In the experiments on rabbits such changes in the thyroid and adrenal have been found, and would appear to account for the failure of insulin action after diphtheria toxin. There is much evidence that in all infections there is a stimulation of these two glands, which would account for the increase in the severity of diabetes and the failure of insulin, either relative or absolute, so constantly found in infected conditions in the diabetic. Furthermore, there is evidence that the same disturbance of carbohydrate metabolism takes place in a much slighter and less noticeable degree in normal individuals who are suffering from infections. Such evidence will be considered in detail in the more complete description of these experiments shortly to be published.

Further Clinical Evidence.

An analysis of the cases of diabetes recorded as being resistant to insulin and not responding to it in the usual manner also affords evidence that the thyroid and adrenals are the usual agents which antagonize the action of insulin in these "insulin resistant" cases. Apart from cases of diabetes with infections which do not respond to insulin in the usual way, a number of cases are recorded which require enormous doses of insulin to obtain the usual therapeutic effects. Many of these cases were definitely complicated by hyperthyroidism, and most of the others seemed to be of the nervous excitable type which we may justifiably associate with overactivity of the sympathetic nervous system, probably caused by the thyroid or adrenal or both acting together. I have recently had a case of severe diabetes in whom the onset of hyperthyroidism (Graves's disease) produced coma in spite of the usual dose of 60 units of insulin a day, and required 140 units a day to control the blood sugars on a constant diet. The use of iodine to control the hyperthyroidism reduced the insulin requirement to the previous amount, and the withdrawal of the iodine again increased the insulin requirements.

An attempt has been made to control the overactivity of the sympathetic nervous system complicating diabetes by the use of ergotamine. But although evidence has been obtained that it does decrease sympathetic activity and so increases insulin activity, it would appear to be impossible to give it to man in sufficient doses to exercise any appreciable therapeutic effect on diabetes.

Conclusions.

It is suggested from experimental and clinical evidence that toxins and infections antagonize insulin action by a stimulation of the thyroid and adrenal glands. These glands are direct physiological antagonists to insulin action, and their overactivity makes diabetes worse and prevents the usual action of insulin.

The effect of various toxins and infections in this respect is being investigated. But the evidence in support of the above hypothesis seems sufficiently clear to warrant this preliminary communication.

THE MODERN HOSPITAL CONCEPTION.*

BY

N. BISHOP HARMAN, M.A., M.B.CANTAB.,
F.R.C.S.ENG.,

SENIOR OPHTHALMIC SURGEON TO THE WEST LONDON HOSPITAL, ETC.

THE characteristics of hospitals have varied according to the time and place of their working. Our present-day ideas and practices may seem strange to our sons' sons a hundred years hence, just as our achievements would most certainly be amazing to our forefathers of a hundred years ago.

In discussing the modern hospital conception it will be well to keep in mind ancient practice. There is a stimulus in the reminder of the high ideals that have been evident even when hospitals were as bad as they well could be. Further, the remembrance of the diversity of aim displayed

by the founders of old hospitals will prevent us falling into the bad habit of thinking that some one line of policy, and particularly the one we are familiar with, is the one and only policy to be countenanced. The study of history has this sure advantage—we shall discover such a wide range of precedents for diversities in practice that we are encouraged to take wide views of present-day practice and what may come out of it.

Early Hospitals.

There seems a common belief that hospitals are, and have been always, places for the treatment of the sick poor; also that they only came into being during the Christian era. It would be foolish to deny that both these beliefs are substantially true. There has been a dominance of the idea of the "house of pity" in the hospital, and pity has been a characteristic mark of Christianity. Yet in point of fact both these beliefs are wrong. The origin of the word "hospital" shows that hospitals were not primarily places for the sick, and we in this country use the word for other purposes. I have only to call to your mind three celebrated hospitals founded within the mediaeval city of London, and still existing in much their original form, to prove the diversity of usage of this word: Christ's Hospital on one side of Smithfield, and St. Bartholomew's Hospital on another, and the Royal Hospital of St. Katherine's by the Tower—all three famous throughout the country. Yet the first of these was and is a school, the second a place for the sick poor—for the "recreation of poor men"—and the third an almshouse. A very proper trinity of benevolence, all covered by this one name. And these three are by no means exceptional; many more such throughout the country survive to this day.

Again, places set apart for the treatment of the sick were not always "houses of pity," places for the sick poor; neither are they always so now. The temples of Aesculapius, whose staff we claim as our ensign, were the classical prototypes of what a complete hospital might be. There were within the precincts sick wards, bathing establishments, gymnasia, libraries, sleeping porches for guests, a theatre, and the temple proper. The provision was as wide in its embrace of human needs as the most modern of spas. I do not think we could do better than keep in mind this ancient practice in building up our own conception of the modern hospital, and particularly the fact that they were not places for the poor alone, but for all classes within the classic city state. To-day in the United States of America, where our mother tongue is spoken by three times as many persons as speak it in these islands, the word "hospital" used in relation to the sick does not mean solely a house of pity; all classes look upon it as indicating a place for them if and when necessity arises.

Houses of Pity.

In this country there hangs about our idea of the hospital an obsession that is an inheritance from mediaeval tradition. Most of our hospitals, when places for the sick, were houses of pity, founded by pious benefactors, who in the current thought of the time sought to make expiation for their sins by their benefactions. These foundations were for the most part under ecclesiastical control, and their value to the community rose and fell with the purity and corruption of monasticism. The ideas that arose from false conceptions of sanctity and the rigid conventual isolation of the servants of the sick in olden times cannot be better illustrated than by a reference to the dictum of St. Chrysostom, the founder of one of the earliest Christian hospitals, to whom we owe one of the most beautiful of the prayers in Christian books of devotion, which fittingly finds a place in the English Book of Common Prayer; this saintly man tried to persuade the deaconesses under Olympia to go unwashed! The struggle between sanctity and soap lasted long. A thousand years later we find St. Vincent de Paul, the reformer of French hospitals, protesting against the isolation of the nursing sisters which put them under the influence of the priest rather than the physician. He said:

"My daughters, you are not religious in the technical sense, and if there should be found some marplot among you to say 'it is

* Read at the inaugural meeting of the Windsor Division, October 15th, 1926.

better to be a nun,' ah! then, my daughters, your company will be ready for extreme unction. Fear this, my daughters, and while you live permit no such change; never consent to it. Nuns must needs have a cloister, but the Sister of Charity must needs go everywhere."

Old influences persisted in this country long after monastic control had passed away, and the new order has only been evolved after many generations of struggle. The stories of old-time hospitals are amazingly variable. Some few are described as well ordered places in fair gardens where, through the simple means of rest, food, and air, natural strength was revived. Of others such details are given as conjure up pictures of horror. We can therefore scarcely be surprised that there still persists in the popular mind a reluctance to enter an institution.

Within the lifetime of some here Florence Nightingale published her classical work *Notes on Hospitals* (1863). The first lines of the preface read: "It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm." Later, after setting out the statistics of the appalling death rate of city hospitals, she writes:

"Facts such as these (and it is not the first time that they have been placed before the public) have sometimes raised grave doubts as to the advantages to be derived from hospitals at all, and have led many an one to think that in all probability a poor sufferer would have a much better chance of recovery if treated at home."

Cool critical statements such as these give no lively picture of former hospitals. Perhaps the citation of a few recorded facts may properly be used to colour the canvas. In mediaeval times there were market surveyors whose duty it was to seize putrid meat exposed for sale and condemn it as unfit for the consumption of the citizen. A very proper and enlightened provision, you will think, and no doubt you will assume that the market surveyors were enjoined to attend to the destruction by fire of the poisonous stuff. But no. In London, Oxford, and Scottish burghs it was provided that the putrid meat should be confiscated and given to the hospitals! John Bell cites a French author, in later days, describing the work of the surgeon, as stating: "Every patient he takes in hand (do what he will) must die of gangrene." Sharp, a Guy's Hospital surgeon, wrote in 1765: "In hospitals at London, bugs are frequently a greater evil to the patient than the malady for which he seeks an hospital." There are several accounts of moneys set aside for the destruction of bugs in hospitals. John Howard, of prison reform fame, also investigated hospitals, and among his reports of 1789 states of the celebrated foundation of St. Thomas's Hospital: "There were no water closets." Between 1862 and 1867 special wards were opened in "the new part of King's College Hospital" for midwifery cases. Florence Nightingale's committee appears to have been a prime mover in the experiment. She reports in her book on "lying-in institutions" that "every precaution had apparently been taken to render the Midwifery Department perfectly safe." Yet in the five years of its existence the mortality from puerperal fever was 33.3 per 1,000. The wards were closed.

These cases I have cited were not exceptional; they are samples of the average of the times. We to-day know nothing like them. I remember one "buggy" hospital in South Africa during the war of 1900, and the scandal the disclosure caused in Parliament and press; and we are to-day properly disturbed that the death rate from puerperal fever throughout the country is a fraction over 1 per 1,000.

There is clear evidence that mediaeval hospitals as places for the sick were not always "houses of pity." The lepers and the destitute were driven into them. The words of our President, Mr. Hogarth, in his address at Nottingham last July, were not a bit too strong when he said: "The hospital [was in mediaeval times] the lazar-house of the destitute, the place to which homeless and plague-stricken outcasts crawled to die, or into which they were herded if they seemed too noisome and dangerous to be tolerated at large." In the face of such facts of history, can we

wonder that any but the most needy ever entered a hospital? For the diligent artisan, the comfortable burgess, the squire and his relations, the nobility and gentry to contemplate that he or his should be associated with one of these places because of his own bodily infirmity would have been held incredible. Therein lay the anomalous state of affairs. The classical hospital, the temples of Aesculapius, was for all. But the later-day hospital as a place for the sick, from mediaeval to early Victorian times, was so bad, since it slew more than it cured, that those who could afford to do so shunned it as a pest-house. The modern hospital is now the best place for recovery of health endangered by serious disease or accident, so that there is no reason why the hospital conception should not revert to the all-embracing completeness of its classical prototype. That is the conception of the modern hospital which I wish to press upon your attention; and then to discuss briefly some of the practical problems that attend it.

The Larger Conception.

The hospital should be possessed by the city, but not be in it. In this regard most of our hospitals are ill placed. The city has grown round and passed beyond them. They are now in the heart of the city. Through their open windows come the unceasing roar of the traffic, the hoots of horns, the screams of trams; and the nurses are at perpetual war with the dust and soot that settle upon everything. What sort of rest is here for the sick? How can the physician carry out diagnostic investigations with nicety in such surroundings? That the hospital should be outside the city is no new idea. It was so in Greece. Petit, in 1786, advocated it for Paris. There was a wave of enthusiasm for the idea in London a score of years ago. Yet to-day, when a renowned hospital is reported to be "falling down," it is to be rebuilt on its old site, despite the facts that the residential population formerly about it has gone and that there is a string of hospitals on the road line from east to west of it.

The unit hospital looks upon its neighbour rather as a rival than as a co-worker. If there were combination instead of isolation then surely by this time we should have hospitals for in-patients at strategic points without the city linked to an inner ring of institutes where consultations were held, with clinics for special purposes, for school children, tuberculosis, venereal disease, mental disease, and the like. This is the ideal; it would be economical in the highest degree in the saving of space, and in the speedier relief of sufferers. I view with alarm the growing tendency to the establishment of isolated clinics for this and that disease, just because it is an administrative convenience to the civic authorities. Medicine has no watertight compartments, and the attempt to make these divisions is destructive of good medicine; for the patient may be treated for one complaint, whereas a larger view might show that the complaint was a secondary symptom. Combination is the essence of civilization, and of medicine; isolation is barbarous.

Cottage hospitals are far too much isolated. They should be linked up with larger hospitals. For want of facilities for consultation and transfer, the patient who has energetic friends cuts the local connexion and betakes him to the town, so that knowledge of the stages of his illness is lost—it is divided between several practitioners. There are attempts in the direction of combination now being evolved in this country; it has been developed to a high degree in Christchurch, New Zealand. To-day for the most part the doctor's work is chopped into small pieces which he cannot fit together. The home doctor, the tuberculosis officer, the venereal disease expert, the hospital physician and surgeon do not meet as a matter of course. Whereas in a co-ordinated scheme they would.

In the isolated unit hospital until quite recently it seemed as though the aim was to limit the staff to the smallest number that was thought able to do the work; now better ideas prevail, and staffs are enlarged so as to include as many as can be economically employed. Selected staffs of trained practitioners there must be in any large organization. The cottage hospital, so long as it remains a cottage hospital, may be, and should be, open to every

qualified and reputable practitioner in the area. In a general hospital of a city such arrangements would be impracticable; it would mean disorder and injury to patients. The wise man knows his own limitations; he does not want to dabble with costly radiographic apparatus or attempt operations the like of which he has never seen. Nevertheless, there is still room for the expansion of our big hospital staffs. I read that in New York City a census taken on the 1921 directory showed that of 8,760 physicians practising in the city no fewer than 3,232, exclusive of consultants, had affiliations with hospitals in the capacity of visiting or assistant visiting physicians or surgeons. This constituted 36.8 per cent. of all registered medical practitioners in the city. Again,

"There exists no absolutely 'closed' staff, as every hospital (outside of purely research institutions) has a so-called 'courtesy' staff consisting of men who are given the privilege of sending in private patients and attending them at the hospital. . . . These privileges refer almost invariably to private or semi-private accommodation and very seldom to public wards."

The association of more doctors with hospital work is shown by this citation to be bound up with the enlargement of the hospital idea, that it should no longer be for the sick poor only but for all. The limited "house of pity" conception ought to be dead, but it dies hard. It is damaging to the hospitals, to the profession, and to the public. Osler wrote in 1908:

"It has always seemed to me a radical defect of the English hospital system that, as a rule, no provision is made for pay patients. Not only should the class . . . with moderate means be allowed to use the general hospitals on special occasions and pay what they could for services, but it would be an immense boon to extend the privileges of the hospital to the well-to-do classes by the establishment of pay wards."

Now, nearly twenty years later, there is a move, in a small way, to meet this radical defect. It should be our endeavour as a profession to foster it in every way. In the next few years the growth of such accommodation will, I believe, be rapid. Legislation is foreshadowed for the registration of nursing homes, with a view to the improvement of these places for the sick. Improvements cost money. It is likely, therefore, that some of these homes will go out of business from inability to meet new capital outlay. The existing accommodation, especially that which the middle classes can afford, will become more limited; and just at a time when domestic difficulties render the care of the sick at home less possible. The demand for hospital accommodation, pay wards, or special hospitals will certainly increase.

The out-patient department is still a blot upon our hospitals, albeit less now than formerly. It is a relic of the bad old times when pauperism was normal for the major part of the population. The caustic comment upon this indiscriminate medication to be found in the minority report of the Poor Law Commission is not too severe. It may be said that it should be banned in its present form, since it is in conflict with the principle of Florence Nightingale: "the very first requirement in a hospital that it should do the sick no harm." There is now no need for it except for consultation purposes, since insurance and provident practice is so thoroughly established and efficient in its working.

Questions.

There are certain questions that will inevitably arise when we consider this modern hospital conception.

Will such a scheme increase hospital abuse? I think it will end it. When the hospital receives all classes of patients—poor, part-paying, and wholly-paying—what is called hospital abuse will disappear. An efficient almoner system (such as we are developing) will place each patient in his proper category. Individual hospital abuse is, in my experience, declining. The grossest abuse now arises from the exploitation of hospitals by wealthy corporations; with this I will deal later.

Will the larger hospital conception endanger provision for the poor? By no means. I think it will enhance it. It most certainly will give the poor confidence in an institu-

tion to which all classes resort—themselves, the workers of all kind, and even the rich.

Will such a scheme mean State control? I think it will prevent it. Closer organization in the working of our voluntary hospitals would so secure them in their pre-eminent position that State hospitals would be likely to be drawn into their wake for their own good.

Will it mean a loss of local interest and therefore of benefactions, especially if the State helped such a scheme financially? I do not think so. The better the scheme and its working the better the appeal it makes. It seems to be assumed by some that State grants mean the automatic loss of gifts and subscriptions. I should like to see the evidence of this. We do not find it true of the universities. Even county council schools have received benefactions! It is not true of the societies for the blind, for though in the last five years State grants have increased tenfold, private benefactions have steadily increased. It is not true of New Zealand, where a State hospital system, under semi-independent control, has received large benefactions.

Will such a scheme mean the general remuneration of the staffs? Yes, undoubtedly. You cannot have paying patients in a hospital, whether they pay in part or in whole, without depriving the staff of some of their means of livelihood. The medical members of hospital staffs must live, even as others, on their work. The proposition is no new thing. There is found among the records of St. Bartholomew's Hospital, in the time of Harvey, this minute:

"That Dr. Andrewes be now advanced to be also an immediate physician to this hospital, and to have the salary or yearly fee of £33 6s. 8d. for his pains."

There is a good custom in vogue in at least one New York hospital.

"The highest salaries are paid to the younger members of the visiting staff. The basis for this is that the younger members give more time to the institution; when they become older and their income from private practice increases, their salary is decreased. The other consideration is that it relieves the younger men to a certain extent from their bread-and-butter worries and makes it easier for them to apply their time to research and study."

Hospital Abuse.

Earlier I said the grossest form of hospital abuse was that due to the exploitation of hospitals by wealthy corporations. I will now justify this statement. There is an ever-increasing number of cases admitted to hospital as out- and in-patients because of industrial accident or disease. These patients are under the protection of the law as regards compensation for loss of wages during illness or loss of earning power thereafter. But there is no provision for their treatment other than by their insurance doctors. The gap has to be filled by the hospitals at the expense of the charitable and of the hospital staffs. Another group of cases come into hospital suffering from street accidents. In both groups of patients a third party is interested in, and benefits by, their speedy recovery—the wealthy insurance companies. But it does not seem to have occurred to them, or with rare exceptions, that they have a duty to the doctors who step into the breach and tend these patients. There is ample precedent for such an arrangement, and failing one arrived at by friendly adjustment we should seek an amendment of the law. In New York State it is provided by law that the party responsible for compensation shall also pay the hospitals and the medical staffs for the treatment of these cases. There can be no doubt that at the present time shareholders of insurance companies are profiting at the expense of the hospitals, and the private benefactions which we may hope these shareholders make do not indemnify them against the charge of exploiting charities and the medical staffs of those charities for business purposes.

Mr. Chairman, that concludes my address. My aim has been to present a conception of something better than we have to-day, wonderful as that is when it is compared with a past that is possibly within the memory of some here.