

Thorner, however, is not discouraged by the prospect of patients taking bromocriptine or related drugs indefinitely. The drug may mimic a normal prolactin-inhibiting factor that is deficient in the patients, he says. On the other hand, because surgery is more successful on small pituitary tumors than on large ones, he suggests that effective surgical intervention may be

possible after a period of drug therapy. Currently, there is a "very hot" controversy as to whether such tumors should be treated medically or surgically.

If the drug treatment proves successful in treating the pituitary tumors, it could set an important example. "Maybe we can use normal physiological controls to treat other tumors," Thorner says. □

## The thyroid gland and world health

Thyroid gland problems are moving from the scientific to the more political public health arena. Methods for the inexpensive prevention of thyroid-related diseases are well established, and new research increases estimates of the damage done by these diseases, which are based on insufficient amounts of iodine-containing thyroid hormone. Even so, iodine deficiencies are still common in many parts of the world, and newborn screening programs for thyroid function are limited even in the United States.

The impact of thyroid hormone on human health is most obvious in goiter and cretinism. In New York at a seminar of the Endocrine Society Sidney H. Ingbar of Beth Israel Hospital in Boston said that goiter afflicts more than 200 million persons, mostly in underdeveloped areas of the world in which the soil and water have insufficient iodine levels and the diet is not supplemented with iodine. The "grotesque and debilitating" enlargement of the thyroid gland in goiter often allows the gland to provide normal levels of hormone, but it can obstruct breathing, swallowing and blood circulation.

The most dramatic result of iodine deficiency is the mental retardation, neurological defects and dwarfism that may follow deficiency in the few months just before and just after birth. In some areas 4 to 7 percent of the population suffers from this cretinism, which can be prevented by providing iodine to pregnant women, Ingbar says.

Recent work in Zaire demonstrates that a more subtle effect permeates a much larger fraction of the newborns. Children of women injected with a three-year supplement of iodine in oil had higher birthweights, lower infant mortality and enhanced psychomotor development compared with a control group. "This indicates that there is in the population as a whole at least subclinical hypothyroidism in newborns," Ingbar says.

Another area in which social policy has not taken full advantage of scientific development is in detecting congenital thyroid gland deficiencies. If untreated, this condition leads to "sporadic cretinism," characterized by severe retardation of growth, maturation and intellectual development. The disease is difficult to diagnose clinically in a newborn, but can be detected with a biochemical test. So far, screening programs have tested 3.5 mil-



Goiter: Five percent of world population.

lion newborns and found a prevalence of one case of the disease per 4,000 births. This is much higher than physicians expected and, Ingbar points out, higher than that of other disorders for which laws require neonatal screening.

Ingbar urges a national screening program (about 10 states require that test now) because the disease's damage can be prevented if lifelong treatment with thyroid hormone is begun within the first weeks after birth. Ingbar calculates that more than 600 infants are born with thyroid deficiencies each year in the United States, and the cost of institutional care for each over a 50-year life span is \$400,000.

Another aspect of hormone control is the conversion of thyroid hormone to its most active form. This biochemical step, which occurs in such tissues as muscle, heart and liver, removes one iodine atom from the four-iodine form of the hormone. Ingbar reports that when a person is ill the amount of the active form falls, and when the patient recovers the level rises again. A low level of the active form is seen during caloric deprivation, acute and chronic illness, surgical trauma, a variety of drugs, old age and fetal and early neonatal life. "It's what you'd expect in starvation conditions, it cranks down metabolism," Ingbar says. "We don't know if it is adaptive or maladaptive in illness." If maladaptive, it could be countered with thyroid hormone given therapeutically. Ingbar concludes that in any case the phenomenon "is widespread and universal, and it demands immediate attention." □

## Turtle cartography

James Sternberg spent months talking turtle with herpetologists around the world. Now, the Center for Environmental Education has published the fruits of his effort — the most exhaustive mapping of sea turtle nesting beaches ever compiled. (Also see p. 217.)

Sternberg and colleagues of CEE's Sea Turtle Rescue Fund began compiling the maps following a recommendation made in Washington at the 1979 World Conference on Sea Turtles (SN: 12/1/79, p. 372). The finished product was presented in New Delhi, India, at the recent Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The maps — *The Worldwide Distribution of Sea Turtle Nesting Beaches* — indicate major and minor nesting sites of green sea, loggerhead, hawksbill sea, olive ridley sea, leatherback sea, kemp's ridley and flatback sea turtles. All species except the flatback are either threatened (likely to become endangered) or endangered (in danger of extinction) in their various habitats, according to the U.S. Endangered Species Act. Says turtle authority Peter C.H. Pritchard of the Florida Audubon Society in Maitland, "The maps will define the context for the many types of sea turtle conservation programs that must be continued and augmented if these creatures are to survive." □

## Artificial heart delayed

A request by University of Utah School of Medicine researchers to the Food and Drug Administration for permission to implant an artificial heart in a patient (SN: 3/7/81, p. 157) has been turned down until the investigators provide more data. Specifically, they have to give better assurance that the heart will be used only in a subject with irreversible heart damage and that the patient receiving the heart would be made fully aware of the risks involved before signing a consent form. They must also provide more information about how the artificial heart would work in the human body and its impact on other bodily functions. The FDA reached its decision after consulting with scientists both inside and outside the government.

Nonetheless, Utah medical school scientists are optimistic that they can quickly provide the data that the FDA wants. A Utah medical school representative told SCIENCE NEWS it should take the school's scientists four to eight weeks to gather the data together and another month or so for the FDA to examine and respond to them. There should be no more than a three-month delay before the FDA grants the approval the investigators seek.

But even if the FDA does give an okay then, it will take the researchers time to find a suitable heart recipient. □