

The Poor Law authorities should be superseded by the local authorities in regard to the care, treatment, and maintenance of necessitous patients suffering from mental disorders.

We welcome the appointment of this Royal Commission, and trust that the outcome of its findings will be a Government Mental Treatment Bill which will be, in a great measure, in harmony with the aspirations of the Association.

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## Part II.—Reviews.

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*The Human Testis: Its Gross Anatomy, Histology, Physiology, Pathology, with Particular Reference to its Endocrinology, Aberrations of Function and Correlation to other Endocrines, as well as the Treatment of Diseases of the Testis, and Studies in Testicular Transplantation, and the Effects of the Testicular Secretion on the Organism.* By MAX THOREK, M.D. London and Philadelphia: J. B. Lippincott & Co., 1924. Med. 8vo, pp. x + 547; 308 figures. Price \$5 or 38s. net.

It is with special pleasure that one desires to review at length an important monograph by Dr. Max Thorek on *The Human Testis in Health and Disease*. For the author, not satisfied with a wide surgical experience, has also devoted his time and attention to experimental and laboratory investigations, and, in my judgment, it is this conscientious and painstaking endeavour to familiarize himself practically with all the facts appertaining to the subject, which has enabled him to sift and correlate the facts relating not only to his own work, but to that contained in the very numerous publications of other investigators. Many of the chapters will be of especial interest to psychiatrists, and especially to those who seek a physiogenic relationship of disorders and dystrophies of the reproductive-endocrine system of glands and mental diseases. There is no doubt in the mind of the author that continued research will soon establish definitely the identity of the internal secretion of the testis and its chemical composition, and he supports this by reference to the works of Winiwarter, who claims to have followed the transition of mitochondria to crystalloids. He refers also to the work of Duesburg, Iscovesco and Mulon on the same lines. Max Thorek does not agree with the view that the Leydig cells are controlled by centres situated in the hypothalamic region or elsewhere, for they continue to live after transplantation of the testis.

The physiology and function of the internal secretions is fully considered, and the history of our knowledge of the rôle of the Leydig, seminiferous and Sertoli cells from the earliest times until now is narrated: "From the time of Hippocrates and Aristotle it has been believed that there was a correlation between the testicular fluids

and the nervous system and spinal cord." The anatomists and physiologists of the sixteenth and seventeenth centuries understood that there was a connection between the functional organs of generation and other parts of the body. They knew that eunuchs and castrated males showed feminine characters. The view that the testicle is an organ with a double function is an old one. The point, however, which has caused particular dispute is not the question of a separate testicular secretion which influences sex-characters, but rather what particular structure is responsible for such secretion and how it acts. There seems to be a general consensus of opinion that the interstitial cells are entirely responsible for sex potency, libido, eroticism and retention of the secondary sexual characters. This is borne out, as will be seen, by castration and experimental transplantation in men and animals. Probably the work was in the press before the important communication by Carl Moore upon "The Behaviour of the Testis in Transplantation, Experimental Cryptorchidism, Vasectomy, Scrotal Insulation or Heat Application" was published in *Endocrinology*, July, 1924. These experimental investigations appear to prove that the scrotum of animals is now to be considered a local thermo-regulator for the testis, and that the regulatory or functional capacities are indispensable for the production of differentiated germ-cells, or the maintenance of those already produced. This is of great interest from both a practical and evolutionary biological point of view. In the Monotremes, the lower reptile-like mammals in which it is said body temperatures are by no means constant, the testes are located in the reptilian position, *viz.*, just posterior to the kidneys in the abdomen. As we ascend the scale of mammals a typical scrotum is gradually produced. Moore asks: May we not consider that perhaps the gradual evolution of a scrotum within the mammal group may have played an important part in the evolution of the whole of the Mammalia? He points out that on hot days the scrotum relaxes to its full pendent position, permitting the testis to be further removed from the body, whereas in a cold atmosphere the scrotum is contracted and brought nearer the body.

The author gives an admirable summary of the effects of the internal secretion of the testes upon growth and metabolism. Weil's studies relating to body proportions and sex-gland abnormalities are summarized; likewise Pézard's researches on the effects of castration are fully described. A very interesting account is given of a religious sect living in Russia and Roumania, called "Skopzies," whose religion prescribes that male members be castrated. This sect was studied by William Koch, who resided among them during the war. He recognized four types:

- (1) The ordinary type with long extremities.
- (2) The type of gigantism.
- (3) The type with acromegaly.
- (4) A type with hypophyseal adiposity.

The type seemed to depend upon the age at which the castration was carried out. Maxim Gorky describes a Skopzie in his *Memoirs, Under Strange People*.

The author, having recorded a number of interesting facts concerning the physical and psychic characters of castrates, concludes "that the incretory function of the testes is of vital importance for the well-being of the individual, and that its correlation with other endocrine glands is fundamental."

A very interesting account is given of eunuchoidism, of which there are three types :

(1) Feminism.

(2) Genito-dystrophic gerodermia—a condition where the male is "old and seems young" or "is young and seems old."

(3) Falta's type, or the tardy type, which appears after normal general sexual development and which then begins to show regressive symptoms.

Precocious puberty, dwarfism and gigantism and their relation to gonadal and other endocrine dysfunctions are fully considered—all these interesting facts are accompanied by descriptions of cases and excellent photographs.

The author gives a good summary of Steinach's vaso-ligation experiments and so-called "rejuvenation" operation. His own experiments on the higher apes and operations on a number of human beings, according to Steinach's dicta, gave, in some instances, good results ; in others the results were disappointing. The following summary of the author's opinion is of considerable value :

"(1) I am opposed to the term 'rejuvenation.' It is misleading and may create a great deal of harm, particularly with the laity, who are bound to exaggerate.

"(2) More clinical data from unbiassed sources are necessary to form a definite opinion. Human data are the only reliable criteria, because what may hold true in the lower form of Mammalia may often be found reversed in the human.

"(3) Clinical evidence supported by laboratory checking will in due time establish the merits or demerits of the Steinach procedure. Presently a mass of evidence is inclined to pessimism, although some good results are reported from some quarters."

A very interesting chapter to the readers of the *Journal* is that on "The Male Climacteric," in which he points out that between fifty-five and sixty-five there is in many males a marked mental and bodily change, which in some cases is associated with arteriosclerosis. There is a type of neurasthenia and involuntional melancholia well known to neurologists and psychiatrists, which probably has its origin in testicular retrogression. In some cases there is for a short time a sexual recrudescence. An editorial in the *Journal of the American Medical Association*, 1911, lvii, p. 1212, in discussing the male climacteric, remarks "that certain tolerably characteristic symptoms not unlike those presented by women in the change of life are undoubtedly manifest in many men about the age of sixty-three, and will be vouched for not only by physicians in general practice, but also particularly by nerve specialists, to whom these patients turn for relief. Attention has been focussed on these patients by Mendel when he speaks of the '*climacterium virile*,' with lack of secretory control and a tendency to shed tears, combined with

outspoken signs of depression, disinclination for exertion, lack of will-power and irritation, other symptoms sometimes prominent being dizziness, sense of pressure in head, hot flushes and palpitation of the heart."

Steinach's interesting experiments showing that the substances of internal testicular secretion have a selective action of storage in the central nervous system are of especial interest in relation to these diseases.

Some very interesting experiments of Max Thorek on transplanted testes in six *rhesus* monkeys may be alluded to. It was found that when X-ray was applied that the transplant thrived, while in the control animal upon which the transplant was not X-rayed it was completely absorbed. The author explains this by the few leucocytes found around the X-rayed transplant and the abundance of leucocytes around the control. He gives proper dosage in order to bring about the result for the preservation of the interstitial cells and an adequate blood-supply to enable them to thrive and function.

A very complete survey of reported cases of transplantation experiments by various workers—for example, by Voronoff—who employed apes, is given.

Now there is a strong biological reason why grafts from bovines, dogs, etc., are not successful when applied to man, and the investigations by Nuttall of blood-affinity of man with the Simidæ offers some assurance of successful transplantation of "monkey gland."

A particularly interesting chapter to psychiatrists is that on "Dementia Præcox and the Gonads." It commences with the account of the investigations of Gibbs (*Archives of Neurology and Psychiatry*, 1923, ix, p. 73), in which the author shows that failure in sex-growth and behaviour is due to a biological inadequacy, but a limitation to the sex mechanism should probably not be inferred. "There is a total functional deficiency in most of these patients. Adequate functional activity of the thyroid, pituitary and suprarenals seems to be necessary for sex-growth." This is entirely in accordance with my histological observations of pituitary, thyroid and adrenal glands in one hundred hospital and asylum cases. Obregia, Parhon and Urechia of Bukarest state that the seminiferous tubules are regularly attacked, and absence of spermatogenesis is the rule. These authors have put forward the hypothesis that the cells of the seminiferous tubules may have an internal secretion. The hypothesis of a perverted internal secretion of the seminiferous tubule is rendered untenable by the fact which Bleuler raised against Bornstein's hypothesis (exaggeration of puberty phenomena). This fact is that unilateral or bilateral castration does not exert any favourable action on the evolution of dementia præcox. Todde found that in mental disease generally the testicles were smaller than in normal subjects, but that the diminution reaches its maximum in phrenasthenia; it is less marked in dementia præcox.

An undue prominence is given, unfortunately, to the work of Matsumoto, who merely looked over my specimens and was in no way responsible for the findings, as he only confirmed what I had

already explicitly stated in a paper which was published in the *British Medical Journal* in 1919, entitled "Examination of the Testes in One Hundred Hospital and Asylum Cases." The author later refers to this paper in highly appreciative terms, as well as to another paper on "The Interstitial Cells in Dementia Præcox and Post-adolescent Dementia" by myself and Prados-y-Such. The conclusions are quoted verbatim with approval, together with the tabular summary of results and most of the original illustrations.

It is interesting to note that at the present time the author has a number of cases of dementia præcox under observation in which human testicles have been implanted. Reports of some seem hopeful, but it must be remembered that spontaneous remissions of symptoms are not unknown. I am doubtful, having regard to the fact that this disease is in all probability a genetic inadequacy affecting many organs of the body, and especially the telencephalon, whether any treatment is likely to give more than temporary benefit. However, seeing that modern investigations show that the interstitial cells have an energizing effect upon all the organs of the body, and, as the author has shown, an implanted testicle may retain its interstitial cells, such operative procedure is of great interest and importance, and it is more likely to be attended by good results than by the method of injections. Still, having regard to the remarkable effects of insulin, it is possible that an analogous substance may be prepared from the testes; but Steinach's experiments show that it is only likely to have an effect on the central nervous system if the substance be obtained from animals of the same species—either anthropoid apes or man.

As a result of the author's own experiments and observations he concludes "that the practicability of therapeutic transplantation from the higher apes to man is proved beyond any doubt." The indications and contra-indications for sex-gland transplantations in the male are fully discussed, likewise the technique is very carefully described in all its details. The reader is able to follow the technique by its clear exposition and the numerous diagrams and photographs by which it is illustrated.

The concluding chapters deal with such subjects as neuroses of the testicle, diseases of the scrotum, varicocele, hydrocele, and their medical and surgical treatment.

This authoritative standard work by Dr. Max Thorek, Surgeon-in-Chief to the American Hospital, Chicago, and President of the International Congress of Comparative Pathology, Rome, 1924, on *The Human Testis in Health and Disease*, should prove of great value to the medical profession generally and to psychiatrists especially on account of its clear exposition, practical character, first-hand knowledge and up-to-dateness. The book is printed on art paper and illustrated by 308 excellent diagrams, photographs and photomicrographs. There is an excellent bibliography at the end of each chapter and an index of over 500 authors cited.

FREDERICK W. MOTT.