PHYSIOLOGY

"Lost" Hormone Found

Lasker Award winner gives evidence that the growth hormone performs an important second function of milk secretion formerly attributed to the so-called lactogenic hormone.

➤ THE "LOST" HORMONE that stimulates milk secretion in the human mammary gland has apparently been located.

The so-called lactogenic hormone in humans really is not a separate hormone at all. Evidence from two University of California scientists shows that instead, milk-stimulating activity in man, and in monkeys as well, is supplied by the growth hormone.

Dr. C. H. Li, director of the University of California Hormone Research Laboratory, Berkeley, in accepting the 1962 Albert Lasker Award for Basic Medical Research in New York, told of the growth hormone's important second function.

The award honors Dr. Li's work in isolating and identifying six of the hormones of the anterior pituitary gland, including ACTH (used in the treatment of arthritis) and the human growth hormone.

Scientists have known for some time that the milk-stimulating force in four-footed mammals (cow, dog, sheep, etc.) is supplied by a special hormone, known as the lactogenic hormone or "prolactin." But attempts to isolate a similar hormone in man or in monkeys ended in failure.

Dr. Li's experiments showed several similar effects produced by the human growth hormone and a lactogenic hormone obtained from sheep. Both substances were found to promote the growth of crop sacs in pigeons.

Proceeding from this evidence, Dr. Li and Dr. William R. Lyons, professor of anatomy at the University of California School of Medicine in San Francisco, injected a single dose of human growth hormone into a non-lactating mammary gland of a mature female monkey.

The result was a rapid development of the mammary gland followed by milk secretion, very similar to the effects resulting from pregnancy or from injections of the sheep lactogenic hormone.

Attempts to compare the molecular structures of the lactogenic and growth hormones have not yet shown any similarities. However, only small portions of the hormone structures are understood at the present time.

The complete molecule of the human growth hormone, a highly specialized protein substance, contains 256 amino acids arranged in a single chain.

Work is proceeding on the difficult task of identifying this complex sequence. The molecular structure must be understood before attempts can be made to synthesize the hormone.

Until the growth hormone can be synthesized, the only available source is the human pituitary gland, the tiny organ at the base of the brain. The gland can be obtained by pathologists at autopsy, but some 1,000 glands are required to produce each gram of the hormone.

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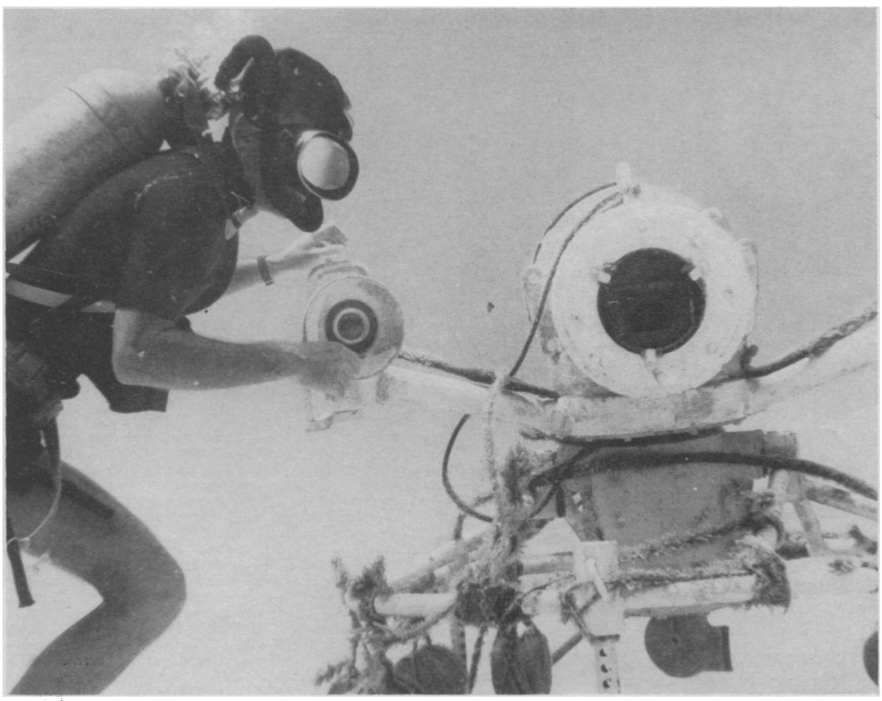

K. Simpson

UNDERWATER RESEARCH—A SCUBA diver is checking a camera after 30 days submergence in the world's first underwater audio-visual research facility established at the Lerner Marine Laboratory in the British West Indies. The camera case window has a poison-impregnated porous mask that retards fouling of the window.

RADIOLOGY

Control Growth Disease With Atom-Smasher

➤ ACROMEGALY, the disease that in extreme forms produces giants, can possibly be controlled soon by the high-energy atom-smashing beam of the University of California's 184-inch cyclotron in Berkeley.

Dr. John H. Lawrence, director of the Donner Laboratory, told SCIENCE SERVICE that he has not treated any forms of real gigantism and that much follow-up will be necessary, but that results seen in treating 20 patients in the past five years are promising.

"We will treat 100 patients with acromegaly in the next couple of years," he said. "The headaches and appearance of these persons have shown improvement as the pituitary tumors have been inhibited."

Acromegaly is a condition resulting from the overactivity and overgrowth of certain cells in the pituitary gland. If such conditions begin early in life, gigantism results. At least half of the recorded giants are acromegalic.

Typical changes of the acromegalic patient who is not a giant include enlargement of the hands, feet, face, head and some internal organs. The chin enlarges and protrudes, the ridge bones of the eyes become thick and heavy and blindness in the outer halves of both fields of vision may result. There is no cure and 48 per cent of the persons so afflicted die before the age of 50; 79 per cent before 60.

The beginnings of the use of the atom in biology and medicine are being celebrated at the Donner Laboratory, with Dr. Charles B. Huggins of the University of Chicago as principal speaker.

Atomic techniques are now used in laboratories, medical centers and hospitals around the world. The Donner Laboratory was opened in 1942.

For some years the Berkeley cyclotron, invented and developed by the late Nobelist, Ernest O. Lawrence, brother of John, was the only source of significant quantities of radioisotopes.

In 1935, Dr. John Lawrence performed with the cyclotron the first biological experiments with neutrons. Finding them to be five times more destructive of tissue than X-rays, he and others explored their use in cancer treatment—work that led him to develop the "atomic knife" technique for irradiating the pituitary gland in some endocrine-associated diseases.

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