

PHYSIOLOGY

Sexless Humans and Artificial Giants Visioned for Future

Discovery Made That Vital Secretions of Pituitary Gland Can Be Separated and Allowed to Act Independently

A GLIMPSE into the future when sexless human beings will be produced and when short people can be made tall by injections of a growth-promoting hormone was given by Prof. Herbert M. Evans of the University of California in his presidential address to the American Association of Anatomists at New York.

Before taking the distinguished anatomical research scientists into such a future as H. G. Wells might describe, Prof. Evans, known as the discoverer of the antisterility vitamin E and for his work on hormones, announced the following important discoveries made by himself and his co-workers at Berkeley:

1. The pituitary gland, situated in the exact center of the head, produces in its front portion two distinct kinds of powerful secretions or hormones, one of which is growth-promoting and the other sex gland stimulating.

2. The growth hormone injected daily into animals from which the pituitary gland has been removed turns them into normal sized, sleek coated, active and healthy animals possessing an undeveloped infantile sexual system. This creation of adult creatures without a developed sexual system is a proof of the

separation of the growth-promoting hormone from the sex-stimulating hormone which is accomplished by very precise chemical process.

3. The growth hormone is strangely converted into the sex-stimulating hormone by means of the chemical substance found in the urine of pregnancy.

4. An overdose of growth hormone produces diabetes in normal animals.

5. The growth hormone not only promotes growth but it is also a necessary stimulus for some other sister glands of the body, notably the adrenal. Dr. Evans' work shows that his growth hormone is needed in some mysterious way by the adrenal cortical tissue before it can manufacture its own hormone that cures Addison's disease and is necessary to normal life. The adrenal cortex hormone was recently purified for clinical application by Dr. W. W. Swingle at Princeton and Dr. Frank A. Hartman at Buffalo. Dr. Evans' work shows that the growth hormone is the secretion of the pituitary which stimulates the adrenal and thyroid.

The growth-promoting hormone has already been applied to at least one human case of dwarfism, although Dr. Evans did not comment on this case in

his address. A young girl suffering from arrested development was given injections and her height increased about four inches.

"It is said that the Mikado wished to add to the statue of the Japanese soldiers," said Prof. Evans commenting on his work. "This growth-promoting hormone should be able to do it, but even the Mikado could not pay the price that it would cost at present. The cost of producing the growth pituitary hormone is prohibitive. It may take a decade to determine its formula and even longer for the chemist to make it in the form of pretty white crystals with coal tar as the raw material. We are the faint beginners in this work. Perhaps Science Service will write the story in 1955."

Unlike Alice in Wonderland, once growth is attained, shrinking can not be accomplished. Some feel that growth might be arrested by injuring the pituitary anterior lobe by X-rays or some other method but this would be a very dangerous procedure.

His production of full normal growth in animals without sex development by means of the growth hormone caused Prof. Evans to remark:

"Writers like H. G. Wells, Julian Huxley, and J. B. S. Haldane might explain that one of the greatest social problems to which man is heir could be solved by transferring this achievement to the human race."

The production of diabetes by an overdose of growth hormone was a big surprise in Dr. Evans' work although it had been known that animals without pituitary glands were unusually sensitive to insulin, the hormone used to combat diabetes.

At his Berkeley, Calif., laboratories Dr. Evans had the assistance of the operative skill of Richard Pencharz, the chemical genius of Karl Meyer and the biological analytical work of Miriam Simpson. A decade of work on the growth hormone led up to the present discoveries. Prof. Evans gave great credit to other workers in the same field, particularly to Prof. P. E. Smith, of Columbia University, who detected precocious sexuality after portions of the pituitary gland had been implanted in rats deprived of their own pituitary glands.

"Because of its manifold relations," said Prof. Evans, "the growth hormone will now surely be conceded to be one of the most important secretions of the body. It has basic physiologic importance quite apart from being essential to growth."

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