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IN PRAISE OF IDLENESS*

BY

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The distinction of delivering the Beyer Memorial Lecture in Johannesburg is the culminating-point of a train of events that started when I went from Oxford to Guy's in 1910. Here I found myself among South African students, and later I numbered many South Africans among my colleagues, my pupils, and my friends. It was therefore only natural thirty years later, when the world decided to evict Mussolini from his Ethiopian empire and entrusted the task of throwing him out to a small force whose medical and specialist services were largely South African, that I should be appointed Consulting Surgeon. In that East Africa Force, whose advance from the Juba to Addis Ababa has never been approached in brilliance by any other campaign before or since in military history, I met for the first time many South Africans, soldiers and doctors, who are my firm friends to-day. After the fall of Addis Ababa I eagerly seized the occasion to visit the wounded in the base hospitals and specialist centres of the Union.

South Africans come to Guy's to learn medicine and to play Rugby football. They are not merely excellent players, they are also able to tell each other in Afrikaans where the ball is coming, and whether they intend to pass or run on. This ruse failed, however, when we met our great rivals St. Bartholomew's Hospital in 1910, for playing back in the Bart's fifteen was a young South African, Christian Beyers, the man we are honouring to-day.

The students of other hospitals sometimes accuse those of St. Bartholomew's of giving themselves airs. They say, "You can always tell a Bart's man, but you cannot tell him much." Yet they all respect the oldest hospital in England, the medical school that trained Pott and Abernethy, Paget, Butlin, and Bowlby. No one could accuse young Beyers of superiority; he was the most sincere and the most modest of men. No one could call him a bookworm, yet he absorbed into his being the great traditions of his hospital. In Johannesburg he became a pillar of South African surgery. A nation asks of its surgeons that they shall be wise, honest, and skilful; Beyers was all of these, and he was also human and kind. When he died before his prime he left a company of colleagues who loved him as a man and a multitude of patients who owed their restored health to his skill as a surgeon.

Beyers has left behind him a great record and a great example. South African surgery stands very high in the world to-day, and you have in this city of Johannesburg men whose reputation is international, men who spend their days in constructive work and their leisure in writing. A sermon in praise of idleness by one who comes to you from the more leisured atmosphere of an older country may therefore be opportune.

Proper Use of the Mind

We pride ourselves that we live in the age of science. The scientific method, based upon observation and experiment, was the intellectual habit of the Greeks. It vanished in the Dark Ages, swept away with beauty and culture by the barbarian tidal wave that swamped Europe. It reappeared with the Renaissance and has progressed ever since.

The scientific method has led to the unparalleled advance of medicine since the time of Harvey; it has, however, the limitation that it is worked by the human mind, a machine subject as all machines are to individual tricks and idiosyncrasies. Yet whereas the mind can make due allowance for faults when they are found in machines other than itself, towards its own faults it is apt to be blind, particularly when it is driven, as no machine should be driven, without rest periods for inspection, adjustments, and renewals.

Man insists on the alternation between work and idleness in the creatures of his own hands and brain. He plans to lay aside his cars at stated intervals to adjust the effects and to replace the ravages of wear. He applies the same principles to his fellow men. The Mosaic Law enjoined one day's rest in seven. Modern conditions, however, tend to interfere with this alternation between work and rest, particularly between mental work and mental rest; for, while the body cannot be driven beyond a certain point without rebelling and ceasing to function, the mind works with no measurable metabolism or consumption of energy, and can go on working without rest, further work often providing the stimulus to greater effort, till the bearings of the machine melt.

What we have come to call civilization has upset the proper use of the mind. In olden days men were individuals. Each man learned from his parents, his fellows, and his elders, but his thoughts were his own thoughts, worked out by him from his gleanings, from his observations of the sky, the sea, the trees, and the animals, into a personal store of knowledge and opinion. Each man worked for a master, but he received his task in the rough to work out according to his own ideas. The journeyman builder was given, not a blue-print to follow slavishly, but a piece of stone to shape into a pillar that should fit one corner of the church that was rising in the meadow, and if he was instructed to decorate the capital he was free to work out a design that included his favourite dog or a caricature of his foreman. Throughout the day his mind was engaged on varied and interesting tasks, and at the day's end it needed and valued rest.

Nowadays men are not asked or encouraged—indeed, are seldom allowed—to think. Their growing minds are

*The Beyer Memorial Lecture delivered at Johannesburg on Nov. 24, 1948.

moulded at school on Government-sponsored primers, and thereafter they receive their opinions from books or newspapers. Their work is no longer personal or intelligent, but some small portion of a whole of which they have no conception, repeated without the use of any mental process several times a minute for fifty-five minutes in the hour, eight hours in the day, five days in the week, and eleven months in the year.

Such a mind is permanently idle, and to it idleness does not mean rest. It has not been weaving patterns from rough materials, but has remained passive while ready-made and standardized patterns, mass-produced on the cheap to fit cortices of every grade and every race, were scribbled over it. When not so used it has no means of self-employment, no stores to lay down in the basement; and the primitive instincts of the herd—love, fear, hate, and greed—stir dimly in those caves of instinct and produce mass sentiments masquerading as thought, clichés and catchwords that form the conversation and the wit of the moron.

The active mind, on the other hand, may be working all the time and come to no harm if the work is congenial, interesting, and within its trained capacity. The artist can paint for hours without being aware of the clock; the surgeon can perform a four-hour operation of the greatest intricacy, at every stage of which he has to make decisions of prime importance, yet he feels no fatigue. But let the artist trudge round a picture gallery, or the surgeon try to watch a colleague for four hours, and both of them will be calling for a Guinness. The mind can work thus continually without tiring, and do so day after day, but it is not doing its best work. It is making decisions without storing them, collecting pictures without hanging them in the galleries, laying up a hoard of valuables which become treasures only when they are sorted out in relation to each other and properly displayed.

Constant use of the mind does not lead to exhaustion any more than constant idleness leads to refreshment. What exhausts is effort rather than use, the performance of tasks that are distasteful or that are beyond easy fulfilment, the fear of failure because the training is inadequate, the intelligence insufficient, the experience too small and too recent. Even so, an internal-combustion engine suffers little harm when it is run for long hours within its capacity or for short bursts at full speed, but when it is constantly set to do the work of a larger engine by operating at full load for hours on end it very soon gives out.

The Cerebral Cortex—the Last Refinement

But a simile that likens the human mind to a machine is over-simplified. The part of the brain that is machine-like is that part whose pattern was designed in the dim evolutionary past, the part that functions automatically while life lasts, whether the owner is directing those functions or not, whether he is asleep, drugged, or engaged in other business. We know that cats or dogs deprived of their cerebral cortex are still cats and dogs with many of their qualities intact. The dog has lost his affection and the cat his aloof cynicism, but both can run about the room in a manner that differs little from normal. Both can show fear and rage. The age-old machinery of the ductless glands, acting by a mechanism of chemical conduction that is but a refined version of the way in which the amoeba finds its food, the autonomic nervous system that recalls the central nervous system of the earthworm, the central ganglia standing at the head of the spinal cord like the cerebral ganglion of cyclostomes, will do all or nearly all that we need to do without conscious attention from us. They will breathe for us, keep our hearts going at the

required speed, adjust our circulation, look after our digestion; they will, with barely conscious guidance, conduct the intricate balancing movements required to ride a bicycle or the complicated calculations that tell us which foot will reach a bar fifty feet ahead when we are running for a long jump. The cerebral cortex, that gives a consciousness to the sorrows, hopes, and fears arising at these lower levels, is the last refinement, the part in whose development we pride ourselves as possessing something that distinguishes us from the lower orders of creation, the part whose highest advancement is the distinguishing mark of the man who stands above his fellows.

The old machine supplies the power, the cerebral cortex determines the direction and length of the journey and its speed, but the two functions of the mind—control and power—vested in different parts of the same machine, can never be entirely distinct as are a driver and his automobile. The driver may step out and go indoors, and while he is away the machine is at rest. The cerebral cortex relaxes its control during sleep, but the subcortical brain is ticking over in the garage, and at any time it may spring to life and race away. And when some part of the operating mechanism takes charge—fear, hunger, or, most dominant of all, sex—the machine is off at top speed and the owner must jump into the seat, seize the wheel, and do his best: he is in for a ride over which his control is not much more than illusory, a ride that may thrill him or lead him to disaster.

What We Lack To-day

When we sigh for the good old days we are immediately reproved by the social reformer, the politician, the statistician, and the leader writer. We are told that there were no good old days; that these distant periods are gilded for us by the mists of time and by the tendency of onlookers to mistake picturesqueness for happiness; that the fortunate few lived in luxury while the workers were poorly clothed and poorly housed, having none of the pleasures that the working-class enjoy to-day, uncomplaining because they knew no better. On the other hand we make a great mistake if we think that happiness consists in having a forty-hour week, a smart car, a television set, and a chromium-plated bathroom. Happiness consists in a job that provides a succession of varied and interesting tasks that demand skill and call for individual enterprise, that is useful to the community in which we live, that offers security if we do it conscientiously and advancement if we do it well, and, if not a belief in a future life, at any rate a confident belief in the future that this life holds for us. All these things the craftsmen and peasants of the Middle Ages had. All or nearly all of them we lack to-day.

The world is no longer full of opportunity. The adolescent must study the openings in a number of trades and finally choose one, knowing that he is on a path that he must follow for the rest of his days. He must work hard and wait long for advancement, which is the reward of uncomplaining waiting rather than of merit. And he is prevented by class and family pride, by the wish to start where his father left off, from making a home and starting a family till long after the age when such occupations are instinctive and physiologically desirable. Later we see him still more unhappy, frustrated because the chance for which he has been working has still not materialized, unable even to confess his fears or share his disappointment because both he and his wife have lived their own lives and put their own interests first for so long before they married that they have been unable to establish that mutual confidence and self-sacrificing comradeship that is the basis of happy marriage. Such men are, in the words of the old song, "all dressed up and no place to go." They have been

straining so long after achievement that strain has become second nature. They are so constantly keyed up to fight the world that is trying to tread them down that they are in a state of continual and futile preparedness. Their basal ganglia are tuned for combat in the day and rehearsing combat during sleep. Their autonomic system is driving their digestive mechanism beyond the needs of appetite and setting their metabolism at a level they do not really require.

The mechanisms that are being called into play are all normal ones; the only abnormality is that they are being called on constantly. It is unlikely that any organ or system in the body ever works anywhere near to capacity. The number of nephrons in the renal system is reckoned to be three times that required for normal excretion; it is probable that they work in turn and rest in turn. The brain, of all organs in the body, shows perhaps the greatest surplus of functional matter over requirements of function. Body and mind seem to have been designed with a tremendous reserve of essential machinery, so that in their normal working labour and rest may alternate. In modern life they are forced to work abnormally.

Stress Diseases

These are the conditions under which a great proportion of the inhabitants of the older and more civilized communities live, and these are the conditions that are causing them to break down and are producing a group of diseases that we may call the stress diseases. In the less stoutly built it is the mind itself that gives way. In the more stable the mind remains coherent and calm and the mechanism working beneath it cracks under the strain. The primitive tribal emotions that reside in the basal ganglia take charge. The autonomic and endocrine arsenals pour out their munitions to excess.

Three diseases stand out as striking and universally acknowledged examples of stress casualties: thyrotoxicosis, duodenal ulcer, and non-renal hypertension. These diseases, as becomes a group that have a similar origin, have certain features in common. They were relatively rare till the beginning of the present century, but since that date their incidence has increased progressively. They are found in civilized countries, in the urban and industrial areas of those countries, and among the more intelligent, ambitious, and hard-working members of the communities. They are seldom encountered in the placid and the lazy, and are practically unknown among native races living under natural conditions. They are thus diathetic or psychosomatic diseases, disturbances of the normal relation of mind and body by overpowering circumstances, and for that reason calling for some general remedy. Yet at present all, except in their earliest stages, appear to be best treated by surgery of a somewhat crude nature. The rational aim of surgery would be to intercept one of the torch-bearers between the hypothalamus and the final recipient in the body tissues. This, unfortunately, is rarely possible, and we must endeavour to correct the defect in the final recipient tissue itself (see Fig.) Our treatment is thus local and destructive. It removes some part only of an activity that is essentially widespread, and tackles a manifestation rather than a cause of the disease; but nevertheless it leads to an improvement that is more satisfactory and more lasting than that produced, in the present state of our knowledge, by any other means.

Of all people we surgeons are most prone to these diseases. I can hardly claim that we are more intelligent, ambitious, and hard-working than any other section of the community, but we certainly shoulder as great a responsibility and must undergo as great an anxiety as any, and so long and so steep is the ladder to advancement, so many

the hands that clutch at its rungs, that we suffer frustration as an occupational risk. Acute hyperthyroidism is distressingly common, and apparently on the increase, among young medical men, usually those holding junior staff appointments and trying to stretch a slowly growing income to cover the needs of a rapidly growing family. Duodenal ulcer is the disease of the surgical registrar and junior surgeon, and an unannounced visit to the surgeons' room at any hospital will usually surprise one of the staff swallowing his glass of citrated milk and his alkaline tablet between operations. Hypertension affects surgeons in their fifties, and makes them one of the worst occupational risks from the point of view of insurance companies.

Rest Periods

To what extent are these risks avoidable? The young man who has carried all before him in his medical school, who has good brains, clever hands, and a stout heart, would be a traitor to himself if he did not plunge unafraid into the battle, prepared to give and to take hard knocks till he has won through. But when he has so won, when the clash of steel sounds fainter behind him and he stands bloody and unbowed with a few comrades equally tough on the upper slopes, he is apt to keep the same combative outlook from mere force of habit, to go on fighting for fighting's sake and working because he has never done anything else. It is this prolonged and no longer needed exertion that is harmful. It is unfair to all those cultural sides of his nature that have had to be laid aside for a time. It is unfair to his wife and his family. It is bad for his thyroid, his adrenals, and his cardiovascular system. Above all it is bad for his surgery.

It is to an audience of medical men, above all to an audience of surgeons, that a sermon in praise of idleness is necessary. We have seen that idleness is a part of function. The heart gives one gigantic heave that sends a dose of blood racing along the aorta; but systole lasts only one-third of a second, and for twice as long the heart muscle takes a rest. A meal is followed by a rest from eating, during which the stomach and proximal intestine break the food down to its elemental constituents. The gastric, pancreatic, and intestinal juices cease while the lower ileum and proximal colon absorb. The mental machinery works

very much the same way. Impressions are constantly being received by the eyes, the ears, the nose, and the hands. Some of these produce momentary reactions and are gone. Some, repeated or received with special strength, are laid down in the association centres as memories. But for the best use of these impressions it is important that there should be periods when the mind has nothing to do but look over its stores and sort them out.

We can recognize among our students two types. At one extreme we have the overpowering enthusiast who attends all lectures and takes down every word from first to last. After a hurried meal he goes to the library and pores over a textbook till the time comes for a ward round, when he listens eagerly to every comment and again enters it in his book. At the other extreme is the footballer who strolls into the lecture a little late and does not really get into his stride as a listener till he has filled and lit his pipe and gets it drawing to his satisfaction. His notes are sparse, and at rounds he is attentive but not verbose. Yet when it comes to a practical task the second one approaches it with a common-sense outlook; when he is asked a question whose answer is not in the textbook he is able to see through the problem to its essentials and give an answer that may not be the right one but that embodies his personal experience; at examinations he beats his more studious fellow student, in the practicals at any rate, and when he goes into the world he makes a better doctor.

Most of us have passed through both of these phases, through spells of hard conscientious work and through spells of idleness. In the first we have acquired knowledge; in the second we have built up wisdom. In the first we have been worthy workers. In the second we have made, or started the train that has brought us to, those personal contributions by which we hope to be remembered when we are dead. For the human mind which has been driven hard does its best work when the tension is outspanned and it is allowed to find the natural paths that shape themselves in idle periods.

For many of us the war has provided such a sabbatical break. We have worked hard even in uniform, but for long times we have remained idle. Then it is that we have discovered to our joy that the disconnected visions of our student days are all fitting into a pattern. Figuratively, we have sprung like Archimedes from the bath in which we have been dozing and have shouted "Eureka."

I have enjoyed such periods of idleness more than most members of my profession. Since I became a surgeon I have twice been docked for six months for repairs—once after an illness, once after a motor accident. In addition I have spent more time in the forward surgery of war than any man. And war is the ideal alternative between feverish activity and leisure, between times when ideas crowd upon us and times when they can be worked out. It provides the tremendous stimulus of corporate loyalty, it brings the fundamental problems of injury and infection once again before us, and it gives us abundant opportunity to study them. Throughout my life I shall remember the entry into Addis Ababa in April, 1941, when I sat next to Dan Pienaar drinking the Duke of Aosta's wines in the Piccolo Gebbi, and the spell of idleness that followed in that grand and barbarous country. I shall think of weeks in the Western Desert when the clear air brought every faculty to life, when the distance at sunset took on every colour of brown, purple, and blue, and at night millions of stars shone with a brightness that seems to be seen only in the Egyptian sky.

Those happy days are past, but now, after three years of hard work in civil surgery, I have once again enjoyed the pleasures of idleness, the armchair existence of a five-days flight in a Plymouth flying-boat. And as it is the most

recent arrivals in the aerodromes of the brain that are still circling the association centres looking for a suitable strip on which to land and night-stop, so it is that the problems of these stress diseases have been turning over in the recesses of my subconscious mind seeking their own clarification while I have been consciously looking down on that wonderful panorama of alternating arid waste and prodigal fertility that is Africa.

Thyrotoxicosis a Stress Disease

That thyrotoxicosis is in most cases a stress disease few will deny. As the thyroid is particularly linked up with the female sexual and reproductive cycle, thyrotoxicosis is above all a stress disease of women, and seems to have its origin most frequently in some emotional disaster connected with a love affair. It is, however, by no means unknown in men, and I have met it several times in the war in young officers summoned to take high rank and responsible posts and asked to bear a load of authority beyond their years. It differs from the other two stress diseases I have mentioned in that, once started, it is self-continuing, and no amount of idleness, no change of occupation or psychological adjustment, has any power to stay it. Though the thyroid gland is probably fourth in the chain of guilt, the basal ganglia, the hypothalamus, and the pituitary taking prior blame, it is responsible for most of the clinical manifestations of the disease, and in the reduction of its activity lies the only prospect of relief or cure.

The overactive thyroid may be damaged by x rays, poisoned with thiouracil, tricked into its own destruction by radioactive iodine, or pruned with a knife as required.

The results claimed for thiouracil show few grounds for satisfaction or even complacency. The mortality under treatment is at any rate 2%. Ten per cent. of patients are intolerant of the drug; of the remainder only 3% are cured—that is, remain symptom-free for a year or more after treatment has been stopped. The majority must remain for years under observation, with occasional return to a maintenance dose. Two per cent. develop agranulocytosis. In nearly all of them the goitre increases in size; it may become cystic and cause pressure symptoms, it may atrophy and lead to myxoedema, it may become malignant. Broders and Parkhill state that "thiouracil goitre is more of a cellular hyperplasia with mitoses very much in evidence, and so therefore more comparable to carcinoma."

The majority of patients treated with thiouracil eventually need operation because their thyrotoxicosis is not cured, because they dislike the disfigurement of a large goitre, or because cysts or haemorrhages are pressing on the trachea or oesophagus. They present the surgeon with a task of considerably enhanced difficulty, for the thiouracil goitre is rigid, friable, haemorrhagic, and adherent, and remains so to some extent even after a long rest from the drug and a course of iodine. On the other hand, the mortality of operation in the hands of a practised surgeon working with a physician who shuns thiouracil is not more than 1%, and the proportion of patients cured—that is, able to return within a few weeks to a full and active life—is over 90%.

I have always felt that an operation secures the desired result more quickly, more certainly, and more safely than any other means, and, having within the last two years, like Omar Khayyám, heard great argument about it and about, I still come out by the same door to register my vote in the same lobby: indeed, after a week's reflection in the relative anoxia of 12,000 feet and under the soporific drone of four engines, I am prepared to be almost dogmatic. I hold that thiouracil has had a fair trial and has failed miserably, that it has no useful place in reputable therapy, and that its use should be prohibited except in

those cases of thyrotoxicosis where operation has been definitely abandoned or where it must be postponed till after the performance of another and more urgent operation, such as one for cancer.

Of the operation I will touch only on a few points that interest me. We all use the collar incision, but none of us, I hope, use the Kocher incision. The collar incision follows a natural crease and the scar is invisible in six weeks; the Kocher incision is strongly curved, with the ends turned up like the moustache of a bomber pilot, and it leaves the horrible scars that may be seen any day in the streets of many Continental cities. Some of us cut across the infrahyoid muscles, some split them in the midline and retract them; I do the latter for no more than sentimental reasons. I have never seen any ill follow muscle cutting, but I do not believe access to the poles is helped appreciably thereby, for the first step in subtotal thyroidectomy is free mobilization of the gland by division of the subcricoid connective tissue fan that binds the upper border of the isthmus and the inner border of the two upper poles. I do not expose the recurrent laryngeal nerve, because I believe that to bare so fine a structure is to invite late involvement by scar, and because if I tie the inferior thyroid artery half an inch away from the gland and then cut in front of its branches in the sagittal plane I know the nerve is safe. I have not drained a thyroid for ten years. Drainage for bleeding is unnecessary, for no thyroid wound should be closed till haemostasis is beyond doubt. Oozing of serum may occur, for Nature abhors a vacuum and she abhors catgut even more, but when it occurs it occurs too late for a drain to help, and it can be removed by aspiration without disturbing the scar.

Duodenal Ulcer

Duodenal ulcer, again, is a stress disease. It is predominantly a disease of men, but it is getting commoner in women as they adopt men's clothes and habits and take their jobs; and whereas twenty years ago females formed no more than a tenth of any series, they now contribute a fourth. Unlike hyperthyroidism, duodenalism can be alleviated and occasionally cured if the stress is relieved and its source removed before scar tissue has converted the lesion into one incapable of satisfactory repair; but since to relieve stress in any particular case it may be necessary to change the man's business, to double his income, to stop his cigarettes, or to shoot his partner or his wife, cure by medical means is not always possible. Surgery is thus called on increasingly for the treatment of duodenal ulcer; but it can never provide a cure for the underlying stress, and must be looked on as no more than a treatment of complications. It is a good working rule that no duodenal ulcer patient should be sent to the surgeon until he is 45, or until perforation, stenosis, recurrent major haemorrhage, or constant pain in spite of treatment makes operation inevitable.

Whereas in gastric ulcer any operation that removes the ulcer and the scar around it is usually satisfactory, in duodenal ulcer no operation that does not permanently reduce the level of acid secretion to one of 20% N/10 NaOH or under is likely to give more than temporary relief or provide any safeguard against recurrent ulceration.

I hope I may, without further discussion, dismiss gastro-jejunosotomy and all forms of pyloroplasty as unsuitable for anything but a very old stenosis in a man old enough to die of natural causes before he gets a jejunal ulcer. I will dismiss vasoligation as summarily, for it is only necessary to visit the two places where it has been practised longest—Manchester and India—to learn how worthless it is. Two operations remain to be discussed—vagotomy and gastrectomy.

Vagotomy

Vagotomy comes to us with all the glamour of the laboratory and the personal recommendation of 57 professors. As I sat in the plane turning over the journals that the steward brought me I was constantly confronted by the advertisement of a face cream that was the final product of years of research and was now acclaimed by Hollywood stars and Mayfair beauties as the source of their loveliness. I seemed to recognize an old friend in Africa: "Vagotomy, I presume."

That vagotomy will reduce the volume and acid level of the gastric secretion in dogs, that it will stop the pain in all peptic ulcers in human beings and heal the majority, for a time at any rate, has been demonstrated beyond question. That it is a sound procedure, to be regarded as the first line of attack on the peptic ulcer problem, is as yet unproved.

A fundamental question that remains to be answered is how important the vagal mechanism of gastric secretion is in human digestion, and what part it plays in the aetiology of ulcer. Dogs have characters and habits very much like those of man—according to the French proverb, better; but they eat with a speed and an enjoyment that we can never hope to emulate. For them vagal secretion is all-important, for it provides an acid bath into which the eagerly awaited and hastily bolted meal drops. Men by custom turn their minds at meal-times to business or to love—in fact, to anything but food; they eat slowly, and the food remains in their stomachs for two hours or more. They need a vagal secretion for the first course, but they depend largely upon a hormonally activated secretion for the further digestion of their meal. Peptic ulcer patients differ from the normal not so much in the high level of their acid secretion as in its constant flow, which has no reference to the calls of meals. The fault with them is not that their acid is too high, but that it is poured into a stomach unbuffered by food.

Vagotomy cuts out completely the psychic flow of gastric juice, but it does nothing to abolish the chemically induced flow that comes later. If there is an ulcer it does not remedy the complications of that ulcer—the stenosis, the deformity, the fixation to surrounding structures; on the contrary, by diminishing gastric tone and delaying gastric emptying it precipitates the stasis which may still be latent, so that in most cases a short-circuit must be performed in addition to the vagotomy to prevent it. Once a fresh opening has been made the stomach is liable to be empty while the second uncontrolled wave of acid secretion is mounting, so that the new stoma is subjected to the dangers of unbuffered acid. In addition to these serious defects vagotomy brings in its train certain minor disabilities, belching and diarrhoea being the most constant, and now that results are coming to light it is clear that it is followed by recurrent ulceration more commonly than a well-performed gastrectomy. Vagotomy is certainly a simpler and, in the hands of those who should not be allowed to do major surgery at all, a safer operation than gastrectomy, but among competent surgeons it will probably come to be reserved for three groups of cases: for patients who have a return of pain or of ulceration after a radical gastrectomy well performed, for cases of gastro-jejunal ulceration to stop pain and bleeding and allow the patient to be made fit for a permanent reconstruction, and for old men with duodenal pain quite out of proportion to the very moderate ulcer that seems to be causing it.

Gastrectomy

Gastrectomy, on the other hand, is a big operation, and, when performed for duodenal ulceration, a difficult one. Yet it gives results that for excellence and permanence are

as yet unrivalled by any other method of treatment. To ensure such results five criteria must be satisfied:

1. The whole pyloric mucous membrane in which the secretory hormone is produced must be removed.

2. The acid-secreting mucous membrane must be ablated in those regions in which it is thick and rugose—that is, in the body of the stomach.

3. The lesser omentum must be divided right up to the cardia, in order to divide the left gastric artery at its origin and allow the lesser curve to swing free, and to interrupt the majority of the vagal fibres.

4. The stoma between the remaining stomach and the intestine must be no larger than the bowel into which it empties—that is, about $1\frac{1}{2}$ in. (3.75 cm.) in diameter.

5. The passage of food after leaving the stomach must be in an onward direction only.

None of the last three requirements is satisfied by the conventional Polya gastrectomy; all are fulfilled either by the modern Billroth I gastrectomy or by the valvular Billroth II gastrectomy.

Hypertension

Hypertension is not a new disease. It has killed many of the great men of history. Non-renal hypertension, or hyperpiesia, on the other hand, is a new disease and a stress disease. It is the price the millionaire pays for his directorships and the clerk for his failure. Its aetiology is unknown. A similar condition can be produced in dogs by clamping the renal pedicle; but, though in some instances human hypertension is associated with one damaged kidney and cured by its removal, such cases are curiosities; in most the renal function is normal, and the kidneys become involved only late in the disease.

The surgery of hypertension provides to-day one of the most interesting subjects for study and one of the most fascinating topics for discussion. Study is stimulated whenever a new problem appears or when a new discovery throws fresh light on an old one. Discussion is most enthralling when theories abound but proved facts are few.

Operations for the relief of the more distressing symptoms of hypertension are being performed in every country. You have done many here. Papers have appeared from the pens of many leading surgeons. You in Johannesburg have contributed some of the most interesting of them. I have done some operations myself, and was one of the first to do them in Britain, but I have spent far more time watching the work of others, reading their papers, listening to their discussions. And I speak to-day as one off duty, voicing those questions that disturb my idleness because I do not know the answers.

What is the cause of essential hypertension? I do not know, and if anyone does he has not told me. What justification is there for attempting to cure by a major operation a disease about which we are so ignorant? The justification of results: surgical treatment is admittedly empirical, but it does cure or improve patients who would otherwise get worse or die. In what way do we believe that blood pressure may be lowered by operation? Once more we do not know, and each surgeon has a different answer and modifies his operation according to the aim he has in view. There are at least five ways in which it may be suggested that the blood pressure can be lowered by operation on the sympathetic system: (1) by dilating the vessels of the lower limbs; (2) by dilating the vessels in the splanchnic bed; (3) by denervating the kidney; (4) by denervating the adrenals; (5) by dividing the sympathetic fibres to the heart.

Merits of Operation for Hypertension

What are the results of operation? Relief of the more distressing symptoms in nearly all cases; prolongation of

life in any series in comparison with a similar series untreated or treated medically; temporary lowering of blood pressure in many, permanent restoration of blood pressure to normal in a few. Can we select those most suitable for operation, or judge beforehand by tests the extent to which any patient is likely to benefit? No. Tests are so fallacious that many have abandoned them. Can we judge from the figures published by surgeons which of them is getting the best results? No; because surgeons differ fantastically in their selection of cases for operation and in their assessment of post-operative results. At one extreme we have Professor X., who will operate only on patients under 40 who have normal renal function, no eye changes, and show a good response to sedation; he has no operative mortality and a high cure rate, but many of his patients might have got well anyway. At the other end is Professor Y., whose chief indications for operation are progressive headaches and failing vision, and who is undeterred by poor renal function and doubtful cerebral and coronary circulation; he has a number of operative and still more post-operative deaths, and most of those who survive are dead five years later, but he saves untold misery and adds some months of productive life to many useful citizens.

The two most popular operations to-day are the Smithwick, in which the three splanchnic nerves and the sympathetic chain from the eighth dorsal to the first or second lumbar ganglion are removed through a trans-diaphragmatic extrapleural approach; and the transpleural, in which the thoracic chain from the fourth dorsal to the first lumbar ganglion, and the three splanchnic nerves in their thoracic portion, are removed through a wide thoracotomy opening. The anatomical reason for this lengthy ablation is that sympathetic fibres have been shown to leave the upper thoracic chain and travel down to the coeliac plexus on the aorta without traversing the splanchnic nerves.

Now I am going to take courage, from the fact that Edinburgh and Manchester are five thousand miles away and that Boston and Ann Arbor are seven thousand miles away, to voice a few beliefs and disbeliefs.

I believe that an operation for hypertension is effective chiefly in so far as it denervates the kidneys and adrenals, and that the vasodilatation it produces is variable in amount and secondary in importance. I do not believe that there is any significant difference in the relief of symptoms and the lowering of blood pressure obtained between a thorough subdiaphragmatic denervation and a Smithwick operation, or between either of these and the extensive transpleural operation now fashionable in England. I do not attach much importance to filament-chasing, nor do I believe that nerves ever regenerate across gaps; at any rate they are never known to do so when we want them to.

Holding these views, I cannot muster any enthusiasm for the Smithwick operation. It is a Peet-Adson hybrid. It often damages the diaphragm and holes the pleura, and it does so to no purpose if it gives results not differing appreciably from the subdiaphragmatic operation. Still less can I grow lyrical over the transpleural operation, which is less thorough than the Smithwick at the lumbar end (I believe the more important end) of the sympathetic chain and is more thorough chiefly in dilating the intercostal vessels. I doubt whether the aortic filament is more than an anatomist's bauble and whether a knowledge of its occasional existence should persuade us to adopt an operation that is not demonstrably superior to others and that is followed by severe pain in the incision in quite a large number of patients. Though I am fully aware that I risk censure by the high priests of hypertension, I will state my own views, which, I reiterate, are those of an idle man, of

one who leans over the railings watching others digging a hole in the road and sees where they are doing it wrong.

Personal Views

First I should accept my cases only from a medical colleague. There are many things other than surgery that may cure hypertension. I well remember George Heuer, of Cornell University, relating two such cases at the meeting of the American College of Surgeons in New York in 1938. Both patients had hypertension that had proved refractory to every form of treatment and had been selected for surgery. One had a serious motor accident on the way to hospital; the other collapsed under the anaesthetic after the laminae had been removed but before any nerve roots had been divided. Both were cured. Rather than choose my cases myself, therefore, or rely on any form of test, I would take only those that had been under the care of a wise physician and accept his judgment that no change of occupation and no drug treatment could help them.

Secondly, I should refuse none except those with myocardial changes. The man who needs a high pressure to push blood through his coronary arteries will die the minute it is lowered. The others—those with poor kidneys, with a rising blood urea, who are unable to work because of their headaches, who are going blind—are also poor operative risks. They are no good to the surgeon whose eye is on statistics. On the other hand, they need our help more than any, and we can promise to help them. Their world is falling in ruins round them. We may send them prematurely to the next, but if we do not we give them a joy they had ceased to hope for. And the improvement seems to be largely unrelated to the fall in blood pressure. An operation that, judged by the sphygmomanometer, is a failure may yet relieve the patient of all his distressing symptoms.

Thirdly, I should, as my main line of attack, perform a bilateral subdiaphragmatic operation through an incision resecting the twelfth rib. I should resect the sympathetic chain from the third lumbar to the twelfth or eleventh dorsal ganglion, following the chain up by splitting the crus. I should pick up the splanchnics where they leave the diaphragm, divide them where they enter the semilunar ganglia, and follow them as high as I could through the diaphragm before cutting them again. I should do this operation on one side, and if the anaesthetist reassured me I should then do it on the other; if the drop in blood pressure was considerable I should do the second side three weeks later.

Fourthly, I should send the patient home after he had recovered from the double operation and reassess him after three months. If it seemed advisable to lower his blood pressure still further I should attack the cardiac sympathetic fibres by removing the second, third, and fourth dorsal ganglia, first on the left side, later, if necessary and after an interval, on the right. I should not divide the diaphragm nor should I open the pleura.

Well, gentlemen, I have talked so long of idleness that I have exhausted you. I have strained your patience so much that your pressures must be near to apoplexy and your duodenal ulcers to perforating. My thesis is the very simple one that the man who works hard and conscientiously does his most important work when he outspans his mind and allows it to wander at its own pace round the paths over which it has been rushing, and that science is advanced further in a shorter time by the informal chatter of a few like-minded friends over cocktails than by the formal exchange of papers or by any number of congresses.

The figure was planned by my former House Surgeon, Mr. Alan Parks.

THE DISCOMFORTS OF CHILDBIRTH*

BY

GRANTLY DICK READ, M.A., M.D.

When I was a student "on the district" I attended a girl whose reaction to childbirth greatly impressed me. When the head started to crown and the effort syndrome became obvious, with the evidence of suffering, I offered her such anaesthetic as I was allowed to give, and she would not take it, but between the contractions she smiled happily. After her baby was born I inquired why she would not take any anaesthetic freely offered her, and her reply has always remained in my mind. She did not take her anaesthetic because she did not want it. "It didn't hurt, doctor," she said; "it wasn't meant to hurt, was it?"

From the teaching of Crile and Head it became obvious to me that the discomforts of childbirth depended largely on the emotional and not solely on the mechanical factors which one had been taught were the cause of the pain. The fact that in childbirth there is usually a woman present is not always remembered even to-day. The performance of the mechanism of parturition is undertaken with a magnificent apparatus, but the fact that the woman has a brain, a mind, an extremely sensitive nervous system from which the impulses act and react upon the mechanism, is not so freely understood.

I asked myself how a woman could be expected to be successful in the task of bearing a child if she was not equipped with adequate knowledge. Would it be expected that the secretary of a business man would be successful if she had never handled pencil and typewriter? Yet women are allowed to enter upon the most important task of their lives untutored, untaught, and unassisted. I began, therefore, to educate my patients much earlier in pregnancy. From the time the women came to report that they were pregnant they were tactfully, gradually, and carefully initiated into the job they were about to perform. Their preparation included not only the normal clinical care of the antenatal clinic but they were taught relaxation and respiratory exercises, and during their short periods of rest while they were under instruction they had the art of childbirth explained to them. They were told that they had a uterus in which the baby was growing, that the uterus was made of muscle and grew with the child, and at each visit they were told the relative size of the child. They were told that the child would move and how to expect to "feel" their baby at about 17 or 19 weeks, as the case might be; they were told the position and were even shown a diagram of it. They were also told that they were already feeding the child and that it was necessary that they themselves should take some care of their own diet. They were told what they should eat and what they should not eat.

My patients were delivered on their backs, propped up in a position equivalent to squatting, but leaning, because the average European is not accustomed to squat. They held their child's hands before the baby was fully born and took it in their arms as soon as the cord was severed. Their happiness and complete freedom from pain were remarkable. Their refusal of anaesthesia was noted, and not infrequently they scorned and rejected the idea that they should be unconscious at such a great moment.

Nerve Supply of the Uterus

The neurological explanation of the phenomena I was witnessing was important. Some years previously Beckwith Whitehouse, in Birmingham, had worked very seriously on

*The substance of a lecture delivered before St. Mary's Hospital Medical Society on Oct. 28, 1948, with Dr. G. W. B. James presiding.