 SCIENCE by M. G. Santoro and A. Benedetto of the Center of Virology in Rome, Italy, G. Carruba and E. Garaci of the University of Rome, and B. M. Jaffe of Downstate Medical Center in Brooklyn, N.Y.

Santoro and his colleagues infected monkey cells with a virus called Sendai virus, then exposed the cells to various prostaglandins. Only one series of prostaglandins—the A prostaglandins—countered replication of the virus, but their inhibition was potent. What is more, the inhibitory effect was found to depend on the dose of prostaglandin used, and the amount that prevented viral replication was not toxic to the cells that housed the virus.

Although Santoro and his co-workers are not sure how A prostaglandins inhibit Sendai virus infections, they suspect it might be via the body's known antiviral chemical, interferon, since interferon and prostaglandins are known to interact. For instance, some researchers found that if infected cells lost their ability to respond to interferon, the addition of PGA_2 or of $PGF_2\alpha$ could restore this ability.

Regardless of the means by which the A prostaglandins thwart virus infection, though, Santoro and his team believe that they might eventually prove valuable in treating viral infections. For instance, the A prostaglandins might prove helpful to early victims of multiple sclerosis, since there is evidence that Sendai virus or some other virus replicates slowly in the central nervous system to produce this increasingly debilitating disease (SN: 12/2/72, p. 362; 3/13/76, p. 166; 8/23/80, p. 118). □

R&D would gain in new Carter strategy

Inside the package of economic initiatives and policy changes proposed by President Jimmy Carter last week were a few morsels destined to fortify the research and development community. Chief among them was a proposed $600 million addition in budget authority for government-funded research above that already earmarked for fiscal years 1981 and 1982. It actually restores more money than Carter's anti-inflation austerity drive last April would have ultimately pared from the federal funding of basic research.

In particular, $225 million would be added to the budget authority for basic research in each of the next two years. That amounts to a growth of three percent over inflation in basic-research spending. But decisions on how and where that money would be allocated will not be made until administration officials meet with a panel of the nation's leading scientists and engineers to iron out budget priorities.

In addition, at least $50 million in proposed budget authority would be added in each of the coming two years toward renovating research facilities and upgrading equipment. Frank Press, the President's science advisor, said that while most government-funded basic research is performed at universities, the facilities and equipment available at those institutions is, on the average, twice as old as their counterparts in industry.

A number of other initiatives are targeted at aiding the small-business community out of which so many high-technology developments are born. Included among them are:

- a simpler, more liberal form of business tax depreciation treatment, which would increase by 40 percent the allowable rate of depreciation;
- a partially refundable tax credit for businesses not earning a profit — especially those in depressed industries (autos, steel) or new firms just starting out;
- creation of an industrial development authority to invest public and private resources — including capital — in areas most affected by economic dislocations or industrial bottlenecks;
- measures designed to allow more rapid amortization of business start-up costs and easier access to capital; and
- an expansion in the National Science Foundation program, which provides seed money for research on concepts not yet ready to compete for venture capital. □