

Stefansson did not return to Ottawa until some time after the members of the southern section had returned, and when he arrived he found that his subordinates had reported to the government in a manner most favorable to themselves, and of course to his disadvantage. Charges had also been laid against him before such bodies as the Explorers' Club of New York and the American Geographical Society. It is somewhat significant that after the charges had been investigated by the Explorers' Club Stefansson was unanimously elected its president. The American Geographical Society also investigated the subject and as a result Stefansson was presented with the Daly Gold medal; and later the National Geographic Society conferred upon him the Hubbard Gold Medal, the highest honor in its gift. The Canadian government department under whose auspices the expedition was organized likewise conducted an investigation, at the conclusion of which an Order-in-Council was passed conveying to Stefansson the thanks of the Canadian people for his services to the nation.

Then last autumn Stefansson published *The Friendly Arctic*, the story of his five years in the Arctic. The name of the book itself was a challenge to all believers in the orthodox conception of the North. *The Friendly Arctic*! Of course, the record of that expedition would not be complete without mention of the insubordination of Anderson and his associates,—although it must be admitted by every unprejudiced reader that Stefansson has dealt very leniently with them. He also elaborates his heretical views concerning the North. We learn that the winter is not the period of dread that we have been led to believe, but that it, excepting for the few weeks of total darkness, is the time when Arctic travel is at its best; we learn that Arctic temperatures are no more severe than those frequently experienced in a number of places in Canada and the United States; that flowers and an abundance of grasses grow upon the northernmost islands of the Arctic archipelago; and that the so-called barren lands of the North are capable of maintaining vast herds of reindeer which will one day add their quota to the decreasing meat resources of the world. And as for the silence! Well, read Stefansson's account of the grinding ice pack in winter, and the myriad voices of millions of waterfowl that make the Arctic their breeding-ground in summer!

The appearance of the book brought forth a howl from all those who felt that their interests, prejudices and preconceptions were being assailed. A learned professor who conceivably had been inoculating generation after generation of youths with the current fallacies took up his pen and wrote

a scathing review. Several ex-members of the expedition, including Anderson, gave lengthy interviews to the press denouncing Stefansson; one scientist, now a professor at McGill, gave a column interview in the course of which he admitted that he had not read the book; and finally, Anderson and three of his former associates made an application to the new Liberal government for the appointment of a commission to investigate the whole matter, apparently hoping that in the desire of members of the Liberal party to pick flaws in the administration of their predecessors—the expedition cost quite a lot more than originally estimated—it might be possible to attack Stefansson indirectly.

And now on top of all this the National Geographic Society awards Stefansson the Grant Squires prize "in recognition of the unique interest and importance of his book, *The Friendly Arctic*, the outstanding geographic publication of 1921"!

D. M. LeBOURDAIS.

## Glands: Fact vs. Fiction

TO sift fact from fancy in the literature dealing with the glands of internal secretion is as difficult as it is imperative. Medicine has often been accused of being more of an art than a science, and in this new branch its art attains the heights of fiction. The term gland, in its magical omnipotence, is the fairy wand of today. Age fades at its touch. No longer would Ponce de Leon need to breast the stormy wave—a little ether, a little technique, a monkey's gland—and the Elixir of Life could be any home brew. Increased stature becomes a matter of proper glandular dosage and love but an endocrine imbalance.

Such visions find little place in the laboratories and clinics where true research progresses. Investigations which have been verified are only too few in number and these alone may be regarded as the basis of our present knowledge which may be briefly indicated as follows.

The glands of internal secretion comprise chiefly the thyroid and parathyroid, thymus, pituitary (hypophysis), adrenal (suprarenal), pineal, and generative glands. The thyroid and parathyroid are situated in the neck, with the thymus somewhat below in the upper chest. The pituitary, which is about the size of a pea, lies underneath the mid-brain. The pineal body, only half as large, is above the pituitary and toward the rear of the brain. The adrenals lie astride the kidneys. The testes and ovaries, in the male and female respectively, constitute the generative glands. The func-

tion of each of these glands is to introduce into the blood stream a *specific* substance which exerts its influence on the body in such a way as to establish an equilibrium and promote health. These secretions are thus carried to all parts of the body and are therefore termed chemical messengers or hormones.

Scientific investigation into the true nature of the activity of glands dates back to 1849, when Berthold demonstrated experimentally that an internal organ influences the composition of the blood and thereby the entire organism. He removed the testicle from cocks and grafted it under the skin in another part of the body of the same bird. Curiously enough, these animals "remained male in regard to voice, reproductive instinct, fighting spirit, and growth of comb and wattles." It remained, however, for Brown-Séquard in 1889 to present the most striking proof of the theory which he had formulated, namely that certain glands secrete specific substances into the blood stream tending to produce a definite correlation of function between different organs. At a memorable meeting of the Société de Biologie de Paris, Brown-Séquard, then seventy-two years old, announced that he had carried out upon himself a series of experiments with extract of testicle injected subcutaneously which had resulted in an access of "physical strength, an invigoration of cerebral function, and a good appetite and digestion." This initiated the practical application of a new method of treatment, now known as glandular therapy or organotherapy.

But the chief advance in our knowledge has come from the clinical side. There are few better methods for understanding the nature of bodily organs than the study of their abnormalities. There is no need to review the lengthy list of diseases known to result from the overfunctioning or underfunctioning of one or more of the glands of internal secretion. Suffice it to say, that by inference and experimentation the various glands are known to perform certain more or less definite functions throughout the periods of development, maturity, and senescence.

Thus, the thyroid gland is recognized as the chief agent in maintaining the equilibrium of the human organism, especially with regard to the delicate balance between the different endocrine organs. If the activity of the thyroid gland is increased, it causes a corresponding increase in the activity of the adrenal or pituitary glands. Furthermore, the thyroid is responsible for quality in general—the brightness or dullness of the eye, the abundance or sparseness of hair, the smoothness or coarseness of the skin, etc. A deficiency of thy-

roid is the basis of cretinism by the arrested development of body and mind. The enlargement of the thyroid gland, on the other hand, results in swelling of the neck, which is unmistakably goitre. This condition, singularly, is almost five times as common in females as in males.

The exact function of the thymus gland is still shrouded in uncertainty; its abnormalities are responsible for the prolongation of childish characteristics on the one hand, and a precocious maturity, on the other.

The pineal gland, that structure which Descartes believed to be the seat of the soul, is similar to the thymus in its effect, except that it appears to be more active in its influence on muscular development.

The adrenal glands influence all muscular activity including the heart-beat. They defer the onset of fatigue and assist in recovery. The final spurt of energy which carries the sprinter over the tape, just after he has felt that he must drop from fatigue is caused by the psychic stimulation of the adrenal glands which reinvigorates the muscles. An increase in their secretion causes an increase in blood pressure; while a deficiency is characterized by a bronzing of the skin and great languor. To a great extent the adrenals determine the color of the hair, its distribution and time of appearance—as well as the character of the complexion.

The pituitary gland, generally speaking, dominates dimension—by which is meant the size of the individual as well as of the various parts of the human structure, for example, the teeth, jaws and hands. Gigantism and infantilism find here their *raison d'être*. Another important yet curious function of this gland is the apparent supervision of occurrences that have a rhythmic or periodic quality, such as sleep and wakefulness, menstruation, etc.

All the glands previously mentioned are linked with sex, but none so much as the generative glands, which determine what Havelock Ellis has called the secondary sexual characters, namely, the masculinity or femininity of the hands, skin, hair, head, torso, and legs.

Against this somewhat vague background of generalities there stand out in rather sharp relief the comparatively few discoveries of indubitable value. Foremost among these is Kendall's isolation of thyroxin, which is the active principle of the thyroid gland. It is significant that of all the glands of internal secretion, in only two, namely the thyroid, and adrenal (yielding adrenalin) has the active principle been determined. However, this does not prevent many glib assumptions as to the nature and influence of internal secretions. It

is only within the past ten years that a voluminous literature has sprung up dealing with this branch of medical science. It represents the efforts of realists, impressionists, and potboilerists. In the first category Biedl's *The Internal Secretory Organs: Their Physiology and Pathology* is the classic tome. A briefer treatise no less sound is E. A. Schaefer's *The Endocrine Organs* (Longmans, Green).

Both these works are concerned with the structure and functions of the various glands in the light of proved laboratory and clinical research. The same cannot be said for the facile productions to be found among the writings of the "impressionistic school," an excellent example of which is Berman's *The Glands Regulating Personality*. As Hoskins, editor of *Endocrinology*, and one of the foremost research investigators has said: "Deductive reasoning which is the mainstay of a considerable class of self-styled practical endocrinologists, can be productive only when the premises are sound. A few examples of more or less dubious premises in current vogue may be cited. We are glibly told of the 'complex hormonal equilibrium' of the blood. However probable the existence of numerous circulating hormones, proof of their existence is almost completely lacking." The subject matter lends itself readily to armchair speculation. However, it must be borne in mind that the nature of the supposed active agents of the glands is unknown with but two exceptions. The confession of the limitations of present knowledge and warning against overenthusiasm by such authorities as Biedl, Schaefer, Hoskins, and Cushing, should give us pause.

But those in the third category fling far the banner which attracts the gullible. Harrower's *Practical Organotherapy* is in effect, a self-advertising manufacturer's plea for an increased clientele. To be radical in such therapy means to administer glandular products for every condition which does not fall within the circle of classical treatment. "Recklessly administering products of all sorts and conditions to patients," says Hoskins, "happily claiming as therapeutic triumphs all changes for the better, and ignoring failures, is not likely to result in very substantial progress. Some patients will be benefited; others, harmed; while many—judging from the vast amount of supposedly inert glandular debris administered—will be left precisely where they would have been if any other placebo had been similarly employed. Only one group stands to gain in any case, namely the vendors of the endocrine preparations. The mere fact that hundreds of physicians and thousands of patients have testified to having profited

by the use of this or that endocrine preparation carries no conviction of its actual value to one who reflects that pharmacopeias are filled with useless medicaments of which the same can be said."

What of these potent preparations, many of which emanate from the slaughter house? Cattle are used as the source of supply. Obviously standardization of products is an impossible task, for no two animals are in the same condition with regard to age, health, and other factors which affect their own glands. Therefore how problematical must be the adjustment of these secretions when introduced into so delicately balanced an equilibrium as exists in the human body. It is a remarkable coincidence in the face of such circumstances when any agreement in therapeutic effect is forthcoming. Again, "the fact, and it is an uncontrovertible fact, that with change of dosage, exactly opposite effects are produced, is highly significant." This refers to adrenalin but may likewise be extended to other glandular secretions. In a word, the administration of glandular extracts is little more than mere empiricism. Empiricism however, in the hands of a true scientist may yield satisfactory results as shown in the treatment of myxedema and goitre. The danger lies in the indiscriminate use of glandular products and in generalizations drawn from insufficient data.

No discussion of glands is complete without some mention of monkey gland grafts, and the Steinach "operations." In the former method the aim is to transplant the generative gland from monkey to man in the hope that the graft will "take" and make up for the atrophy of the generative glands which parallels senescence. While this method has much to recommend it on theoretical grounds, nevertheless, in practice it is beset with many difficulties. Grafts do not always "take." And if they do, it is questionable whether they can maintain their functional integrity. Furthermore, there is considerable evidence to show that there must be a real deficiency, such as is produced by castration, before the beneficial effects of these glands can be established. The most important consideration, however, is the fact that little is known concerning the influence of secretions thus acquired on the other organs and secretions of the body. In other words, by enhanced activity in one organ a severe strain is placed on the other organs of the body with serious, if not fatal consequences. It will be recalled that a Mr. Bacon who filled many columns in the *New York American* with the details of his monkey gland operation finally entered the obituary column by committing suicide following his failure to attain the promised heights.



The Steinach method of rejuvenation which is creating such a furore in Germany and Austria-Hungary is simple in technique and can scarcely be called an operation. It requires an incision, to be sure, but this is merely to get at the vas deferens (excretory duct of the testicle) which is then ligated. This causes a certain amount of atrophy which in turn stimulates a substitutive activity on the part of the cells responsible for the internal secretion bringing rejuvenation. Again there is the danger of undue activity and patients are warned not to change their mode of living too quickly or too radically. The case of a Mr. Wilson in England has achieved some publicity. After having shown remarkable improvement he wanted to lecture on his own case and tender his praise to Steinach. He engaged the largest hall in London for this purpose, but with dramatic suddenness died of angina pectoris on the very eve of his triumph. "He had been so overjoyed with his newly gained physical and mental strength that

he overdid the enjoyment of life." Thus ended the interest of the British medical profession in this operation.

Spectacular as are the possibilities for rejuvenation and intriguing though they may be, the methods so far developed have failed to convince the critical endocrinologist owing to the failure to establish concordant results. Thus Steinach's method has been reported as successful in the hands of some, and as a failure in the hands of others. Such evidence has much in common with the "cures" of glandular therapy. The confusion of fact with fiction in this field is as much a challenge to the constructive attention of the layman as to the well-trained clinician. Majority opinions in medical science are only too often fallible, yet how much less can be said for the blind acceptance of a therapeutic procedure which is based on an inadequate physiology.

NICHOLAS AND LILLIAN KOPELOFF.

## The Epic of Ireland

IRISH history is painful reading for Englishmen and those English writers who try to make it anything else are not very happy in their efforts for they end by making it unintelligible. History may be partial in its sympathies and yet not produce this effect. Nobody writes history from some peak on Olympus. Good history, like any other work of art, takes color and mood from the mind of the writer. Lecky's Irish History must be studied by all who wish to understand Ireland; so must Connolly's. They differ profoundly but each of them is a revelation of the truth. What you ask of a historian is not that he shall give you an account of events written somewhere above the snow line in a bleak impersonal austerity or that he shall attempt his task in the spirit of a man who holds that you cannot explain anything unless you explain everything. History so written is the most confusing of all. What you ask is that he shall give you a picture that is intelligible and throws some light on the facts. The difficulty about English writing on Ireland is that English writers find it hard to think of Irish history except as an aspect of English history. They bring to Irish social systems and motives English standards; and when the Irish character bewilders them, as it generally does, they do not look for the clue in Irish history, for that little Irish history they know is not the history of the Irish in Ireland but the recent history of the English in Ireland. History seen in this false perspective keeps all its secrets, for the man who relies on these methods goes in Bacon's phrase "hooded and looks abroad little." And as there is something unsatisfying to the intellect in a treatment that leaves a problem in the obscurity in which it finds it, this sort of history disappoints even those whose past it seems to flatter or palliate.

There was until lately this excuse for the English neglect of Irish history that it was to some extent shared by the Irish themselves. I well remember the excitement

and emotion with which a few young Englishmen watched the beginnings of the Irish renaissance. Kipling's spell was then all powerful: force, good, rational, sensible British force was everything; the British Empire was the Roman Empire come back to life; small peoples spelt insignificance and the sooner they passed into the dusk the better. In this atmosphere the notion that Irishmen living under the shadow of this great blotting enveloping system could make their language and culture stand out somewhere on the page of history seemed mere saucy foolishness. This was England's mood. But there was not too much encouragement for these lofty ambitions in Irish politics either, lost as they were at that time in a twilight between the setting of one great effort and the dawn of another. If England could not understand this revival, Ireland did not open her eyes and her heart all at once to this spiritual revelation.

Why was it that this movement proved to be not merely a temporary passion stirring the imagination of a sensitive race but a real political force giving direction and a glowing power to the self-consciousness of a nation? Because, says George Russell, it satisfied some permanent longing in the Irish nature: it expressed some fundamental instinct in the Irish character. Throughout Irish history, with all its desperate calamities, there has survived this constant force, the Gaelic spirit. The Gaelic spirit is a Mendelian dominant, strong enough to assimilate every new element forced on its hospitality. Mr. Hackett in the opening pages of his brilliant volume (*The Story of the Irish Nation*, by Francis Hackett, New York: The Century Co. \$2.50) puts this point, and writing his history from this starting point he presents Ireland's long struggle as a magnificent epic. This conception adds a unity to Irish history which gives it a romantic interest and throws an illuminating light on its problems. It explains the failure of the great confiscations and the penal