

PHYSIOLOGY

New Thymus Gland Extract Speeds Sex and Growth

Mysterious Organ of Youth Visits Effects on Later Generations and May Speed Growth of Animals Practically

ONCE THE MOST mysterious part of the body, the thymus gland, which is closest to the heart of any of the endocrine organs, is now proved surprisingly to develop sexual precocity and speed up growth.

Practical applications to animals, perhaps even man, is foreseen because of an acceleration of the effects that occur as succeeding rat generations are given thymus extract injections. For instance, the future might see cattle raised in half the usual time.

Dr. Leonard G. Rowntree, formerly of the Mayo Clinic, since 1932 director of the Philadelphia Institute for Medical Research, uncovered this hidden effect of the thymus. He followed a lead given by Adolph M. Hanson, a Fairbault, Minn., physician, who in time snatched from a busy practice made an extract of the thymus gland and reported that it seemed to lower blood pressure in the animals with which he worked. Dr. Rowntree was investigating this effect in rats when he discovered sexual and growth effects.

Daily Drops Injected

Injected daily with drops of powerful thymus extract, rats are affected markedly. Not so much the rats that first receive the injections, except that their families were more numerous. And their children's children, also treated with thymus extract, show little effect. But in the third generation, and in the fourth and fifth generations, sex came rushing earlier with more force, and size and growth were extraordinarily developed at early ages. The great granddaughters were rushed into parenthood by the physiological push of the thymus treatment. A third generation rat became a mother at 42 days and a fourth generation rat became a father at 29 days. They were correspondingly big and well-developed. Rats without benefit of thymus do not become parents until 50 to 70 days old.

Translated from rat to human terms, this means that girls or boys might be-

come sexually mature at the age of 8 or 10 years, if they, their parents, grandparents and great grandparents had been treated with thymus extracts.

An ounce-weight pinkish mass in the upper chest of children, the thymus has hitherto interested physicians principally because it sometimes chokes little babies to death. It dwindles to seeming insignificance when the boy or girl develops the sexual attributes of maturity. Numerous earlier investigations had failed to show a function of the thymus gland.

Sweetbreads are Thymus

All animals from primitive fishes up to and including man have thymus glands. Calves' thymus glands are sweetbreads. It is from these that the Hanson extract is made. But you can eat this table delicacy without any worry that it will be forcing your grandchildren and great-grandchildren into early parenthood. Scientists long ago tried feeding thymus gland material to animals without any results.

Sexual precocity is perhaps the most striking effect of Dr. Hanson's thymus extract but general growth and development of the rats are also dramatically forced and they are unusually gentle and easy to manage. The third generations of the thymus-treated rats weighed a third again as much at birth as the average newborn rat. They could hear and they cut their teeth on their second day of life. By the fourth day their eyes were open and their bodies completely covered with hair. And they mate and bear offspring at a third of the age of their grandparents.

Only Way

In no other way can such effects be obtained. Growth alone might possibly be attained with vitamins but not precocity in rate of development and activity. Another important point is that the bones in thymus-treated rats are perfectly normal for their size regardless of age. This is not the case in ab-



SPRING: AN IRONIC SYMPHONY

A Midwestern editor with an eye to ironic contrasts had his photographer concoct this photograph of his smoke-choked city as seen from a blossom-crowned bluff on the opposite side of one of its rivers. But the story is not unique: any one of a hundred cities in the soft-coal regions has a place where its veil of poison smoke may be regarded by a thoughtful citizen through a veil of hawthorn or wild crabapple petals. . . . Eventually, of course, the smoke abolishes the petals.

normal size caused by some other gland effects.

Plunged headlong into maturity and old age, the thymus-injected rats lived faster and more furiously. They had faster and more merry lives at the expense of their youth. The blood count of the injected rats was the same as that in much older normal rats.

Since it is our human desire to live long, it may prove desirable to lessen the thymus effect in order to promote long life and a postponement of old

age. This is at present purely speculative. Many more experiments are necessary. But those who breed animals for man's use or food may be able eventually to accelerate production enormously through use of thymus extracts.

Dr. Hanson who prepared the potent extract had previously given to the world a powerful extract of the parathyroids, tiny glands in the neck which govern bone formation. Because his extract was reported in a little-known medical journal, a Canadian scientist, Dr. J. B. Collip of McGill University, was credited with having first extracted the parathyroid hormone. But Dr. Hanson was able to prove his claim to pri-

ority and was awarded a patent for his product. Unselfishly sacrificing his chance for personal profit in the interest of the advancement of science, he assigned to the Smithsonian Institution in Washington all income and royalties accruing to him under the patent.

Three years ago Dr. Rowntree, then at the Mayo Clinic, gave the first dose of cortin to a human patient suffering from then-hopeless Addison's disease. His clinical use of the hormone extracted by Princeton University scientists from the adrenal gland cortex was the first application of this important substance for the saving of human life.

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PHYSIOLOGY

At Least Three Vitamins Still Await Discovery

DISCOVERIES of new vitamins and further effects of gland hormones were predicted by Dr. E. V. McCollum of the Johns Hopkins University and Dr. Oscar Riddle of the Carnegie Institution of Washington, who were presented gold medals of the American Institute in recognition of their researches.

"There is little reason to doubt that at least one new fat-soluble vitamin remains to be discovered," Dr. McCollum said, "and probably at least two more water-soluble vitamins exist."

Dr. McCollum discovered vitamin A in 1913, and since has been a leader in nutrition research.

All the main elements of hormonal control of reproduction appear now to be known, Dr. Riddle declared, in emphasizing that the women of the present generation are the first who could possibly know and learn the basis and the meaning of the cycles and adjustments which are peculiarly theirs. Not one of the four hormones chiefly involved in human or animal reproduction had been separated or assayed twelve years ago and the most recently separated is less than three years old.

Dr. Riddle, working at Cold Spring Harbor, N. Y., extracted the prolactin hormone from the anterior pituitary gland, demonstrated the thymovitin hormone of the mysterious thymus gland, and has done other important glandular researches.

Many new and spectacular researches in nutrition will come to light during

the next ten or twenty years, Dr. McCollum believes. The recent discovery that paprika is a rich source of ascorbic acid or vitamin C suggests that research among plants of unusual or specialized structure may prove fruitful.

Sodium, calcium, magnesium, chlorine, iodine, phosphorus, sulfur, iron, copper and manganese are known to be indispensable in the diet. Yet with the exception of calcium, phosphorus and magnesium very little is known of the roles played by these essential sub-

PHYSICS

Penetrating Rays Sprayed Up From Thunderclouds

PENETRATING radiations resembling cosmic rays, but "softer," are thrown upward into the air from the tops of thunderstorm clouds, like spray from the tops of waves. They come to earth again to the eastward of the cloud, drawn down by the earth's magnetic field.

These radiations, which are made up of speeding negative electrons, were described before the meeting of the American Geophysical Union by Dr. B. F. J. Schonland, noted South African student of the physics of the air, who is visiting in the United States.

Dr. Schonland stated that when he

stances.

Important as are the applications of nutrition discoveries to human health and well-being, as in the prevention of rickets, beri-beri, infantile scurvy and pellagra, Dr. McCollum foresees other advantages to be derived from them. Profits from the raising of farm animals may be increased enormously by applying present knowledge of proper feeding.

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PHYSICS

It's Raining Radium— But Not Much

RAIN BRINGS down radium, washing it out of the air, G. R. Wait and A. G. McNish of the Carnegie Institution of Washington told members of the American Physical Society. But you need not go out with a bucket the next time it rains, for the quantity is exceedingly minute—to be measured only with delicate instruments that tell of the electrified or ionized state of the air. With such an instrument in the open near their laboratory, the two physicists found that as the rain began the ionization of the air increased rapidly, to fall off again when it stopped.

The decrease with time was of such a character, they said, "as to be explainable by assuming that decay-products of radium, principally radium B and radium C in equilibrium with it, are carried to the earth's surface by rain."

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began his investigations of penetrating radiations caused by lightning, he thought he would find electrons poured directly earthward as well as upward into the higher levels of the air; but this proved not to be the case. He has found that lightning-engendered radiations can influence cosmic-ray detecting instruments as much as a thousand miles away from a thunderstorm, and he stated that another investigator claims for them an even greater radius of action. But their effect is always felt to the eastward of the storm that gives them birth, never toward the west.

The research was undertaken with