of what can be accomplished by a steady and consistent commitment to important scientific goals." The "steady and consistent" part, many U.S. space scientists feel, has been a sorely lacking aspect of the U.S. planetary program, whose progress is sometimes perceived as a succession of individual battles for separate funding needs. Calling attention to the declining role of the U.S. in planetary research, he said, "I know that we all look forward to the advances in human knowledge that soon will be appearing in Soviet scientific journals...." The Venera accomplishment, he said, suggesting a strong reference to concerns about the potential losses if the U.S. loses its position of space leadership, "has surely aroused the admiration of people all over the world." His words were spoken to Barsukov and Surkov. His message was for Washington.

Other planetologists feel, however, that individual contacts rather than formal agreements still provide the bulk of their scientific exchange, and such one-to-one links are likely to continue. "I could not see a situation," says the State Department source, "where the U.S. government would try to restrict personal contacts."

—J. Eberhart

Rad damage of polymers

At the bottom of a water-filled, stainless-steel-lined pit, various construction materials used in nuclear power plant buildings recently were exposed to a cobalt-60 radiation source. The experiments — conducted by Ken Gillen and Roger Clough of Sandia National Laboratories in Albuquerque, N.M.—indicate that long-term, low-level doses of gamma radiation degrade the materials faster than do equal doses doled out at a higher rate over a shorter period of time.

The findings have implications for determining the lifetime of certain polymers used in nuclear reactor structures. Traditionally, age testing of these materials has emphasized total radiation dose—not dose rate. A typical age test, for example, involves exposing polymers to 40 Megarads—a radiation dose about equal to that expected during a plant's 40-year design life—over a period of several days.

The Sandia tests, on the other hand, involved administering lower doses over a longer period of time to more closely simulate the nuclear power plant environment. In one test, polyvinylchloride — which is used for cable jacketing — was shown to degrade three to four times faster at the lower-level, longer-term dose rate. Similar results were observed using polyethylene, a cable insulation material.

The Sandia tests show that polymer damage, mostly embrittlement, occurs when radiation exposure causes chemical bonds to break, which in turn leads to oxidation — the combination of a substance with oxygen. □

Hypothalamic hormones and cancer

The hypothalamus was found during the late 1960s and early 1970s to be the brain and body's executive hormonal switchboard; Roger C.L. Guillemin of the Salk Institute in LaJolla, Calif., and Andrew V. Schally of the Veterans Administration Hospital in New Orleans shared a Nobel Prize for the discovery (SN: 10/22/77, p. 260). Since then the isolation, sequencing and synthesis of hypothalamic hormones and the design of analogues of, and antagonists to, them has opened a radically new approach to birth control, with one analogue ultimately reaching clinical trials (SN: 5/24/80, p. 331). And now hypothalamic hormone analogues look as if they can counter some hormone-sensitive cancers — notably hormone-sensitive prostate cancer — Schally and his colleagues report in the March Proceedings of the National Academy of Sciences.

Luteinizing hormone-releasing hormone (LHRH) is a hypothalamic hormone that controls sex hormones in both men and women (SN: 8/12/72, p. 108). Superactive LHRH analogues (compounds similar in structure to LHRH) increase levels of the male hormone testosterone, stimulate the testes, stimulate libido and influence other sex-hormone related functions. Paradoxically, however, large doses of these analogues do just the opposite. So Schally and his co-workers tried to learn whether such doses might make testosterone-dependent prostate cancer regress in animals. They found that it does.

Then they attempted to see whether such doses can do the same for testosterone-dependent prostate cancer in humans, which constitutes about a half of all cases of human prostate cancer. Over periods of six weeks to a year they gave large doses of superactive LHRH analogues to six patients with localized prostate cancer and to four patients whose prostate cancer had already metastasized. The patients agreed to this experimental treatment since estrogen, a treatment for local prostate cancer that cannot be surgically treated and for metastasized prostate cancer, had not helped one of them and was contraindicated for the rest of them because of their medical histories. (Castration is another treatment for metastasized prostate cancer.)

The treatments brought about tumor regression and clinical improvement — such as better urinary flow and a decrease in bone pain due to cancer metastasis—in nine out of 10 patients. (The tenth patient's cancer was found to be hormone-insensitive.) Schally and his colleagues conclude, "...Long-term administration of LHRH analogues could become an alternative to surgical castration and estrogen therapy for the treatment of hormone-dependent prostate carcinoma."

However, the analogues were not without some undesirable side effects of their own, notably a decrease in libido and erectile potency. And as Avery Sanberg, a prostate cancer scientist at Roswell Park Memorial Institute in Buffalo, told Science News, what Schally and his group are doing, essentially, "is changing the hormonal milieu. But it remains to be seen whether that effect is any better than what therapy in the past has given.... Nobody has ever cured prostate cancer with hormonal therapy." William Scott of the Johns Hopkins Medical Institutions agrees: "I think we have gone about as far as one can go with hormonal therapy. I think any other hormonal manipulation is just a variation on the theme." *—J.A. Treichel*

Measles eradication as world-wide goal

Although still regarded in some countries as just part of growing up, measles infections take a heavy world toll. Each year 1.5 million children die of the disease and its complications, which include pneumonia and brain inflammation. The incidence of complications and death is highest in developing countries where there is malnutrition and high risk of concurrent infections.

At a meeting in Washington, physicians from 21 countries concluded that worldwide eradication of measles is possible, probably within 20 years. An effective vaccine is available, but major challenges are expected in financing immunization programs in developing countries and in motivating some of the developed countries, such as France and the United Kingdom, to participate.

The United States is cited as the best example of a measles eradication program. Currently, more than 96 percent of children entering school have proof of immunity. The annual incidence of measles here has dropped from 336.3 cases per 100,000 population in the 1950s (before the vaccine came into use in 1963) to 1.3 cases per 100,000 population in 1981. So far in 1982, a record low of only 130 cases has been reported, says Alan R. Hinman of the U.S. Centers for Disease Control. He and colleagues predict in the March 19 Journal of the American Medical Association that by October 1982 indigenous measles will have been eliminated in the United States, although approximately 500 cases per year will occur due to importation of measles with occasional, limited transmission. Other countries making progress toward extensive immunization of children include Canada, China, Czechoslovakia, Costa Rica, Cuba and Chile. □