

THE ENDOCRINES

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There is a growing belief that the endocrine glands, or glands of internal secretion, have controlled the development of man from lower forms of life, and are now controlling his heredity. At a recent meeting of the American Association for the Advancement of Science the following formula was pronounced: "We are what our glands make us," which means if we are well and efficient, the credit is due to the glands; if we are sick and depressed, it is the fault of the glands. But none of the scientists thought it necessary to throw any light on the subject of the who or what makes the glands.

All the glands of the body, be they ductless or not, are under the laws of the union of the organism. All organs have individual laws – a given amount of self-control or individuality; but all are bound together by the blood and nervous system. In the light of common sense and reason the glands do not exist as separate entities acting for themselves, aside from the rest of the bodily organism. If the nervous system is normal, the glands are properly energized. If the habits of life are enervating, there will be a slowing up of secretions and excretions, causing a retention of waste products. The retained waste products reduce the alkalinity of the blood and cause over stimulation and enervation, affecting all parts of the body.

Our glands and organs have evolved as our bodies according to natural laws. The glands are under the control of the subconscious mind the same as our heart and lungs; they function subconsciously. If the functioning becomes abnormal, it is because something has gone wrong with their nerve and food supply.

The normal function of all the glands and organs is necessary for healthy existence; they have the innate power of selecting from the blood, the elements required for growth and repair. Each gland and organ has an individuality all of its own, yet it is dependent on the entire organism for food and nerve energy. If the latter are supplied normally, general health will result. On the other hand if man lives in such a manner as to become enervated and toxic, all organs will suffer from lowering of energy; secretions and excretions are reduced and metabolical power is lowered.

When we therefore speak of the glands, we should always keep in mind that they are made from the blood, which builds the entire body. We doubt interglandular reciprocity exists, but overall is a nervous system that furnishes energy for the proper function of the glands.

The pituitary gland is about the size of a pea and hangs on the base of the brain like a fruit on a thin stalk, and fits into a solid protective cup in the skull. The gland consists of three parts differing functionally and structurally. The anterior part is necessary for the proper evolution of the sex glands, and is composed of epithelial tissue. The central part is also gland tissue of different structure, the posterior part or lobe consists of peculiar nervous cells with colloid or epitheloid-like bodies among them.

The thyroid is a large perfect mass of tissues well supplied with blood vessels and is found below the larynx and is composed of two lobes lying on either side of the wind pipe. It has a great controlling force in the growth of man's body and its sustaining power. It acts upon the growth of inner and outer coverings of the body, skin, hair and mucous membranes. The thyroid is essentially an energy producing organ and the action principle in thyroxin, almost pure iodine. With a deficiency of thyroid secretion life becomes slow and inactive, mental activity is arrested and sinks below normal, and goiter develops, also exophthalmoses. William Gull describes certain cases of mental deficiency with an over growth of fat in adults which seem to accompany an atrophy of the thyroid gland and the victims of which were restored to normal by eating the thyroid substance of animals. The disease named myxedema.

In 1886 Marie, a French Physician, found that in tumors in the pituitary gland an enormous over-growth of bone occurred.

The glands or sex glands of the male are the testicle and prostate gland; of the female they are the ovaries, breast and uterus. The gonads are of external and internal secretions. The ovaries produce the ovum, but they also produce an endocrine substance that vitalizes a woman and makes her feminine. The testes have as their external secretion the semen which carries the spermatozoa and which is stored at the prostate gland. The ovaries regulate the lime distribution in the female. During gestation an ample supply of foods rich in calcium and sodium is essential for the normal growth and development of the fetus.

The adrenal glands are also two in number and sit on top of the kidneys like small dunce caps. They are big as one's finger tips. Each gland is composed of a cortex or outer portion and the medulla or inner portion is called the core. Adrenal secretion – adren – energizes the muscles of the body, especially the muscles of the circulatory system and the digestive tract. The adrenals seem to get their potential energy from the thyroxin of the thyroid gland. Adren supplies the base for saliva, pepsin, hydrochloric acid, pancreatic and intestinal juices.

The thymus gland is a large mass of whitish tissue situated just below the thyroid gland and behind the upper chest bones. It seems to be the predominating gland of child growth before the time of puberty. These are the most easily seen of the ductless glands.

The para-thyroids are composed of four tiny glands as large as wheat kernels located near the thyroid gland. Their chief function seems to be the control of the calcium metabolism or the lime salts of the system; also to control the steadiness of nerves and muscles. They regulate the detoxication of the body. There is always a lack of para-thyroid endocrine secretion in lockjaw and epilepsy.

The pancreas has an elongated shape, of a pinkish color. It lies in front of the first and second lumbar vertebrae and behind the stomach. It weighs between two and three ounces, is about six inches long, two inches wide and a half inch thick. It is a compound of lobules, joined together by connective tissue to form lobes, and the lobes united in the same manner form the gland. The small ducts from each lobule open in the main duct which runs lengthwise through the gland. The pancreatic duct ends the

common bile duct usually enter by means of a common opening into the duodenum about three inches below the pylorus.

Scattered through the pancreas are round ovoid bodies known as the Islands of Langerhans. Each island is about one-twenty-fifth of an inch in diameter, and consists of a group of many-sided cells. Their function is to furnish the internal secretion of the pancreas.

Two secretions are formed in the pancreas: 1. The pancreatic fluid, which is one of the most important of the digestive fluids, is an external secretion and is poured into the duodenum during intestinal digestion. 2. The secretion formed by the Islands of Langerhans is an internal secretion that is absorbed by the blood and carried to the tissues. This internal secretion, called insulin, aids in the oxidation of glucose.

The spleen is directly beneath the diaphragm, behind and to the left of the stomach, and is covered by the peritoneum. The spleen acts in our body as an electric power station where the blood is recharged with electricity. This is affected by means of an apparently insignificant device by which the blood current is suddenly checked. As is well known, the arterial capillaries in all other parts of our body pass into those of the veins, but in the spleen the fine arterial capillaries terminated and become small sacs, which are called after their discoverer the "Malphigian corpuscles". There the circulation of the blood apparently is brought to a standstill.

We know the iron in the blood is magnetic in character. The sudden impact of the magnetic blood current upon the walls of the Malphigian corpuscles has the effect of converting its magnetism into electricity. We must, therefore, assume that minute electric discharges take place from the spherical walls of the Malphigian corpuscles into the blood.

The liver is one of the most important glands of the body. It is the storehouse and the clearing house of the system. It is here that the food is finally prepared for its advent in the circulatory system and where the broken down particles of the system are renovated and again made fit for use if possible. It is a gland of internal and external secretion. The external secretion is bile and is thrown by a duct into the digestive tract and internal secretion is sent direct into the circulation.

The normal function of the glands depend on a well balanced diet, furnishing the needful alkaline elements. The chemical reaction of the endocrines and their hormones are greatly enhanced by the presence of small amounts of such elements as iron, manganese, copper, nickel, cobalt, zinc, iodine, which are soluble in water and act as catalysis. These elements are found in green leafy vegetables, especially in the powdered form. They may be added in small amounts as preventive accessories to our daily diet.

The general principles about them may be laid down: 1. They form a connected system. They are interdependent. The secretion of one balances or supplements the secretion of another. If one is removed, the entire sequence of events may be upset. For instance, disease of the islets of Langerhans

results in lack of sugar combustion and diabetes. But also in states of thyroid activity sugar in the urine may occur. The injection of adrenalin will cause sugar to appear in the urine. Yet in both instances the islets of Langerhans will be intact. What happens? No one can say exactly. We know these things for facts, but cannot explain them completely. Perhaps one secretion activates the cells producing another secretion, perhaps the opposite occurs, perhaps it restrains their secretory activity. Perhaps in the tissues they mix and supplement, or counterbalance, each other. At any rate it is proper to call all the ductless glands the endocrine system, just as much as to call all the organs of digestion the digestive system.

2. In general they preside over four functions: a. growth; b. nutrition; c. sex; d. the vegetative process of gland secretion and involuntary muscle control.

Thyroid increases gastric peristalsis.

Adrenal activity checks the activity of the stomach.

Thyroid inhibits the pancreatic islets.

Adrenals diminish pancreatic activity

Thyroid stimulates metabolism.

Adrenal inhibits activity of the intestinal muscle.

Thyroid stimulates metabolism.

Adrenals inhibit metabolism.

Adrenals dose out sugar to the blood

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