cation of the already inferred presence of argon. Argon has been estimated to comprise up to 35 percent of the air of Mars, but the polar temperatures measured by Viking would indicate that the inert component comprises as much as 80 percent of the *local* atmosphere, Kieffer says, causing a substantial depletion over the rest of the planet. The huge quantity of the inert component, he says, comes from the fact that about a third of the atmosphere takes part in the freezing out that forms the winter polar cap. The total pressure drop (including CO_2) over the planet should be only a small amount, he points out, since the cap in the opposite hemisphere is melting at roughly the same time, but more slowly. □

Insulin: Before and beyond

Scientists have known that the hormone insulin is made from a larger protein—proinsulin. Now it appears that proinsulin itself is derived from a still larger protein. This discovery should help in the eventual isolation and characterization of the gene or genes that makes these proteins and ultimately insulin, opening new approaches to the treatment of diabetics or to the mass production of insulin for such treatment.

Only recently has it become possible to isolate large amounts of the islets of Langerhans, the tissue of the pancreas that makes insulin. Such isolation, in turn, permits the preparation of small amounts of messenger RNA's, the molecules that translate gene messages into proteins. These mRNA's can then be placed in the test tube and primed into making proteins. What are the proteins made by these mRNA's? Shu Jin Chan, Pamela Keim and Donald F. Steiner, biochemists at the University of Chicago, attempted to find out, using isolated islets from rats.

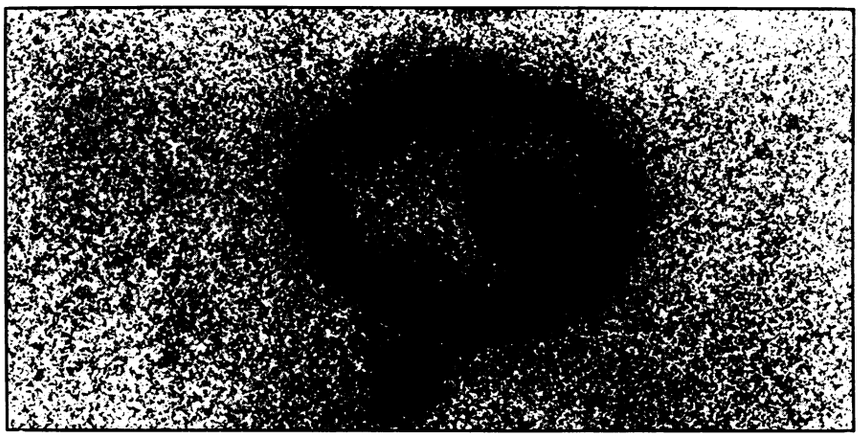
As they report in the June PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, the initial protein made by these mRNA's is not proinsulin, but a still larger protein. It has a molecular weight of 11,500 daltons—about 2,500 daltons larger than proinsulin. They call the larger protein "preproinsulin."

The positive identification of the mRNA's which make preproinsulin, proinsulin and eventually insulin, the investigators believe, should facilitate the isolation and characterization of the genetic material involved in their production. The gene or genes could then be synthesized, opening new doors to the treatment of diabetics or to the mass production of insulin.

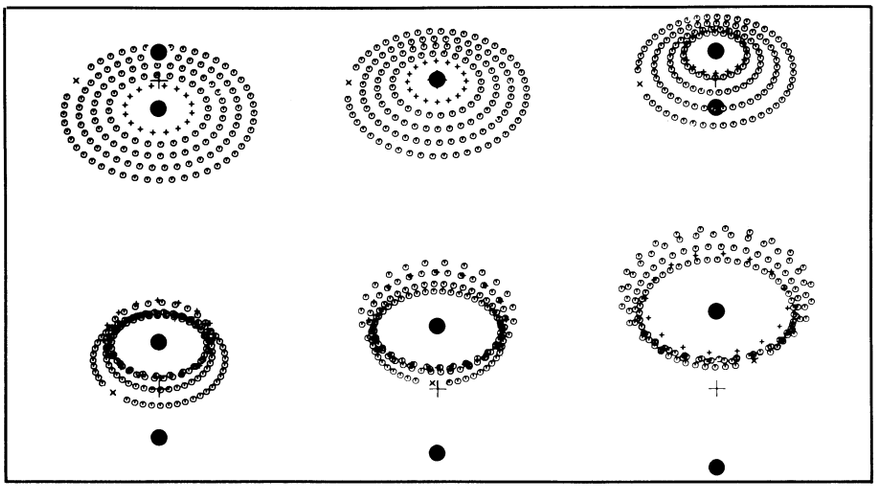
For instance, Walter Fiers of the University of Ghent, one of the first researchers to unravel the chemical composition of a real gene that dictates the production of a protein (SN: 1/6/73, p. 12), suggests that the synthetic gene or genes might be incorporated into the islets of Langerhans of diabetics to make the insulin they lack. Whether the gene or genes would make the desirable preproinsulin, proinsulin and insulin they need is not known. But it is now possible to get a synthetic DNA sequence to make proteins in a living cell, thanks to the new techniques of recombinant DNA engineering (SN: 6/19/76, p. 389).

Recombinant DNA engineering may also eventually allow the rapid mass production of preproinsulin, proinsulin and insulin in bacteria. Such products could then be used to treat diabetics. Such rapid, large-scale production "could be important because we just barely have enough insulin available for our needs today," attests James M. Moss, a diabetes authority at Georgetown Medical School. Livestock sources of insulin used for treatment are decreasing, whereas the number of diabetics is increasing. □

A ring galaxy and how to make it



Among the notables in Halton C. Arp's (Hale Observatories) collection of "peculiar galaxies" is this photograph of a ring galaxy never before published. In a keynote address at the recent American Astronomical Society meeting, Alar Toomre of MIT discussed this and other cosmic oddities. His theoretical work deals with them in terms of "interacting galaxies." His hypothesis for the ring galaxy describes it as the remains of a "collision" in which a massive body (large dot) passes through the disk of another galaxy. The theoretical sequence of events is pictured below where even the displacement of the remnant galactic nucleus is predicted.



Milwaukee project: Nine-year follow-up

The IQs of seemingly retarded children reared in the worst city slums can be increased by an average of 33 points. This surprising finding was made in 1971 by Rick Heber and his colleagues from the University of Wisconsin (SN: 7/10/71, p. 24). Forty children had been selected. Twenty received intensive educational intervention and made impressive gains when compared with control children who had not received special education. But these children were less than four years old at the time, and the question was: Will these gains hold up—especially after the children enter school? The answer is: Yes.

Heber has followed the progress of the children who took part in what is now known as the Milwaukee Project. At nine