THE BORDERLAND OF DISEASE.

BY

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THE cure of disease, as it presents itself to us in hospital practice, is, for the most part, concerned either with acute infective or inflammatory processes, or with established organic changes which may admit of compensatory improvement or arrest of progression, but often connote either a hopeless prognosis or a lame and partial recovery. The ordinary hospital patient, in fact, only seeks admission when driven to it by one of two sets of circumstances—an illness of acute onset which alarms him from the outset, or a chronic disturbance of health, which patching-up processes at home, often over a considerable length of time, have failed to relieve. It thus comes about that in the daily routine of ward work we see very few patients, other than those suffering from acute disorders, who are not victims of the end-products of disease. They become inmates of a hospital, in many instances, when the most hopeful opportunities for arresting or curing the malady from which they suffer are past and gone. Unwillingness to give up their work or their domestic duties; dislike of discipline and hospital routine; and a careless indifference to symptoms which, though inconvenient and long-lasting, do not entirely incapacitate them, make the large bulk of our working-class population continue to depend upon a bottle of medicine or a box of pills until sheer inability to get about compels them at last to seek shelter and rest in a hospital or infirmary. Among the leisured and wealthy classes who, by paying the requisite fee, can command professional service at any time, and in that large section of the population whose members are able nowadays, under the conditions of the recent Insurance Act, to summon the aid of the panel doctor on any excuse, however trivial, if it interferes with the comfort and convenience of everyday life, ample opportunity is offered for the investigation of disturbed health processes in their early manifestations. In a vast proportion of patients belonging to these classes, however, the minor ailments are, in such large measure, either unimportant or imaginary that they fail to arrest attention, and are apt to be dealt with perfunctorily and without any clear-sighted intuition as to their bearing upon hereditary predisposition or prospective possibility. This casual attention to minor ailments is explained and to some extent condoned by the experience of every panel or club doctor that capitation payments on insurance principles mean the creation of a desire on the part of the contributors to get something back for their money, and consequently an endless appeal, not so much for advice and guidance as for a tangible return for their outlays in the form of medicine, pills, liniments, and what-not. The easiest plan of alleviation, and that which gives least trouble and at the same time satisfies the patient, is an empiric prescription or a bottle from a stock mixture, accompanied by the confident assurance that the disability is a passing one and of no importance.

It is true that our knowledge of functional disturbance is still primitive, and that its more thorough investigation is seriously handicapped by the large number of subjective ailments which apparently have no appreciable organic or functional change to account for them, but if the class of patient who comes only to secure his "pound of flesh" be eliminated, is it not possible that too little heed is given in many instances to mental and emotional irregularities which, if discovered, would be illuminating and explanatory? Is it not nowadays more necessary than ever before that the functional and neurotic departures from health should be dealt with systematically, and that closer scrutiny and more detailed investigation, either in the hospital or in the patient's home, should be given to all obscure and rebellious ailments which do not yield, within reasonable time, to simple methods of treatment? It is obvious that there must be a cause for every discomfort that drives an ordinary and honest person to consult a doctor or to consent to a course of treatment. Something in that individual's state of health has become disarranged so that the normal balance, upon which perfect comfort as regards health depends, is disturbed. It matters not

whether we are able to locate the origin of the trouble or not; it exists, and it is the first duty of the medical practitioner to endeavour to restore such economic stability as will enable the client who consults him to go back to the affairs of everyday life freed from any signs or symptoms that remind him he is mortal, and reasonably assured that, with proper precautions, recurrence may be avoided. Just as in questions of public health it is becoming more fully recognized that preventive measures are more valuable and economical than curative processes, so must it ultimately emerge in the case of the individual that he will come to concern himself far more with keeping than, as he now does, with getting well. This trend of events is already foreshadowed in the promulgation of a science of eugenics, which, however much it may at the moment suffer from the impracticability that in many directions is the price of over-enthusiasm, is yet a movement calculated to frustrate the invasion of many diseases by providing the individual with a soil on which morbid germs will find it difficult to thrive, or even to exist. The durability of the human mechanism must have a limit, but there is no reason why the average length of life should not be materially increased if the contributory circumstances of disease were better understood and combated. The exceptional men and women who live to reach a century or more of existence prove that the capacity of the human body for carrying on its functions over such a length of years is a determinable fact. It requires only a sufficiently wise insight into questions of incidence, and a more rigidly scientific control of all the circumstances inimical to perfect health which advancing civilization, increasing luxury, and restless ambition bring in their train, to make a century of life the rule rather than the exception of human existence.

Probably one of the first directions in which a drastic change is necessary before such a desirable amelioration in the conditions and duration of the individual life can be achieved is a revised system of tuition for medical students. As educational methods are at present arranged, the only practical knowledge of disease which the undergraduate meets with and the only clinical evidence which is brought before him of ill-health is the material chosen from the wards of his hospital, or from its *post-mortem* rooms and pathological museums, to illustrate the ravages of which disease is capable when it has become a firmly established condition in the life, or a demonstrable cause of the death, of the patient chosen for illustration. Structural changes in any organ which admit of physical signs to verify the textbook description, or some unusual variety of disease which has a sensational interest because of its rarity are eagerly seized upon by most clinical teachers as the texts from which their educational sermons are preached. But necessary and valuable though all such instruction is, it only illustrates, after all, the damage which disease inflicts—a damage which, in many instances, is beyond repair, and at best is typical of an end-process that has scarred the patient and left him a less perfect machine than it found him. Of the conditions which preceded his illness, the circumstances upon which probably the first departure from normal health depended, the proclivities to disease to which his inheritance and upbringing exposed him, and the intimate habits of his life which brought him within the danger zone, the student learns little or nothing. In the acute infections, which form a very small item in his hospital experience, he may see a case through all its stages and witness either a fatal issue or a complete recovery. In the event of recovery, what does he know, or what is he taught, of the future risks that such a patient ought to be warned against? If death ensues he may have demonstrated to him in the *post-mortem* room the havoc wrought by this particular disease, and this is knowledge which is all-essential for his future guidance; but if the illness ends in recovery his opportunities for additional experience cease with the discharge of the patient from hospital. He has watched the man through an acute illness, and has seen him sent home with the satisfactory assurance, duly recorded for statistical purposes on his history sheet, that he is "cured" or "improved," but his information ends there, whereas for future usefulness it is just where it ought to begin. Is the patient who is discharged after pneumonia as "cured" really as good as he was before, or has

his illness paved the way for a succession of after-effects which render him no longer a first-class life? Is it quite certain that the case of enteric fever, who was labelled "cured" when he left the hospital, does not subsequently develop evidences of imperfect metabolism, or of biliary disturbances to which he was formerly a stranger, or that he does not remain an unconscious carrier of his ailment to those with whom he is associated in domestic or civil life? What guarantee is there that the child "cured" of chorea will not have a recurrent attack within six months, or slowly develop an insidious mitral disorder that will ultimately unfit her for active work and usefulness? Many similar illustrations might be quoted, but these are sufficiently graphic to fortify my contention that the education at present offered in our hospitals is faulty and in want of serious revision. Attendance in the out-patient room where minor ailments are the rule is, I am fully aware, a compulsory part of the curriculum, but every doctor need only appeal to his personal recollections to realize how little attention is given to the disorders which mostly present themselves there for treatment. Who of us ever bothered over the examples of indigestion, chronic rheumatism, simple cold, mild tonsillitis, constipation, diarrhoea, or the hundred and one other trivialities which constitute the bulk of the practice in the out-patient room or dispensary? They were all too commonplace and insignificant to be worth either time or attention. What drew the student crowd was a major operation by a chief who had a way all his own of carrying it out; or, on the medical side, some extremely rare case which it had required all the clinical ingenuity of a distinguished professor to diagnose and all his dialectic skill to demonstrate.

But if these imperfections of tuition during the undergraduate career of future members of our profession constitute a flaw which prevents the raw material being worked up to something more near its possibility of perfection before it is stamped with a seal of competency and launched forth to cure the ills and prevent the woes of humanity, what is to be said for the few who aspire to occupy positions in the higher ranks of professional service? So far as the young surgeon is concerned, the present system of advancement may have something to commend it because his hospital affords him the necessary opportunities for the practice of his handicraft and the acquisition of manipulative dexterity. But what about the young physician? The present process by which he aspires in time to become a consultant is one which binds him hard and fast to the practice of his hospital, and to it alone. In the course of many years he plods through the various steps of progression from house-physician to a place on the medical staff. His upbringing has been such as to debar him from any familiarity with the minor ailments of the average workaday life or the management of the sick in their own homes, and has therefore afforded him no opportunity for intimate acquaintance with the preliminaries of disease or with the difficulties of its guidance and control outside of a hospital. He has, in short, acquired no knowledge of general practice, and yet it is from that source of revenue he hopes to draw his income. The old-fashioned apprenticeship system had its faults, but something like it will require to be re-established if the public is to retain the confidence it ought to have in those from whom it seeks a confirmatory—and presumably an experienced—opinion.

For any man who desires to be an accomplished exponent of the art of medicine it is from these minor ailments that he ought to learn his business. They belong to what I have ventured to describe as the borderland of disease, and it is in this area of petty foes that success is to be sought if a general invasion or a territorial conquest is to be avoided.

A homely, everyday illustration presents itself in the case of the infant whose fretfulness, sleeplessness, and general malnutrition prompt its mother early to seek medical advice. If the sign-posts are intelligently read, a skilful adjustment of the child's diet may preserve it from rickets with all its subsequent penalties and deformities; or from convulsions with their dreaded sequelae; or from marasmus with its fatal possibilities.

To all who have reached the goal-posts of experience and are able to estimate retrospectively the value of clinical observation, it must be a matter of genuine regret

that we have so often failed to estimate at its true value the "writing on the wall" which has frequently been, in the light of subsequent developments, the earliest evidence that the Angel of Death had entered upon his campaign of relentless activity and instituted his earliest insidious attacks upon the ramparts of health. At the moment we did not appreciate the full significance of the small disabilities which seemed to be mere ripples on the surface of the placid stream of unbroken and reliable health, but as the months and years have passed on evidence has accumulated and compelled us to recognize that we have confused the "post" with the "propter" or alternatively the "propter" with the "post," and have failed to grasp the true inner significance of these early phenomena, whose real meaning cannot be mistaken when illuminated by the fuller evidence of pathological tissue change. The following examples, taken at random from my own borderland experience, will recall to others many similar clinical memories.

A lady of 48 years of age, who had enjoyed a life of unbroken health, came to see me many years ago complaining of recurring attacks of tightness in her chest and oppression of breathing, especially after exertion. She was the mother of three children and, in addition to her domestic duties, had always taken an active and leading part in the social life of her day. She was energetic, restless, and distinctively neurasthenic. She had no evidence of organic disease, but her pulse was always one of moderately plus tension, and though her heart was normal in size and its valves perfectly competent, there was a distinctive accentuation of the second aortic sound. When she reached the menopause she suffered much from flushings and other evidences of vasomotor instability, her neurasthenic tendencies became more pronounced, and the attacks of chest oppression were more frequent and somewhat more severe. They never caused her serious alarm, and the firm opinion of the many physicians she consulted was that her recurring discomfort was pseudo-anginal in type, dependent upon an unstable nervous system temporarily aggravated by her climacteric and free from any serious risk to life. One afternoon while walking leisurely in the park she suddenly experienced a more than usually severe attack similar to many she had previously gone through. She went home by hansom, and before reaching her house was comparatively comfortable, though not completely free from pain. She ate some luncheon and then retired to her room to rest, having in the meantime telephoned to ask me to look in upon her during the afternoon. When I arrived I found her lying on her bed partially undressed, but complaining of nothing worse than a continuing slight sensation of tightness in her chest, which made her glad to have her corsets undone for greater freedom in breathing. Her pulse was full, regular, and numbered 64. On auscultation, the only physical fact of consequence was the accentuated second aortic sound, which seemed no different from what it had been on many previous occasions when her chest had been examined. As I was leaving her room, she suddenly exclaimed, "The pain is coming again," and by the time I reached her bedside she was cyanosed, and within two or three minutes she was dead. Permission was given for a partial *post-mortem* examination, when it was found that she had a congenital narrowing of the right coronary artery, with early sclerotic changes in the aortic arch as well as in both coronary arteries and in the wall of the left ventricle. The circumstances of her health-history justified the confident opinions that had been given during life, and no known methods of investigation could have discovered the congenital fault from which she suffered, but the subjective manifestations meant, in her case, no mere functional disturbance, but a veritable organic lesion undeclared by physical signs. Though the borderland could not be explored by present methods of investigation so as to reveal the true meaning of her symptoms, the lesson of such an experience must surely be a warning against over-confidence in the generally accepted unimportance of what is described as false angina.

Another class of patient whose broken health declares itself through the circulatory system, and who often comes to us for help when his symptoms are still confined to the borderland country, is a familiar visitor to all our

consulting-rooms. He is usually a man of gouty habit of body, who has reached his fifth decade along the roadway of a strenuous, ambitious life, who has "burned the candle at both ends" for many years in a daily round of ceaseless endeavour to reach the top of his tree both professionally and socially. He has worked hard day in and day out, and has found his relaxation in active devotion to sports and convivialities. He has paid large tribute to Mammon, and has also worshipped at the shrines of Venus and Bacchus. He has been what is called a successful man of the world, and has eventually reached that stage in his life-journey when he must reckon with waning energies and declining powers of recuperation. His health record has been one of such unbroken success that he has had no personal experience of the "ills to which flesh is heir" and has probably never consulted a doctor. But inexorable Fate at length finds him out and ominous headaches, palpitations, shortness of breath on exertion, and an unaccountable sense of weariedness and inertia drive him to seek advice. The following is a typical example of this oft-repeated record:

A vigorous, enterprising, gouty type of man who had lived every hour of his life without having been ill, save once in his 30th year when he suffered from pneumonia, began to find when he was 56 years of age that he occasionally rose with a slight headache, which disappeared after breakfast; that he sometimes waked about 3 o'clock in the morning with an unpleasant sense of abdominal distension and accompanying palpitation; that the usual exercise to which he was accustomed produced unwonted fatigue, and that sudden effort gave rise to slight dyspnoea and a passing unpleasant sensation of vertigo; that he was compelled to get up once or twice every night to pass water, and that he was developing an impatience of temper to which in his earlier years he had been a complete stranger. None of these ominous warnings gave him the least alarm, and he brushed aside the repeated suggestions offered by his wife that he should see a doctor. He attributed all his discomforts to his liver—the usual *bête noire* of every variety of physical malaise—and endeavoured to correct them by a blue pill followed by a morning saline draught sufficient to set up a temporary diarrhoea. In passing it may be asked, Why does humanity pin its faith so implicitly to aperient medication? No matter what the disability may be, nine people out of ten endeavour to correct it by a dose taken at their own hand, and in most instances apportion the value of their self-chosen remedy to the violence with which it acts. The gentleman whose case I am now relating rapidly became a slave to his favourite pill, and lulled any suspicions he may have had about his health into a sense of security by periodically providing for a drastic clearing out of his bowel, without any attempt to modify his ordinary habits of life. For a time his plan of self-medication seemed to answer, but ultimately, when he was 58 years of age, he began to realize that his pill was losing its charm, and that his troubles were gradually becoming more pronounced and a source of increasing annoyance. Very much against his own inclination he was then persuaded to seek advice, and here is a short account of his condition when he presented himself for investigation: "A stout, florid man, of 58 years of age, prematurely grey, and to appearance older than his years; obviously hampered in his breathing by even slight exertion, with morning cough, hawking, headache, and nausea; troubled with frequency of micturition, especially at night; and disturbed by increasing imperfections in his digestion and a constant sense of languor and weariedness, for which he could in no way account. On examination his liver was found to be enlarged and tender; his heart was hypertrophied, sufficiently to displace a thrusting apex-beat outside the nipple line, and on auscultation revealed a short systolic murmur in the aortic region with a loudly accentuated second sound, and an occasional dropped beat; his arteries were thickened and tortuous, and the sphygmomanometer recorded a tension of 180 mm. of mercury; his urine was pale in colour, with a density of 1026, and contained a faint haze of albumin, together with sugar to the extent of 1.75 per cent.; his knee-jerks, though present, were feeble, and a fine tremor could be detected in his muscles when they were put on the strain." Some weeks after this examination the patient began to suffer from mild attacks of cardiac

asthma, accompanied subsequently by a passing sense of constriction in his chest. Ultimately, after a long day of unwise exertion, followed by a public dinner at which he made a speech, he retired to bed completely tired out, woke from his sleep about 2 in the morning with a severe headache and feeling of sickness, which terminated in an apoplectic seizure. From this he partially recovered, but it proved the prelude to another of greater severity some weeks later, to which he succumbed. Here was a clear history of at least two years, during which invaluable borderland symptoms were allowed to pass unheeded and the golden opportunity for staving off terminal disaster irrevocably lost.

In the pulmonary system cases occur constantly in which misinterpretation of, or neglect to search for, the explanation of early and often unobtrusive signs allows the enemy to gain full possession, whereas he might have been kept at bay or defeated if he had been resolutely opposed while he was still merely a borderland foe. Here is a graphic case that came under my own investigation only a few months ago. A man of 43 years of age who occupied an important position in one of our great public services, had been troubled with a slight but persistent cough for six months. He saw a doctor from time to time and complained of the annoyance which this cough caused him. Knowing that he smoked a great deal and was dyspeptic, the doctor regarded the cough as unimportant and assured him it was entirely due to tobacco and an inactive liver. Despite this assurance, however, the cough continued with increasing persistence, and the sufferer became alarmed when he found that he was unable to sleep at night on account of it, was gradually losing flesh, and beyond all was so tired out from his day's duty that, as he expressed it, he felt every evening that he was completely "played out." This was the story with which he came to me and it was one which at once aroused suspicions. On examination there was no evidence of disease in his heart, nervous system, or abdominal viscera. His tongue was coated and his pharynx granular, both conditions doubtless due in great measure to his tobacco. When his lungs were examined, there were very few physical signs, but the left chest, when seen in profile, expanded less freely than the right; on gentle percussion the note on that side was correspondingly flat, and the respiratory murmur was wavy and bronchial in quality, especially over the second and third interspaces close to the sternal border. Behind there was impairment of the breath sounds over the supraspinous fossa, and after coughing there came a suspicion of one or two small moist râles. Throughout the lower lobe an occasional creaky râle could be heard, but there was free air entry from apex to base, and no suspicion of dullness anywhere. The right lung was without physical signs except in front, where, from the clavicle to the level of the third rib, the breathing was harsh, with the expiratory part of the murmur ominously prolonged. These physical signs, though indeterminate, were, in the light of the accompanying symptoms, disturbing, and the patient was advised to have a skiagram of his chest taken, and also to have his sputum examined bacteriologically. The skiagram showed a mottled shadowing in both upper lobes, much more marked on the left side than on the right, with a deeper density of shadow, and with long streaks radiating downwards throughout the whole upper lobe of the lung. The sputum was found to contain tubercle bacilli in large numbers, and at a second examination, four days after the first, the suspicious sounds in the supraspinous fossa had become so pronounced as to leave no doubt as to their true nature. The patient at once gave up his work and went into a sanatorium, where he is now undergoing the usual course of treatment. This is a case which illustrates how much misled we may be if, in early cases of phthisis, we trust to the evidence of subjective symptoms or of physical signs alone. X-ray examination helps the diagnosis in many obscure cases, and ought never to be omitted when the circumstances are suspicious. In this instance the evidence of the sputum was all that was necessary to clinch the diagnosis, but there are lots of cases in which, if the stage be sufficiently early, there may be no sputum, or where such as there is contains no tuberculous organisms. And it is in such circumstances that treatment offers the best chances of success, so that again we have, from an example of this kind, evidence of the superlative value of

borderland manifestations. But another lesson is to be derived from this case: the borderland symptoms were referred to a doctor, who was consulted again and again, but who jumped at conclusions that because of the patient's habits he had contracted a cough which he said was "a reflex from his liver." He omitted to auscultate his chest, to ask to see the sputum, or to inquire into the progress of events so far as they concerned the general nutrition of the sick man. More mistakes, as we all know, are made from lack of painstaking than from want of knowledge, and this case is a regrettable example of mischief that might have been curtailed by being earlier discovered had this scrap of common knowledge been borne in mind.

(To be continued.)

OUR PRESENT KNOWLEDGE OF THE THYROID GLAND;

WITH A PRELIMINARY REPORT ON A CASE OF THYROID GRAFTING.*

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THE work that has been done on the thyroid gland within recent years has acquired enormous dimensions, but, remarkably enough, the clinical, operative, and pathological observations and physiological investigations constitute a perfectly congruous study of wide practical applicability and interest which concerns almost every branch of medical science.

In a comprehensive survey of this subject it is of advantage to refer, first of all, to a few developmental points.

1. Development.

The thyroid gland is said to have a double origin. The main portion arises from the base of the tongue and grows downwards into the neck, where it bifurcates. This pharyngeal bud or projection is, to begin with, a tube—which suggests the probability of the secretion being poured into the mouth in antenatal life—and is known as the thyroglossal duct. Out of the bifurcated end are formed the isthmus and the larger portions of the lobes, the lesser segments of which were thought to originate from the fourth branchial arches, but this view of an "epiblastic contribution" is not now generally accepted. In course of time the hyoid bone is developed across the duct, which thus becomes divided into a lingual and a thyroid section and ultimately obliterated, the meatus of the lingual portion remaining as the familiar foramen caecum, and the thyroid part occasionally surviving as the so-called pyramidal lobe. In some instances a mass or masses of thyroid substance fail to coalesce with the main gland, and are known as "accessory thyroids." Our study of the development of the thyroid not only throws light upon the anatomical peculiarities already indicated, but it also explains certain pathological conditions which are met with in the neck, such as the vascular tumour which grows at the base of the tongue (lingual thyroid) and the cysts in the middle line of the neck, both being thyroglossal in origin, and which are liable to be mistaken for the cystic enlargements of the hyoid bursae and dermoids, but the latter are rarely situated mesially, as they are attached, as a rule, to the great cornu of the hyoid, the styloid, or the mastoid processes.

2. Anatomy.

The important fact to bear in mind is that the gland is tied down to the trachea by cervical fascia (the surgical capsule); hence the liability of the windpipe to compressional changes and the diagnostic importance of the act of swallowing. With the exception of giant goitres, which, owing to their size, impede tracheal movements, fixation here, as in the breast, is indicative of malignancy, and more definitely so if there be aphonia. The inferior thyroid arteries are of primary surgical importance owing to their intimate relationship with the recurrent laryngeal nerves, which are liable to be torn or included in the ligatures for these vessels.

Physiology.

The physiology of the thyroid gland is a chapter of absorbing interest. It presents for consideration functions of the most intricate order by means of an internal secretion, which has eluded the efforts of many investigators to analyse or identify it definitely. We are all familiar with the microscopical appearances of a section of the gland—the spheroid vesicles lined with columnar epithelium and filled with colloid material. A noteworthy feature is that, with the exception of the colloid substance, the gland shows no other sign of secretory activity, and no secretion or its active ingredients have been isolated or their presence proved in the veins or the efferent lymphatics of the gland. For all that, there can be no doubt of the great rôle that the thyroid plays in animal economy, and Dreschel's opinion to the effect "that it secretes a complex material which subserves more than one essential function" is doubtless correct and conforms to the present conception of glandular secretions in general, which are looked upon as influencing metabolism by acting as excitants or stimuli (hormones) to some or as agents of control or inhibition to other organs. It is now conclusively proved that the thyroid has a profound influence on the metabolism of growth, specially with regard to calcium and nervous tissues; that it affects sexual functions, as evidenced by its increased activity during menstruation, pregnancy, and lactation and the retrogressive changes observed in the genitalia in experimental thyroid inefficiency; that it is concerned in the glycogenic work of the liver by its inhibitory action upon the pancreas, the pancreatic hormone being the principal stimulus to the sugar-producing cells of the liver; further, it influences the circulation by virtue of its vaso-dilator property, and the fact that the gland receives part of its blood supply from two cerebral vessels (the vertebrals) points to the probability of its having a bearing on intracranial blood pressure. There is also what Gley terms its neuro-chemical relationship with the other ductless glands, the parathyroids, the pituitary, the suprarenals, the ovaries, and the thymus, which is pretty constantly in a condition of hyperplasia in cases of Graves's disease.

Such substances as have been chemically obtained have not shown the potency of the gland extract, and of which may be mentioned Bubnow's thyro-protein, which acts in the manner of an enzyme; Fraenkel's thyro-antitoxin—a significant term suggestive of the view, now held by many workers, that the thyroid secretion possesses the property of neutralizing toxins, and that in Graves's disease this defensive element is absent or impaired; Roos and Bauman's thyro-iodine, which also contains a trace of phosphorus. In Hutchinson's opinion the iodine and phosphorus containing substance is the active one.

3. Pharmacology and Therapeutics of the Gland Extract.

Allusion has already been made to the vaso-dilator effect of the gland's secretion. Accordingly, the extract lowers the blood pressure. It produces tachycardia, diuresis, and its prolonged administration brings on glycosuria. It causes a mononuclear leucocytosis (a condition present in Graves's disease, and which becomes reduced after the ligation of the vessels or hemisection of the gland). No true exophthalmos has ever been produced.

Thyroid medication may be said to occupy the foremost place in organotherapy. The brilliant results obtained by the exhibition of this drug in myxoedema are well known. In some rare instances, however, it fails to act, and then the question of other measures arises. In this connexion the following notes on a case of congenital myxoedema may be of interest: "E. H., 4 years of age, a typical cretin (Fig. 1), was brought to the Ashton Infirmary early in 1907. For about three years he was treated with thyroid extract without intermission. He came under my care in January, 1910, and I continued the treatment for over six months, prescribing 20 grains of the dry extract per day. Neither his physical nor mental condition underwent any appreciable change. I then decided to try grafting. I had a sheep killed in hospital while the patient was being anaesthetized. I removed the thyroid, placed it in hot saline, and after incising it in several places planted it into the child's omentum, which I scarified with a needle.

* Delivered to the Twenty Club, March, 1914.