

among adoptees in Denmark (SN: 10/7/78, p. 244). The Iowa team followed 92 adoptees through young adulthood; the two groups were matched for age, sex, time spent in foster care and age of biologic mother at the child's birth.

Cadoret became especially convinced of a genetic component specific to alcoholism when he observed that a history of antisocial behavior on the part of the biological parents was a statistical predictor of a child's antisocial behavior, but not of a youngster's alcoholism tendencies; an alcoholic parent predicted an alcoholic

offspring but not necessarily an antisocial one.

The only possibly influential environmental factor, according to Cadoret, might relate to the finding that children who were antisocial as young adolescents often developed alcoholism as young adults — however, this may also suggest similar biological mechanisms involved in alcoholism and antisocial behavior, he says. "Many of these adoptees were well on their way to becoming alcoholics by the time they graduated high school," he says. □

More clues to rheumatoid culprits

The cause or causes of rheumatoid arthritis, like those of most chronic diseases, have not been firmly pinned down. Yet the culprits underlying this devastating form of arthritis did appear to come a bit more into focus last week at the annual meeting of the Arthritis Foundation in Atlanta. For the first time, genetic markers for rheumatoid arthritis were linked with a particular chromosome, and a herpesvirus was indicted as a possible trigger for the disease.

Peter Stastny of the University of Texas Health Science Center in Dallas and his colleagues reported that they had studied 12 families with at least two rheumatoid victims in each family. (One family had six victims and another five.) Most of the rheumatoid patients in these families were found to possess a cluster of human lym-

phocyte antigens (HLA) already associated with rheumatoid — those coded by genes of the so-called D location in genetic material — and believed to reflect a genetic susceptibility to rheumatoid. Stastny and his team then found that the genes coding for these antigens are all located on chromosome number six.

Michael A. Catalano of Scripps Clinic and Research Foundation in La Jolla, Calif. and co-workers reported that they had found antibodies to Epstein-Barr virus in the blood of two-thirds of rheumatoid patients studied. (EB virus is a herpesvirus, the cause of mononucleosis and strongly indicted as a cause of two human cancers.) Before EB virus can be blamed for sparking rheumatoid, though, it must be found in the diseased joints of rheumatoid patients. □

Interferon studies disappointing so far

Interferon's potential as a cancer cure may be proved eventually, but results so far have been less than fantastic. On the positive side, Hans Strander and colleagues of the Karolinska Hospital in Stockholm report that six of twelve patients with osteogenic sarcomas who were treated with interferon are now free of detectable cancer. Less optimistic results come from U.S. clinical trials.

At a meeting of the American Association for Cancer Research in San Diego last week, E.F. Osserman of Columbia University College of Physicians and Surgeons reported on preliminary results from a clinical trial that he and his colleagues set up under the auspices of the American Cancer Society (SN: 10/28/78, p. 295). Fourteen patients with multiple myeloma who had never before been treated for their cancer or who were in relapse after drug therapy received interferon daily for six months (unless their cancer was clearly progressing). To date, only four of the 14 have experienced substantial regression of their cancers. With drug therapy, Osserman says, cancer regression would have been expected in 11 out of 14 patients.

Also at the AACR meeting, tentative results of the ACS interferon trial against

breast cancer were presented. Patient eligibility was limited to women with objectively measurable breast cancers who had not received prior therapy. To date, 16 breast cancer patients have been treated with interferon from 42 to 84 days, and only five have responded.

Still a third batch of preliminary results was presented at the AACR meeting by Susan Krown of the Memorial Sloan-Kettering Cancer Center in New York City. Krown and her colleagues gave interferon to 16 lung cancer patients for 30 days. All but two had been treated previously with drug therapy. So far only 15 of the 16 patients have proved evaluable, and of the 15, eight have not changed, and seven have actually grown worse.

Nonetheless, the researchers participating in the interferon trials are encouraged that interferon has shown at least *some* anticancer activity. And as Frank J. Rauscher Jr., vice president for research at the ACS, points out, "The activity we have found warrants further testing and more precise, longer-term studies to find out how permanent are interferon's effects, exactly how it works, what are its side effects and what the optimum dosage should be." □

Venus: Know your neighbor

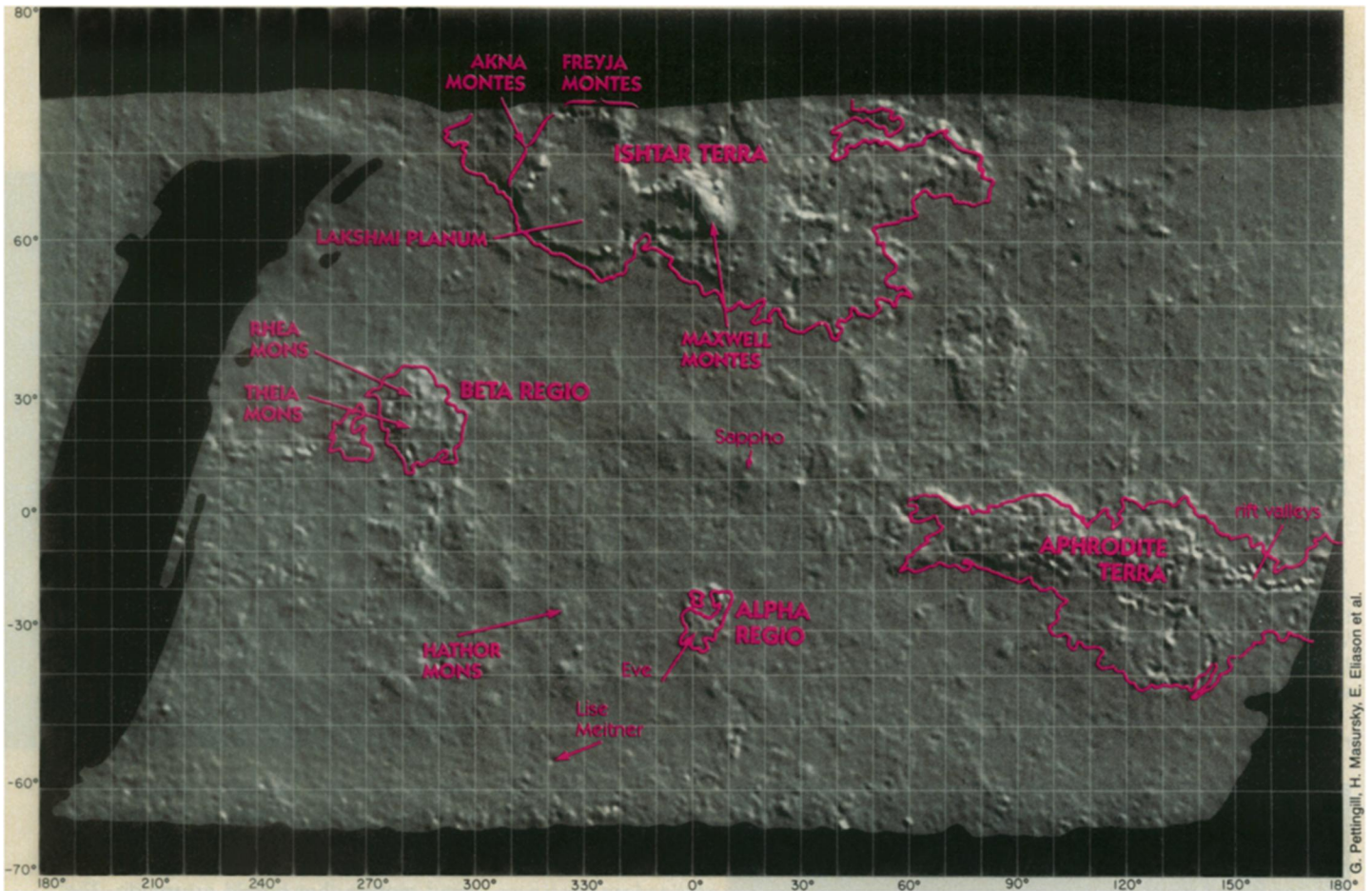
There is more to Mars than Olympus Mons, spectacular as the gigantic volcano may be. Caloris basin is but a paragraph in the story of Mercury, and Mare Orientale is far less than all-revealing about earth's moon. As spacecraft photos of these worlds have shown, getting a sense of a whole planet in all its diversity requires a global view. And in the case of haze-shrouded Venus, such a view has been a long time coming. Earth-based radar has revealed small portions of the surface, but it is the radar aboard the Pioneer Venus orbiter that has finally given earthlings a planetwide portrait of their homeworld's nearest thing to a twin.

About 83 percent of Venus has now been mapped by the device, and data on another 10 percent are now being processed, which will leave only the polar regions uncharted. And in the global view, Venus is very much its own world.

Unlike the earth with its segmented crustal plates, Venus appears to be a "one-plate planet," with no sign either of equivalents to earth's mid-ocean ridges, where new crust is born, or of the subduction zones where old material from one plate is carried down beneath the edge of another. The reason, according to UCLA's William M. Kaula, may well be that loss (or lack) of water in the early Venus led to higher temperatures and thence to a more efficient settling-out of heavy, basaltic rock into the lower crust. This left a thick layer of lightweight, granitic rock at the top, which in effect "choked off" plate tectonics. Another way to put it is that about 84 percent of Venus may be wrapped in a single, planet-girdling continent, leaving only a small amount of low-level terrain equivalent to the ocean basins that cover five-sixths of the earth.

Atop this "super-continent," however, are a pair of huge highland regions, easily worthy by terrestrial standards of being considered continents in their own right. In the northern hemisphere is Ishtar Terra, as big as the contiguous United States, whose western portion is a vast plain known as Lakshmi Planum, the size of earth's Tibetan plateau and rising some 3,300 meters above "sea level." Running southwest-northeast across western Lakshmi is a mountain range, Akna Montes, joined at its northern end by an eastbound chain called Freya Montes. Some of the great peaks reach as much as another 3,300 meters above the plain, yet they are dwarfed by a huge massif in eastern Ishtar, Maxwell Montes. Towering as much as 11,800 meters above "sea level," it is nearly two kilometers taller than Mt. Everest, and the radar data show the feature to have perhaps the roughest terrain on the planet, a sign that it could be volcanic.

Aphrodite Terra, the other major high-



G. Pettingill, H. Masursky, E. Eliason et al.

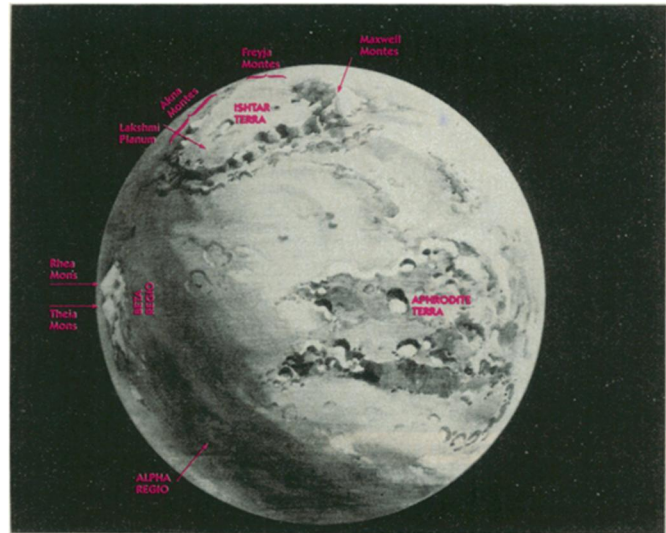
land region, is even larger than Ishtar. Situated on the equator, it extends for some 9,600 kilometers, enough to span the wide, northern portion of Africa. Mountains rise 8,000 meters above the surrounding terrain in the west, 3,300 in the east, again with rough, suspiciously volcanic-looking terrain. Details such as an apparent lack of uplifted plateaus suggest, says the U.S. Geological Survey's Harold Masursky, that Aphrodite may be more degraded, and hence older, than Ishtar.

Off Aphrodite's eastern end is a group of great canyons, apparently rift valleys, extending for as much as 5,000 kilometers. One of them reaches a depth of 2,900 meters below the planet's mean radius (6,051.4 km) making it deeper than the Dead Sea rift though only about one-fifth as deep as the Marianas trench in the Pacific. The great Venus rift also has walls that stretch about as far above the surrounding terrain as its floor extends below, making it as deep as the great Valles Marineris canyon complex on Mars. Similar but less pronounced features lie east of Ishtar. It is possible, Masursky allows, that Ishtar and Aphrodite may be remnants of limited tectonic crust collisions that took place before the process was choked off, but they could also have resulted from local uplift episodes like those that created California's Sierra Nevada range.

One feature that has suggested large-scale volcanism even from earth-based radar data is Beta Regio, which resembles a connected pair of huge shield volcanoes,

Shaded-relief image, computer-derived from Pioneer Venus radar data, is the first global view of the surface of Venus (above).

Major highland regions are outlined in constant-elevation contour lines 0.6 km above planet's mean radius. Painting at right shows approximate relative positions and sizes of indicated features without the distortions of the radar map's Mercator projection.



NASA

christened Rhea Mons (which may be bigger than New Mexico or Olympus Mons on Mars) and Theia Mons, which each reach about 4,000 meters above their surroundings. From its roughness, Beta appears to be younger than either of the major highlands, and Masursky believes that it may be situated on a vast fault that runs from about 40°N to 50°S—fully a fourth of the way around the planet. Far to the southeast lies Alpha Regio, an 1,800-meter-high, rough region suggested by radar imaging to be covered with parallel fractures and possibly to have been active over an extended period of time.

Except for the widely scattered highlands and the small bit considered to be

below "sea level," Venus appears from the radar data to be a rolling plain, varying only about 1,000 meters between its highest and lowest points. Scattered over the plain are large, shallow, circular features with radar-bright centers that may be central peaks, implying the features to be meteorite impact craters. If so, the ubiquity of the craters suggests that much of the planet's ancient surface may still be exposed despite the signs of apparent massive volcanism in some areas.

This global view is only the first. Vital questions, such as a clear distinction between volcanic and impact features, depend on improved radar data. But long-hidden Venus is now less secretive. □