A shortfall at Superfund

After five years, all that's left in Superfund, the $1.6-billion fund established for cleaning up hazardous waste sites and for handling emergencies like chemical spills, is $125 million. One day after the current Superfund law expired at the end of September, the House approved an emergency 45-day extension of the program to make sure that cleanups don't halt while Congess completes work on new legislation. This could take at least a month.

So far, the Senate has approved a $7.5-billion, five-year extension of the program. But various versions of Superfund legislation are bogged down in a maze of House committees, which can't decide how much money is needed, who to tax, how quickly cleanups should be done and whether victims deserve compensation (SN: 3/2/85, p. 133). □

Picturing polio

Olson & Connolly/Scripps Clinic & Research Fndtn.

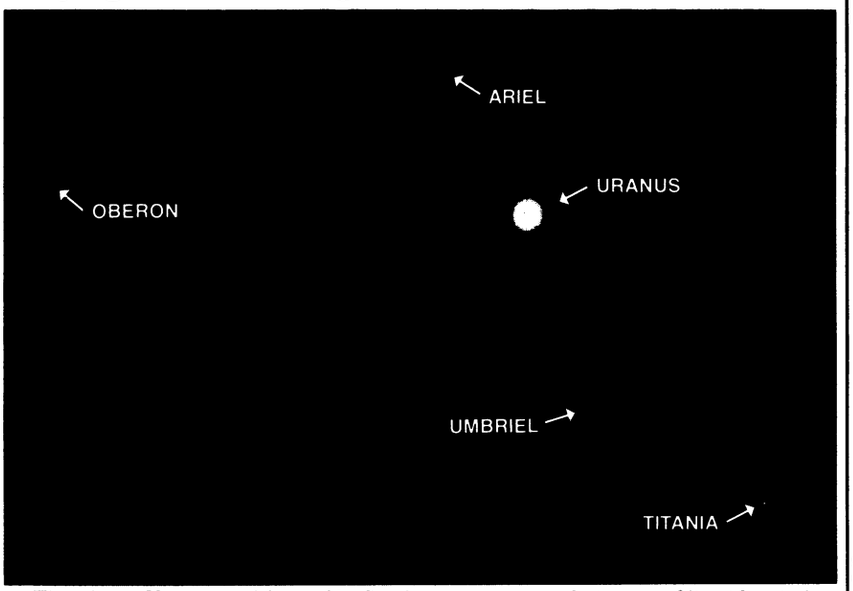
Animal viruses are being caught by paparazzi scientists. First it was a cold virus (SN: 9/21/85, p. 181), now it's a poliovirus.

The work, published in the Sept. 27 SCIENCE, was done by James M. Hogel and David J. Filman at the Scripps Clinic in La Jolla, Calif., and Marie Chow at the Massachusetts Institute of Technology.

The structure is similar to the cold virus — both are icosahedrons, with 60 copies each of four proteins. The image (above) was generated from over one million pieces of X-ray crystallography data.

While the work won't immediately lead to the development of an improved vaccine, it does enable scientists to relate form to function. The Scripps scientists have already analyzed mutated polio strains resistant to monoclonal antibodies. They related DNA sequence changes (determined by other research groups) to protein changes. The changes turn out to be on the virus surface, suggesting very strongly, says Hogle, "that the site of the mutation represents the antibody binding site."

Voyager 2 homing in on Uranus



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The planet Uranus and four of its five known moons —but none of its at least nine rings —are shown in this photo taken from a distance of 247 million kilometers by the Voyager 2 spacecraft, which will fly past Uranus on Jan. 24. Voyager's visit will be the first by a spacecraft to a major planet that is almost invisible to observers on earth without the aid of a telescope. The discovery of Uranus in 1781 virtually doubled the size of the known solar system.

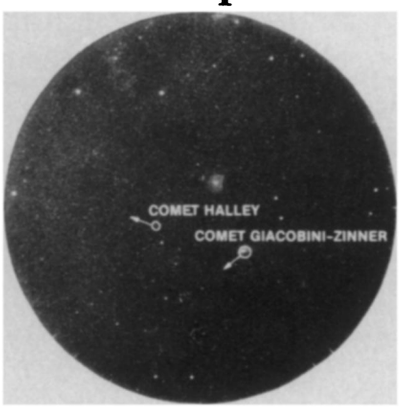
The planet's rings, too narrow and dark to be visible so far to Voyager's cameras, were not detected from earth until 1977 (SN: 3/19/77, p. 180), and even then it was not because they showed up in any photograph taken through a large telescope. Their presence was inferred only because they blocked the light of a star near whose position in the sky (as seen from earth) Uranus was passing at the time. When they do become visible to Voyager, they should appear like rings on a target, because Uranus is tilted nearly pole-on to earth.

Also missing from the Voyager 2 image is the planet's smallest known satellite, Miranda. At the time of the photo (July 15), the narrow-angle camera that took it could resolve features no smaller than about 4,570 km across. The image is actually a composite of two —one of Uranus itself and another, enhanced 10-fold in brightness, to bring out the faint satellites.

Comets Halley, G-Z seen in same photo

Comet Giacobini-Zinner (G-Z), which on Sept. 11 became the first comet ever visited by a spacecraft (SN: 9/21/85, p. 180), and Comet Halley, to be visited next March by an international five-spacecraft fleet, appear together in this photograph taken Sept. 14 from southern California's Palomar Observatory.

The photo was taken by Jet Propulsion Laboratory scientist Eleanor Helin, using Palomar's 46-centimeter Schmidt telescope. The two comets appear less than 2 degrees apart in the sky as seen from earth, about four times the diameter of the moon. G-Z, however, was only about 71.8 million kilometers away at the time of the photo and receding with each passing day, while Halley was about 384.4 million km away and coming closer. Seen north of the constellation Orion, G-Z appears as a fuzzy streak with a brightness of about magnitude 8, while Halley,



JPL

larger but more distant, is at a much fainter magnitude 12. An arrow indicates each comet's direction of movement.

Also visible in the photo, just above the "a" in the word Halley, is a nebula designated NGC 2174.