

Advertiser 3/8/20

THE PHYSIOLOGY OF EVERYDAY LIFE,

FACTOR IN GROWTH

There was not a vacant chair in the Prince of Wales Theatre, Adelaide University, on Tuesday night, when Professor T. Brailsford Robertson delivered the final lecture of the series on "The Physiology of Everyday Life." The special aspect dealt with was "Growth: Internal Factors." Amongst those present was his Excellency the Governor, who was attended by Captain the Hon. Nigel Somerset.

Professor Robertson, who was accorded a splendid reception, referred to previous lectures in which he had dealt with matters external to the animal, but which limited or promoted growth, such as food-stuffs and environment. But in addition to these, he pointed out, there were a number of internal factors which also regulated growth. There were limits beyond which growth did not extend in the various species and types of organisms. A mouse, for instance, never grew to the size of an elephant or a kangaroo. It was apparent that there must be some factors which were peculiar to each particular species, to each class, and, in a degree, to each individual, and which determined not only the growth of the animal as a whole, but of each of its parts. The sight of animals, plants, and children in the process of growth was so common that people were apt to overlook the fact that growth was a remarkable thing. During infancy and adolescence growth was natural, but in middle age a healthy person scarcely altered at all in weight. An adult did not grow taller, because the ends of the bones had hardened, but why should he not grow heavier? What was the explanation of the various tissues remaining practically stationary? Fat was not growth. Of course it was common knowledge that during disease, or a period of starving, a person would rapidly lose weight; but it was remarkable how rapidly he would recover it when the illness was over. In normal health lost tissue through any cause was soon made good again. From this fact it was apparent that the growth of new tissues by adults was not impossible.

The lecturer showed lantern charts to indicate that in all animals growth occurred in three cycles or periods, during which slow and rapid progress alternated. The influence of food supply and assimilation on the periods of growth was explained. The most abundant supply of food, however, would not force rapid growth during the comparatively stationary periods, but a restricted supply of food would retard growth in the period of normal rapid development. To a large extent the process of growth was self-regulating.

A chart was shown indicating the stages of growth in a child. During the first few months after birth the development was rapid, then it became slower, but it underwent another spurt at about four or five years of age. Another period of rapid growth occurred at about adolescence. These results could not be explained by alterations in diet. They were due to some internal changes, and the influence of certain internal accelerating agents which stimulated growth, and these influences or agents were present in less degree at periods of slow growth than during the intervals of more rapid expansion. The Animal Products Research Foundation, in connection with that University, was enabling them to undertake work in connection with the search for these substances. The substances or agents he had referred to were produced in the bodies of animals by special organs. One of these, which was of great importance, was known as the thyroid gland. It set the pace of the turnover of food-stuffs. If it became defective or more or less inactive, development was at once retarded. On the other hand, if it was over-active, growth was stimulated abnormally. Many valuable experiments had been carried out in recent years in connection with this gland. Amongst these those of Gudernatsch, in America, and Julian Huxley, in England, were of special significance. Tadpoles had been developed into frogs in a few days by the administration of thyroid tissue. Miniature frogs had been produced in a similar way, as the growth of tissue could not keep pace with the metamorphosis of the creature. In human beings the failure of the thyroid was accompanied by disastrous results, and produced the disease known as myxoedema. This occurred in several localities of the old world, and in one or two places in Australia. Views were screened of infants in whom the thyroid gland had become inactive, and arrested physical and mental development had followed.

The lecturer also dealt with the effect of the pituitary gland on growth. This was found at the base of the brain. When over active in a young animal or human being, before the ends of the bones had hardened, enormous growth followed. Gigantism was one of the results of this condition. When over-activity of this gland occurred in an adult the bones thickened and the features became coarse. In recent years it had become possible to extract the active substance of both thyroid and pituitary glands. Rendall, an American scientist, had been particularly successful in extracting that of thyroid, which he called thyroxin. The substance from the pituitary gland was known as tethelin. This had been found to have a remarkably stimulating effect on the growth of cancer. Administered to animals suffering from cancer it had increased the rate of the growth by 500 and 600 per cent. Young animals in a normal state of health had grown very rapidly when this was given them, and had attained an enormous size. With advancing years a decline in weight occurred. Senescence bore the aspect of deficiency diseases. It appeared that the cells of the body were starving. Senescence never occurred in the unicellular creatures. It had been said that these were immortal. But if they were brought together and compelled to live in communities, and in a limited space, they would show signs of senescence, and would decrease in bulk. Something of that kind took place in the community of cells comprised in the higher animals. It appeared to be due to the exhaustion of the supply of some substance necessary to their healthy rejuvenescence. (Applause.)

Advertiser 3/8/20

IS THE PEACE TREATY JUST?

From "FACTS":—What a change within the short space of three months! On May 12 Professor Phillipson, addressing the League of Nations Union, said, inter alia, that President Wilson, at the Peace Conference, "found himself in a vice from which he and his fourteen points never emerged with safety. His oneness of mind and strength of purpose surrendered to the bargain-drivers. He became practically a tool in the hands of the old Frenchman and the wily Welshman." On July 29 the professor addressed the Chamber of Commerce and declared that the Peace Treaty did not violate the fourteen points; in fact, it showed "an enormous amount of generosity and magnanimity towards Germany." On May 12 he described Clemenceau as a man animated by the principle, "I love France and abominate Germany," swayed by "poignant memories of 1870-1," and dominated by the idea of "revanche." "Dr. Wilson," he went on, "might be said to have been harassed by the dictates of conscience, M. Clemenceau by obstacles to his 'revanche' policy, and Mr. Lloyd George by menace of his position at home. After all, politicians and local preachers were not the best peacemakers and world-rebuilders." And now this Treaty, a result of "bargaining and hawking" with the "scribes and Pharisees," becomes on July 29 an agreement actuated by the "spirit of highest justice!" Surely the professor cannot imagine that the public is so short-memoried as to forget a speech of not three months ago! Did he come to tell both societies just what they wished to hear? Did he "follow the example of the music hall and the theatre, and devote himself to the role of a popular entertainer?" If so, I think it is time for an ordinary layman to remind the University that its function is not to pander to public opinion, but to lead the people in the way of truth; not to deal in vague generalities which cannot stand the test of facts, but to examine all things (not some) with impartiality and not under the influence of a misguided patriotism which mistakes national conceit and self-satisfaction for national idealism. As it is, the professor's address will arouse only amusement among serious students of international affairs.

Register 3/8/20

THE PROGRESS OF GROWTH.

THYROID AND OTHER GLANDS.

So great has been the success of the series of lectures delivered by Professor Brailsford Robertson on the subject, "The Physiology of Everyday Life," that, before the third, and last, address was begun on Tuesday night, Professor Henderson said that, with the consent of Professor Robertson, the committee had decided to repeat the lectures if a sufficient number applied for tickets. This had been decided owing to the fact that many people had been unable to obtain tickets owing to the lack of sufficient room, and because it was realized that the subject was of very great importance. The first of the series would be repeated on August 30. Again on Tuesday night the Prince of Wales Theatre was crowded with people. Among those present was His Excellency the Governor, who was accompanied by Capt. the Hon. Nigel Somerset. The lecture dealt principally with the processes of growth of an animal, and the important bearing the thyroid and other glands had on the question. His remarks were illustrated by a number of very interesting and instructive slides.

—Growing Periods.—

The professor said that in the previous lectures those things outside the animal which limited or enabled its growth—animal foodstuffs—had been dealt with, but there were also factors regulating growth which were internal to the animal and of those he would speak. A mouse never grew to become an elephant, and there were factors peculiar to each species, to each class, and, to some extent, to each individual, which determined the growth of the animal and of each of its parts. We were so accustomed to see animals, children, and plants grow as to become apt to forget what a very remarkable thing growth was. Take the condition of an adult. If he were in health and middle-aged, he neither increased nor lost weight, but remained in a sort of stationary condition of growth. One could understand why he did not grow taller, because the ends of the long bones had hardened and he could not grow longer; but why should he not grow heavier? Why should his various tissues all remain stationary? It became more remarkable when one considered the effect of a period of starvation or illness. The loss of tissue through those causes, or from an injury, was rapidly made good as soon as normal health was restored. So that the growth of new tissue was not impossible! In all animals there were periods of rapid growth, alternating with periods of slow or arrested growth. These alterations were independent of the food supply. The most abundant food would not make an animal grow rapidly during the period of stationary growth, and very restricted food was required to prevent growth in an animal in the period of rapid development. The process of growth was, to a large extent, self-regulating. The food supply remaining constant, an infant would grow extremely rapidly during the first few months after birth, then very much more slowly. It underwent another spurt of growth at about four or five years of age, then grew more slowly again, and there was a period of very rapid growth at about adolescence. Such results in different individuals were not to be explained by the alterations in the food, and must be due to internal changes and to the production at certain times in the life of the animal or man of certain accelerating agents which stimulated growth, these being produced in less quantity at periods of slow growth. It was in the search for those substances that experiments were now being undertaken in connection with the Animal Products Research Foundation started last year by a number of citizens of Adelaide.

—Important Glands.—

The substances in the body which forced the growth were produced in special organs, one of which was known as the thyroid gland. It was the thyroid which set the pace of the turnover of foodstuffs. If it were over active, development was greatly hastened; if it were under active, development was very much delayed. The important part played by the thyroid had been illustrated in recent years by the experiments of Gudernatsch and Julian Huxley. These experimenters had administered the thyroid tissue to tadpoles, with the result that, within a few days the tadpoles had turned into frogs. It was possible in this way to obtain minute frogs, because the growth of the tissues did not develop as rapidly as the development. Failure of the thyroid produced the disease in human beings known as myxoedema, which occurred in several parts of Australia. If the thyroid failed to act properly in an infant, development, both physical and mental, was arrested, and the condition known as cretinism resulted. Another organ having a great deal to do with the control of growth was the pi-

pituitary gland, which was found at the base of the brain. The over activity of this gland produced immense overgrowth of bone. If it occurred before the ends of the bone had hardened, the bones grew abnormally long, and we had those cases of gigantism which were exhibited at fairs (people seven or eight feet high, &c.). If it occurred after the ends of the bone had hardened, the bones became thick, and the fingers and feet abnormally so. This was a disease known as acromegaly.

—Gland Extracts.—

It had become possible in recent years to extract from both of those glands the substances responsible for their action. That responsible for the action of the thyroid had been prepared by Kendall in America, and was called by him thyroxin; while the substance from the pituitary gland was known as tethelin. This had a very striking effect upon the growth of bone and skin and cancer. When administered to animals which had cancer, the growth of the cancer was increased at the rate of 500 or 600 per cent. If it were administered to normal animals, and discontinued at about adolescence, the animals grew to an abnormal size, reminding one of gigantism in human beings. Ultimately, after having remained for a long time at a steady weight, the weight of the adult on the average declined. Some people grew heavier through an accumulation of fat. This was really a decline in the weight of their actually living tissues, and the end of that process was what was known as senescence. To what was that due? It bore every aspect of a deficiency disease—that was one due to the lack in the living cells of the body of some constituents for which they were starving. Senescence was never observed in the small animals of the one-cell type, which never formed into communities; but if those same animals, which were potentially immortal, were brought together and forced to live in a limited space, they showed the phenomena of senescence, and gradually diminished in bulk and number, just as the community of cells forming the higher animal diminished in bulk and in number with age. Such a dying colony of communal organisms was all rejuvenated by certain substances, probably not identical with any of the known vitamins, but similar to them in certain respects. Those substances were produced by bacteria, and their chemical nature was at present quite unknown. Their existence had only very recently been demonstrated in the course of experiments conducted under the Animal Products Research Foundation. Whether that senescence in the higher animals was similarly due to the exhaustion of supplies of necessary substances or not was a matter which awaited investigation.

Register 2/8/20

The Chancellor (Sir George Murray) referred, at a meeting of the University Council on Friday, to the recent death of Dr. Benjamin Poulton, who for 18 years was lecturer in the principles and practice of surgery, and for 21 years was a member of the council. As lecturer in surgery, said the Chancellor, Dr. Poulton had done valuable work, and had helped to raise the medical school to the high position it had now attained. As a member of the council, he had been most regular in his attendance, and, although not often heard, had been a watchful critic and a keen supporter of the interests of the University. He would be best remembered, however, for his fine independence and uprightness of character, and his many lovable qualities. The University had probably not suffered a loss which was felt more intimately since the death of Mr. J. A. Hartley. The Vice-Chancellor (Professor W. Mitchell) and Sir Joseph Verco also spoke in appreciative terms of the life and work of Dr. Poulton, and particularly in regard to his influence for good upon the medical students. The council resolved that a letter expressing the sympathy of the council should be sent to Mrs. Poulton.

Register 2/8/20

At a meeting of the University Council last Friday it was intimated that the Hon. Sir J. Lancelot Stirling and A. A. Kirkpatrick had been appointed by the Legislative Council as members of the Council of the University. It was also formally reported that Messrs. L. L. Hill, F. Anthony, and H. S. Hudd had been appointed by the House of Assembly to the University Council. The Chancellor (Sir George Murray) welcomed the new members, Messrs. Hill, Anthony, and Hudd, who were present.