THE LOGIC OF SURGERY

ALFRED JOHN CRAIG
O.B.E., M.D., B.Sc., F.R.C.S.

Emeritus Professor of Surgery
Royal University of Malta.

This is the first P. P. Debono memorial lecture, instituted by the "Association of Surgeons and Physicians of Malta", delivered on the 30th. October 1969 at the Medical School of the University.

We are met here tonight to commemorate professor Peter Paul Debono, who occupied the Chair of Surgery at our Royal University from 1926 to 1951. It is a pleasure to have among us his brother professor J.E., his sister, Sister Debono of the Order of the Sacred Heart, and his two daughters, Mrs. Ellis and Mrs. Micallef Eynaud. We thank them for honouring us with their presence this evening. We are only sorry that Mrs. Debono is unable to be with us; through her family, we send her our best wishes.

Before I set about my task of developing my theme, I wish to thank my colleagues and the Council of the Association of Surgeons and Physicians of Malta for the signal honour of inviting me to deliver this Foundation Commemorative Lecture and thereby giving me a unique opportunity to pay a pious tribute to our beloved Peter Paul, who was my teacher throughout my formative years. However great I count this privilege I cannot help but be overawed by a sense of inadequacy. In choosing to charge me with this responsibility I imagine that my colleagues must have taken regard not so much of my erudition which I know to be scanty, but of my seniority and my long and close association with the man whom we are commemorating. This association started when I was a student and, I gather, his proverbial blue-eyed boy. Later I became one of his chief assistants, his anaesthetist, his confidant, his comforter in disappointments, the patient listener to his grievances, his helpmate in the B.M.A. and the Camera Medica and goodness knows what else. Later we became colleagues and I was fortunate to become his immediate successor in the Chair of Surgery; our friendly association carried on until the 3rd. June 1958 when death did us part.

I happened to be president of this association when the idea was mooted by professor Ganado of founding this commemorative lecture and it was happily acclaimed by all of us. It seemed so fitting that this association which has as one of its objectives the safeguarding of the standards and prestige of our consultant service should honour professor P.P. Debono, who was a supreme teacher and was the pioneer of scientific surgery in these islands. He set for us a standard which with all our zeal we strive to emulate and he founded a school, based primarily on the worth of good doctoring and the wisdom of clinical surgery. In this lies the chief claim of professor Peter Paul Debono to greatness and it is our hope that the institution of this biennial memorial lecture may perpetuate not only his memory but also the standards, the trends, the ideals and the influence of that school.

Most of you will have heard a lot about professor Peter Paul Debono, the surgeon; I shall briefly tell you something about Peter Paul the man. Short in physical stature, rather overweight by present day standards: he used to say that unless he had a substantial mid-day meal he was apt to make silly mistakes at his work in the afternoon — as good an excuse as any other, I thought, for satisfying one of the major pleasures of life. He was himself an excellent cook and was a master at boning a chicken and he always liked to cook the meal himself whenever he had guests to

dinner. A dreadful driver, (though he never admitted it and felt insulted if ever this was hinted at) he was good at everything else that needed the cooperation of mind with hands. He had a sense of humour and a charm of his own once you got to know him, being kind hearted and deeply religious. An exemplary family man, he led a simply kind of life; his hobbies were unsophisticated — the occasional game of bridge. so often interrupted by an emergency call, stamp collecting, gardening at five o'clock in the morning and tending his aviaary. He once had me hunting all over London at stores and chemist's shops for Robinson's food for babies — an obsolete brand — because one of his parrots thrived on it; I managed to get two tins for him and he was delighted. During the season he went to the opera one a week and loved it; only, when he was tired, I used to watch him being roused to consciousness by the applause. I end this epitome by quoting from one of the testimonials given him by professor C. Sammut: "I have known Dr. Debono from childhood and have had an opportunity of seeing him grow and wax into that character of a true Christian gentleman for which, apart from his high professional qualifications, he is justly esteemed by all who know him." What greater tribute could one give?

The topic I have chosen to argue today is an ambitious one. I only felt the full impact of it as I came to write it. I chose it from among the alternatives because I thought it would be one that might have appealed to P.P. One of his most impressive characteristics was that he constantly sought a reason behind phenomena and in matters of symptom, diagnosis and therapy he looked for a "rationale". One of the meanings of this favourite word of his is given by the "Concise Oxford Dictionary" as "logical basis" and in this lecture I propose to deal with surgery considered as a rational activity.

What, then, is Surgery? It is a matter of common experience that quite often we know and understand perfectly well what a word means until we look for a definition. Medicine and Surgery seem to be such different disciplines that it looks as though there should be no difficulty in defining either of them in terms of their different activities. And yet they have so much common ground — a common ground that keeps varying from time to time. Billroth in the 1890s said with some pride that "internal medicine had become more and more surgical." We now think that we are adopting so much medicine in our surgery, in matters of diagnosis, in anaesthesia, in pre- and post-operative care and in those diseases where treatment is both medical and surgical. Is the differential diagnosis of jaundice a matter for the physician or for the surgeon? When did pulmonary tuberculosis change over from medicine to surgery and back again to medicine? Are duodenal ulcer, ulcerative colitis and thyrotoxicosis medical or surgical? The "Shorter Oxford Dictionary" defines surgery as "the art of treating injuries, deformities and diseases by manual operation or instrumental appliances". Perhaps this may have been true of pre-Hunterian surgery. As a definition of modern surgery it is grossly out of date. In the first instance it takes no account of the intellectual element in surgery nor of its constant pursuit of truth; and what about those crucial situations in a surgeon's work when he rightly decides on masterly inactivity? I trust it should become clear by the end of this lecture that there is much more to surgery than mere handicraft.

By its emphasis on the manual exercises of a surgeon's work that definition takes us back to the origins of surgery in prehistoric ages. The art of healing in those times was a magico-religious practice based on the concept of illness as a visitation by evil spirits which had to be driven out by magical rites and incantations. It is possible that the operation of trephining of the skull as carried out in prehistoric times — the first surgical operation we know of after the one of rib resection — may have been one of such rites meant to allow the departure of the evil visitors. In later times it certainly became an empirical therapeutic operation. It only became rational relatively recently when we became acquainted with the cause and effect of increased intra-cranial pressure. It was bound to be obvious even to pri-

mitive man that a deformity, a wound or a broken bone could not be put right by any magic spell. Instinctively he must have felt that some of these disorders needed rest and immobilisation while others manual or instrumental correction. In early historical times this is borne out by documents either in writing or engraved in stone. Surgery, therefore, is something that arose out of sheer human necessity as an art based on a purely empirical foundation. Undoubtedly, it still retains a lot of practical empiricism and necessarily, it still remains an art in the sense that the surgeon has to apply his knowledge to certain variable situations at some particular definite time on an individual patient.

However, since John Hunter (in the eighteenth century) surgery has grown into a scientific discipline. Not only has it drawn on the findings and conclusions of the other sciences but it has itself materially contributed to the understanding of the working of the living organism both in health and disease. It has thus come to form part of the biology of man.

The number of the sciences and technologies the modern surgeon applies to his work is too large to enumerate. Just consider, for instance, how impossible it would be for a surgeon to place an electronic pacemaker inside the body, employ an artificial kidney or institute an extracorporeal circulation, put in an intramedullary nail, perform a total hip replacement or even give a safe blood transfusion were it not for the recent advances in physics, chemistry, biology, pharmacology, metallurgy and plastics technology. Even the results of our various forms of treatment are assessed on statistical analysis which, in its turn, is an application of the calculus of probablity.

The scientific foundation of the surgery of today is mainly based on what have come to be known as the basic sciences: Anatomy, Pathology, Physiology and experimental surgery.

Those of us who studied Anatomy before the war will remember the inscription written in bold letters across the wall of the old dissection room: "He who does not dissect the dead will mangle the living". This was said by John Abernethy, a surgeon. The relevance of anatomy to surgery is immediately obvious; the pathological process which calls for surgical treatment is situated in a specific anatomical site and the access to it at operation calls for a detailed knowledge of anatomical planes. The work of A. K. Henry demonstrates very cogently the logic underlying the anatomical exposure of the deep structures of the extremities. The contribution to the science of anatomy made by the older surgeon-anatomists is perpetuated in the various eponyms in common use up to this day — Hunter's canal, Camper's fascia, Scarpa's triangle, Cooper's ligament, the nerve of Bell, the triangle of Petit, the glands of Littrè and so on ad infinitum. Our Peter Paul was an anatomist. The sheaf of veins unnamed in text books running parallel to Poupart's ligament which he was fond of describing does not carry his eponym; he rather good-humouredly christened it by somebody else's name. In our own time substantial contributions from surgery to anatomy came from John Morley, a contemporary of P.P. in Manchester who elucidated the anatomy of abdominal pain and enabled us to correlate rationally the site of pain, tenderness and rigidity with the site and nature of the underlying lisease. Sir James Patterson Ross, another contemporary of P.P. at Bart's together with Sir James Learmonth perfected our knowledge of the anatomy of the sympathetic system; Sir Clifford Naunton Morgan, one of our external examiners in surgery worked out the anatomy of the anal canal and its sphincters; Sir Charles Ballance, with whom P.P. was in frequent contact during the 1914-1918 war, contributed very largely towards the knowledge of the finer anatomy of the temporal bone and that knowledge is being extended by one of our own surgeons working in the Department of Anatomy of our Royal University.

John Hunter that indefatigable 18th century worker emphasised the relevance of Pathology to Surgery and started the

era of morbid anatomy. From thenceforth surgical treatment was to be modelled on the pathology of the disease. Hunter's extensive collection of specimens illustrating the Morbid Anatomy of so many surgical diseases laid the foundation of the museum of the Royal College of Surgeons of England and provided rich material for study by generation after generation of young surgeons until a large part of it was destroyed by enemy action. The science of Surgery owes a great debt to the large band of pathologists and morbid anatomists who have painstakingly enlightened us on the pathological processes accompanying surgical disease. The work of Rokitansky and of Virchow for instance, was an important factor in promoting the progress of German surgery in the late 19th and early 20th century. I would like to illustrate the bearing of pathological concepts on surgical treatment by relating the history of Hirschsprung's Disease. It was at first thought that the disease lay in the dilated part of the colon — therefore, in those infants who survived the early years, attempts were made to cure the disease by excising the dilated colon. These met with failure. When later it was thought that the underlying pathology was a spasm of the rectosigmoid from sympathetic overactivity, treatment was directed at sympathetic denervation again with out success. Success came when the pathologists demonstrated absence of ganglion cells in the contracted rectosigmoid and various types of resection of this part were devised. In its turn the science of pathology has gained from the observations of the followers of John Hunter. In recent times one can recall the work of Bland Sutton on tumours, that of Fairbank on diseases of the skeleton and the tidy work of Cushing and Bailey on tumours and other intracranial lesions. The morbid anatomy as studied by the pathologist is that of the end result of disease as demonstrated in the postmortem room; the surgeon is given the opportunity of studying what Lord Moynihan used to call the pathology of the living and this has been made possible by the rapid and extraordinary growth of surgery following the introduction of antisepsis by Lister and the discovery of anaesthesia by Wells and Morton.

Peter Paul used to say that he found his experience in Bacteriology and Pathology of invaluable help in his surgical work. It may not be known to the younger generation of doctors that he had published important original work on the anaerobic and on the typhoid group of bacteria, on agglutination in Bacillary dysentery and on amoebic dysentery in Malta. Among his qualifications he held the Cambridge D.P.H. and during the first world war, after being in charge of a surgical ward at the R.N.Hospital at Bighi for the first half of the war, he held appointments as Specialist in Pathology and Bacteriology attached to the R.A.M.C. and throughout the whole war he was Acting Pathologist to the Central Hospital as a substitute for Professor C. Sammut. After the war he demonstrated Surgical Pathology at Barts. He often told me how he enriched his clinical experience by constantly visiting in the wards those patients who required laboratory investigation. His ideal, which is in fact the ideal of scientific surgery, was a perfect integration between Surgery and Pathology. He inculcated this in those who worked with him and I in my turn tried to stimulate those who worked with me to visit the laboratories of Pathology and Bacteriology rather than be satisfied with the mere reading of written reports. Working with P.P. one did not hold formal clinico-pathological conferences as the pressure of work and the organisation of those days did not allow of such exercises but believe me, we kept ourselves well informed of all the aspects of our cases. His knowledge of bacteriology and pathology would come out in various ways: he would, for instance, on incising an abscess or aspirating an empyema tell us immediately what the probable responsible organism would turn out to be and as a rule he was right: as we opened an abdomen with a perforated appendix or incised an ischiorectal abscess he would say: "The books invariably call this B. coli pus but actually the smell of it is due to the intestinal anaerobes". One incident he related with pride concerned a

patient at Barts. Whilst watching a senior colleague incise an abscess in the neck and on looking at the pus he surprised his colleague by saying: "That patient has actinomycosis". His colleague received this with scepticism as this was a rare disease at Barts but P.P. was right.

The 20th century is characterised in the history of surgery by an increasing emphasis on Physiology mainly as a result of the concept of the preservation of the "milieu interieur" introduced by Claude Bernard. I would like to give one out of the many possible illustrations of the change that has occurred within recent years. To the surgeon of the 19th and the first quarter of the present century the only means available for curing a patient suffering from intestinal obstruction was the correction of any mechanical cause of obstruction, combined, in some instances, with the resection of any portion of gut that was not viable. It is a credit to their skill and resourcefulness that a not inconsiderable number of their patients survived; yet the mortality was very high. The ultimate cause of death in this condition is still not fully understood but one factor is certain and that is the profound disturbance of the "milieu interieur" of the body. The introduction of gastrointestinal decompression and the restoration of water and electrolyte balance have been the main factor in lowering the mortality and saving countless lives. Here is another instance. We do not know the ultimate cause of duodenal ulcer and possibly when we do get to know it one day surgical treatment may no longer be necessary. This was Moynihan's forecast of surgery to end surgery. Up to now there is a large number of patients who cannot get relief unless they are operated on. There is one common factor in these patients and that is the presence in excess of hydrochloric acid in the gastric juice and our surgical efforts are directed towards finding the best way of reducing it while interfering as little as possible with the normal digestive functions. This is pure applied physiology. It may be salutary to reflect on the many fallacies that we may fall into while we think we are applying physiological principles. It was at first thought that the primary lesion was a spasm of the pylorus which allowed the acid to accumulate and gain concentration and it seemed logical to relieve the spasm by various kinds of pyloroplasty. The fallacy lay in mistaking the effect for the cause as it was the ulcer that caused the spasm. Then it appeared reasonable to divert the stomach into the jejunum thereby killing two birds with one stone — affording rest to the ulcerated duodenum and neutralising the acid of the stomach. How P.P. used to relish explaining all this — it seemed so rational if only we could see at that time the fallacy on which it was based — the acid was just being diverted into the jejunum. The extensive resections that followed the failure of gastro-jejunostomy did effectively reduce the acid — the more extensive the resection the more effectively they achieved this but at the same time they disturbed more profoundly the normal function of the stomach and the normal metabolic processes of the body. In 1936 Ogilvie propounded an operation to which he even gave the name of "Physiological Gastrectomy" — it was intended to preserve the pylorus and its alkaline secretion. He soon realised that the operation did not give the good results that were expected of it and two years later he himself with characteristic honesty exposed the physiological fallacy which this operation was based upon and said categorically that it should be abandoned. The ideal operation has not yet been devised but in vagotomy combined with a drainage procedure we have found the least mutilating operation that gives acceptably good results. This problem of the surgicaal treatment of peptic ulceration has provided so much information on the function of the stomach and stimulated so much research that it may be regarded as a major contri bution of surgery to the science of physiology comparable to the enormous increase in our understanding of the function of the glands of internal secretion as the thyroid, the pituitary, the parathyroids, the adrenal, the thymus and the pancreas came within the scope of surgical intervention.

In his teaching P.P. constantly introduced physiological considerations to elucidate methods of treatment. He received

with enthusiasm the notion introduced by Böhler that while you rigidly immobilised a limit in the treatment of a fracture you preserved the function of the muscles and the activity of the circulation by active muscle contraction within the plaster cast, exercise and early restoration of function. The posture in which he placed his patients on the operating table which was intended to minimise the lowering of blood pressure from spinal anaesthesia was a simple application of Starling's law of the heart.

There is no doubt about the value of experimental surgery as a tool of research. John Hunter was the first to realise this and the progress of surgery in the last fifty years is largely due to the enormous amount of experimental research which is being carried out the world over. Even though some of it may not seem to be immediatly relevant to practical surgery the widening of the horizons of knowledge is of value in itself. The history of science demonstrates that the purely academic exercise of today may find some important and even far-reaching application in the future. The combined observations of the clinical surgeons and of experimental scientists have led to a better understanding of the mechanism of surgical shock, the circulatory disturbance of burns, the metabolic disturbance of severe trauma and of the factors concerned in the healing of wounds. Certain new surgical techniques must necessarily be tried on experimental animals and prove their worth and their safety before being applied to surgery on human patients. One regards with a certain amount of scepticism however any result of experimentation which alleges to go counter to and contradict the healing powers of the body, the *vis medicatrix naturae*. I would suspect something wrong, for instance, in an experiment which alleges that the haematoma round a fracture hinders rather than contributes towards the union of fractures. The main disadvantage of experimental surgery on animals is that its results cannot always be translated to surgery on humans. Of late, there has been a tendency in some places to practice some forms of experimental surgery in various guises on human beings — these are sometimes said to be free willing volunteers but at other times they are unsuspecting human guineapigs, genuine holocausts, presumably on the altar of science. The ethics of this practice, to say the least of it, are questionable.

Having said all this on the mainstays of surgical science we should feel bound to remind ourselves of the vast amount of knowledge that has been accumulated throughout the years by the patient, painstaking and accurate observation of innumerable clinicians who have recorded their results in the surgical literature for future generations to build upon and, in their turn, extend. It was by the process of clinical observation correlated with findings at operation that Moynihan constructed the clinical picture of duedenal ulcer and of acute pancreatitis. By a similar process, in collaboration with J.E., his brother, Peter Paul recorded the surgical complications of Brucellosis and I was fortunate in that I had the opportunity of extending their observations in the field of the locomotor system.

It sounds reasonable that anay form of surgical therapy should stem from an accurate diagnosis. This is an ideal one should pursue but unfortunately we do not always attain it preoperatively. With the increase in our aids to diagnosis, however, this margin of error is progressively being reduced and the exploratory type of operation is becoming more uncommon. Surgery does not easily lend itself to conjecture; the surgeon has not only to know that a bone is broken, he has to know exactly where it is broken and how it is displaced before he can treat it; not only has he to know that there is a stone in the urinary tract but he has to know exactly where it is before he goes in for it. In P.P. Debono's early days surgical diagnosis depended largely on symptoms and physical signs and the methods of reaching it were summarised in his dictum, which I believe originated at Barts "Eyes first and foremost, hands less but little and tongue not at all". He himself was an outstanding diagnostician but that was due to his extensive experience as a doctor rather than to that miserable aphorism. An accurate history is just as important in surgery as

it is in medicine and he gets a poor history from the patient who refuses to guide the patient with his own tongue. By the time one has taken a good history he should be orientated on differential diagnosis and on the line which the special investigation should take. Physical examination is most important. I understand that in the United States this is going out of fashion and the patient may be subjected to a host of investigations without ever having been examined. This is to be deplored. Aids to diagnosis are multiplying every day and are becoming more and more sophisticated. They have undoubtedly added to the accuracy of diagnosis and in a difficult or tricky case they may be indispensable perhaps but when they become a matter of indiscriminate routine they tend to blunt our clinical insight. Every investigation should ask a question relevant to the case and there are two things we should keep in mind — one is that certain methods of investigation are only meant as tools for research and are not practical measures for day to day routine, the second that the more esoteric methods of investigation also have their pitfalls and a lot of experience is needed in their interpretation. There is no more irritating figure than the enthusiastic young doctor who gets himself bogged down by a mass of reports on radiological, haematological and biochemical tests of every description and has not used one ounce of common sense. In all surgery there is no substitute for comon sense.

Whatever means we use in diagnosing an ailment, be they clinical, chemical, haematological or radiological the conclusion is reached by inference and a long process of induction. Every detail, therefore, has to be correlated with some concrete process or condition which past experience has shown to correspond with it.

Radiology is of the greatest help to us in diagnosis and the popular mind has endowed its findings with a sort of mystical infallibility. True enough, with the refinement of its various techniques it has become extremely accurate and trustworthy but yet it should be still a golden rule that its results have got to be integrated with the clinical picture remembering we do not treat X-ray pictures but patients.

It has been speculated that soon we may be able to reach a diagnosis by computer. I have the temerity to foresee that this method may give us the name of a disease but will tell us little or nothing about the patient.

tion of antisepsis by Lister revolutionised

Infections have been among the earlist conditions that surgeons have had to treat. We find descriptions of them both in early Egyptian and Greek writings. There have been two landmarks in the history of the surgery of infections — the first concerned their prevention, the second their treatment.

In the days before Lister some of the most dreadful and dreaded infections were produced by the surgeon himself, so much so that the surgical ward was like an antechamber of death. Localisation of infection was encouraged by various means and when in the exceptional case it did occur the thick pus that resulted was greeted as *"pus bonum et laudabile"*. The introduc- the whole of surgery. Professor Debono made this the theme of his inaugural lecture when he was appointed Professor of Surgery. Hospital fever disappeared, surgical wards became a place of healing, and operative surgery became safe. But for this the tremendous surgical progress of the last century would not have taken place.

The second landmark was the discovery of penicillin by Fleming. This was the first of a long series of antibiotics all of which are being used in surgical practice; they have changed practically every aspect of the surgery of infection. Carbuncles, at one time a commonly fatal disease, are decreasing in their incidence and when they do occur they are amenable to treatment — the same may be said of other diseases such as acute osteomyelitis and lung abscess. The mortality of infections has been reduced by an incredible amount. There are a few points worth remembering — pus still needs to be drained surgically according to the old precept *"ubi pus, ibi evacua"*. The Irish counterpart is equally true — "where there is no pus, don't drain it". Secondly,

antibiotics cannot and do not penetrate dead tissue and, thirdly, the indisciminate use of antibiotics, by promoting drug resistance is probably an important factor in promoting cross infection — a problem of the utmost concern.

The value of the use of antibiotics as a prophylatic is still sub judice. Trueta has approached this problem from a different angle. He has redirected attention to the fact that a wound that is clean or has been rendered clean can resist a certain amount of infection provided that the local environment has been rendered unfavourable for the thriving of the microorganisms. This has given rise to a new concept in the treatment of wounds and was adopted with great success in the last world war.

It is possible that injuries were the first stimulus for the development of surgery. The earliest surgical writing, the Edwin Smith Papvrus, deals mainly with injuries and does this in a very practical way. Injuries also figure prominently in the Hippocratic collection — there we find writings dealing with wounds, head in juries, fractures and dislocations. Some of us may recall that the Hippocratic method of reducing a dislocation of the shoulder was a favourite one with Professor Debono. It is perhaps more rational than the more recent one of Kocher. Steady traction is applied to the arm by pulling on it; countertraction is provided by putting your foot in the axilla and when muscle spasm is overcome as a result of the traction the head of the humerus slips into place in the glenoid cavity or else you slip it in with a twist of your foot. Though war time has always provided a stimulus to the advancement of the surgical treatment of wounds there is no dearth of injured persons needing surgical treatment in peace time — indeed their number is increasing owing to industrial injuries and the increasing numbers of motoring accidents. These injuries may involve any system or, indeed, more than one system in the same accident, a lot of them are serious and need urgent and very highly skilled and specialised treatment. Therefore, when these accidents occur in large numbers it has been found necessary to establish a special accident service provided with a number of specialist surgeons available at any time of the day and night. With this organisation many lives are saved that would otherwise be lost and the injured patients are given such care as will return them to health and activity in the shortest possible time. Pari passu with this, surgical conscience has been stirred into concerning itself with all the aspects of injury: with its prevention, its immediate treatment, its after care and the resettlement into a useful occupation of those who have remained to some extent disabled. Surgery has thus intruded into the field of the legislator. the administrator and the social worker. There is much more that we wish to see accomplished — more safety measures in our homes and in industry, more safety devices in motor vehicles, stricter control of driving licenses and easier facilities for resettlement of the disabled.

Congenital abnormalities, like injuries, attracted the attention of surgeons early on in surgical history. With the exercise of some ingenuity it is possible to obtain a good deal of correction of abnormalities of the limbs by mechanical non-operative means and therefore the development of this art did not have to wait for the antiseptic era. Naturally, with the growth of operative surgery the role of the surgeon in the correction of congenital abnormalities is ever increasing and this field of surgery has become one of the most satisfying and rewarding. There are very few anomalies that cannot be corrected to some degree — many of them can be fully corrected. With open heart surgery even some of the most complicated anomalies can now be corrected. Unfortunately there is still a small residue of anomalies for which only partial restoration can be achieved and these create some of the most distressing surgical and ethical problems. I, for one, cannot as yet see my way clear to a satisfactory solution of the problem of the severe spina bifida.

Acquired deformities of the locomotor system have largely disappeared with the decline in the incidence of the diseases that produced them such as rickets, tuberculosis of bones and joints, chronic osteo-

myelitis and the badly united fractures. Scoliosis unfortunately is still with us and faces us with one of the major unsolved problems.

So much of our time is taken up with ablative surgery, the removal of diseased organs in whole or in part that it is good occasionally to think of the happiness that is brought to so many people by reconstructive and restorative surgery wherever this proves feasible — the restoration of eyesight, of hearing, of the circulation in a limb, of movement, of the act of swallowing, of normal intestinal function after obstruction, the restoration of normal appearance of the face after injury had disfigured it. Nothing but surgical measures could accomplish this, though surgery of this kind has its limitations. After all we are mere humans.

The foreseeable future will find surgeons still contending with the problem of malignant disease, i.e. cancer. If untreated, this disease will almost invariably sooner or later kill the patient. Up to a few years ago surgical operation was the only means of treating this disease; now, other measures are available such as radiation, chemotherapy aand the use of hormones. So we are often in a dilemma as to which means to adopt or as to the order in which to apply the methods at our disposal as the results of treatment are so often unpredictable and apparently capricious. In professor Debono's early days the problem was not so complex. The concept of the disease was that some tissue cells become autonomous, break loose from every restraint, multiply and disseminate at the expense of the rest of the body until eventually they sap up all the strength out of the host and the patient dies. The body was thought to be absolutely defenceless against the attack. The rational way of treating this disease appeared to be by some operation that extirpated the diseased together with a wide margin of apparently healthy tissue in continuity with the lymphatic field to which the disease could spread. This method was eminently exemplified by the radical excision of the breast as devised by Halstead and Samson Handley. Nothing could appear more rational. In the light of the evidence now becoming available it seems that the whole concept was rather naive and it is particularly in its application to cancer of the breast that it is being called into question. A lot of heart searching, fresh enquiry and reappraisal is taking place as results of treatment are being assessed on a large scale. It would seem that our fundamental concepts have to be altered and new methods of treatment tailored to the new concepts. With a few exceptions such as the hormone therapy of disease in the prostate, radiation for disease in the nasopharynx and chemotherapy for the disseminated reticuloses it seems that surgery still holds the best prospects so long as it does not damage any form or degree of natural immunity or defence mechanism that the patient may possess. The treatment of this disease is often tragically disappointing but those many cases where we are rewarded with success give us heart and make us feel that our efforts have been well worth while.

It is a popular fallacy that the surgeon practically lives in the operating theatre and the operative part of surgery is the one that is so highly glamourised. Operations, of course, form the most important and responsible part of a surgeon's work. It is in operating that the surgeon applies his skill on the patient and it is at this moment that he has to make most of his quick and crucial decisions as he meets with the unusual, the unexpected, the difficult and the critical situations. This is where hands, brain and heart are put to their severest strains and their most exacting tests. At one time speed and spectacular performance attracted the highest admiration and sometimes even loud applause. Anaesthesia has eliminated the need for speed. Without condoning the habits of those surgeons who enjoy dawdling and fiddling one can say that it is now universally recognised that skill lies in the gentle handling of tissues and organs and speed is only gained by avoiding unnecessary movements and planning each step ahead — that achieves "hurry without haste". It is a joy to watch a master surgeon turn an operation into a

work of art. Yet an operation is now regarded as only a part of a plan of treatment — an incident, albeit the most important one, in the management of the patient. The surgeon who is to give his patients the best treatment has not only to be a skilled operator but has to be highly competent in selecting his patients, choosing the right time for operating, supervising the pre and post operative treatment and managing his patient through any post-operative complications that may arise.

An operation inflicts an injury on a patient — an injury that can make him very ill and to which he may succumb. So before counselling an operation we have to ask ourselves these questions: 1) What is going to happen to the patient if he is not operated on? 2) Is this operation justified? 3) Is the operation feasible? 4) What are the risks of the operation as compared with the risks of the disease? 5) How extensive a procedure would the patent tolerate? The surgeon usually answers these questions in a flash in the light of his experience and it is in the answers that he himself gives to these questions that he shows his clinical judgment. Next he has to select the appropriate operation. "The proper operation", says Grey Turner, "even if clumsily performed, is much more likely to be successful than the wrong operation however brilliantly performed". When we come to choose the proper operation we often have to choose between several alternatives. Experience and our acquaintance with the literature will tell us which are the ones most likely to give most benefit. When it comes to details it would appear that equally good results can be achieved by alternative procedures provided they are well performed. In his Grey Turner Foundation Memorial lecture the late Professor Lambert Rogers relates that Mr. H. W. S. Wright once asked G. T. a technical question about some operation. The reply was: "It doesn't matter which way you do it, but always with great care, extreme precision and no tricks". In a similar vein P.P. often said that an operation that was appropriate in the Mayo Clinic may not necessarily have been so at the Central Hospital. Another of his tenets was that not everything new or recently popular was neces sarily better and if an operation had given him good results he would cling to it irrespective of any change in fashion.

On the other hand, without the constant trying of something new there can be no progress — surgery would become stagnant. Before that something new is generally accepted it has to prove its worth and stand the test of time. In one of his sanguine moods, Lord Moynihan once stated that surgery had attained such a degree of perfection that no further progress was possible. Time has belied that negative forecast.

Progress has engendered specialisation and specialisation in its turn has promoted progress. Surprisingly, P. P. was not keen on specialisation. He himself was so extraordinarily versatile that he did not see the need for it. Perhaps in a sense he was right. No one should specialise until he has obtained a general conspectus of surgery — in other words one should have some grounding in general surgery before becoming a specialist and preferably he should also be a good doctor.

With this increasing progress the future is a matter of conjecture and speculation but from time to time we should pause and consider whither we are going. Is organ transplantation to be the surgery of the future? From the purely surgical point of view renal transplants have proved their worth. It is doubtful if cardiac transplanation, a purely palliative procedure, has saved more life months than it has taken away.

As a conclusion to this theme it would not be out of place to ask ourselves the ultimate question: What is the object of surgery? Sir James Learmonth once gave a choice between two definitions: Wordsworth's "To make the gift of life more valuable and the men more worthy of the gift." and Macaulay's summary of Bacon's view: "The multiplying of human enjoyments and the mitigation of human sufferings." Either of these he considered to be a laudable objective; either of them emphasise the humanitarian aspect of our science and art. No one should aspire to

become a surgeon unless he has a respect for the human person. In a recent Bradshaw lecture on cancer of the breast Sir Hedley Atkins admonished us that in conducting our controlled trials each of our statistics, each of the plots on our graph is a human being, each is somebody's wife, somebody's mother or daughter; that irrespective of what little we may achieve in advancing knowledge, our first duty is to care for these people as individuals. This we can only forget at our peril and so in our consulting rooms, in the wards and in the operating theatre we do well to reflect on the precept given us by Lord Moynihan: "A patient can offer you no higher tribute than to entrust you with his life and his health, and by implication with the happiness of all his family. To be worthy of this trust we must submit for a lifetime to the constant discipline of unwearied effort in the search of knowledge and of the most reverent devotion to every detail in every operation we perform."

It is because he achieved this ideal that we regard Professor P. P. Debono to be worthy of our reverence in our com memoration this evening.