

concerns alone the well-being of our own species—man. Our profession is not one that brings either ease or wealth in its train. To the vast majority of those who embrace it as a calling there is but little beyond a well-earned competence. But with its many drawbacks it has within it elements of human interests which contrast favourably with the sordid and debasing elements of other pursuits. We certainly, in our profession, have a great incentive to live up to Sydney Smith's noble ideal—Let every man be occupied, and occupied in the highest employment of which he is capable, and die with the consciousness that he has done his best.

ART. XX.—*The Evolution of Modern Surgery.*^a By F. CONWAY DWYER, M.D. Univ. Dubl., F.R.C.S.I.; Professor of Surgery in the Royal College of Surgeons in Ireland; Surgeon to the Meath Hospital and County Dublin Infirmary.

I HAVE been entrusted by my colleagues with the honourable and responsible task of delivering the Inaugural Address for the Session that has just commenced. My first duty is to return them my grateful thanks for the distinction, and to earnestly desire that I were better qualified to discharge it.

Before entering upon the discussion of the subject on which I purpose to claim your attention, another and a painful duty devolves upon me. The hand of death has been very busy in recent years in thinning the ranks of the staff of the Meath Hospital. The last to receive his summons was Sir Philip Crampton Smyly, one of the most widely known and respected members of the profession in Ireland. I had not the privilege of being his colleague in the hospital, and I am not, therefore, in a position to speak of his many excellent qualities with the knowledge that intimate association confers; but I knew him well enough to sympathise with the affectionate regret with which his memory is held by his fellow-

^a An Address introductory to the Session of 1904–1905, delivered at the Meath Hospital, on Monday, October 10, 1904.

workers and share with them their grief for his loss. Sir Philip Smyly was the grand-nephew, and for a short time the apprentice, of the great surgeon whose fame is one of the cherished traditions of the Meath Hospital, and whose name is indissolubly linked with the history of this place. He was the son of Josiah Smyly, also a distinguished member of the staff, and to whose munificent liberality we owe the endowment of the ward for children. Sir Philip Smyly proved himself worthy of his ancestry, and showed at an early age that in him the inherited qualities of the race were well marked. After a successful career in Trinity College he was appointed surgeon to the hospital in 1861. He was an able and conscientious teacher, whose aim was to impart solid and useful information rather than to make a vain parade of learning by the delivery of long orations at the bedside. His contributions to surgical literature were numerous and important, more especially in connection with diseases of the throat—of which subject he was the pioneer in this city—a branch of surgery for which his singular neatness and dexterity as an operator gave him a peculiar fitness. He combined in a rare degree the qualities of intellect, temperament, and manner that ensures success in our profession. To high professional attainments he added unflinching tact and courtesy, and with these aids and the charms of a singularly attractive personality his success was early and decisive. By his death the medical profession has lost a distinguished member, and his colleagues a sincere friend and loyal fellow-worker.

To those students who come amongst us for the first time, and to those who are returning for further experience in hospital work, I extend on behalf of my colleagues and myself a very hearty welcome.

I have, after some consideration, selected as the subject of my remarks a well-worn theme—viz., The Evolution of Modern Surgery—and I feel I owe an apology to my audience for seeking to interest them upon a matter with which already they must be familiar; and yet it is one of enchanting and compelling interest; its comparatively recent origin and swift development, the entire

revolution it has effected in our views as to the scope and method of treatment of surgical maladies, must be my excuse. A wider gulf exists between the surgery of to-day and that of a quarter of a century ago than between that period and the methods in vogue in mediæval times. To appreciate the radical change that has taken place in the domain of operative surgery a brief retrospect will be necessary. Less than thirty years ago there was absolutely nothing known about the essential causes of infective diseases. Vague speculations incapable of verification were readily accepted, mere hypothesis in whose support nothing tangible could be advanced found numerous adherents, and fierce controversies were indulged in by the partisans of this or that theory. Speaking of the views held at this time, Sir William Gull said: "We are carried back to the days of ignorance, when concoction and maturation were made to explain whatever was obscure." Tubercular disease was considered to be a diathesis; erysipelas to depend in some way on the weather; while tetanus and some other diseases were looked upon as visitations. Hospital wards were ravaged by septicæmia, pyæmia, phagedæna, &c.; in fact, sepsis in every form was present, and dogged the steps and foiled the efforts of the surgeon. It is, happily for the present generation, impossible to realise the awful mortality that supervened upon operations, even of the simplest nature. This state of things had the inevitable effect of restricting the sphere and limiting the utility of surgical interference. Few cases except those of an urgent nature were submitted to operation. As illustrative of the lamentable condition of our art at this time, Mr. Mayo Robson, in a recent address, said: "In Bartholomew's Hospital in 1870 there were three ovariectomies, all fatal, and twenty cases of hernia in which the sac was opened, with nine deaths." In the hospital reports of this period the causes of death are diffuse cellulitis, erysipelas, &c., and where the death took place very shortly after operation shock, which in all probability was acute sepsis. Viewed from our present standpoint this calamitous record was the direct result of the conditions under which operations took place. Mr.

Griffith, speaking at the annual meeting of the British Medical Association held at Cardiff, gave a vivid description of the hospital arrangements in his student days. "At this time," he said, "linseed meal and charcoal poultices were used to dress wounds and to encourage suppuration; laudable pus was the sign of a good dressing and healthy action. Each ward had its set of sponges, and these were used indiscriminately for the various cases under treatment. The operating theatre was crowded with students from the dissecting-room, and at the operation the great surgeon invariably wore, with evident pride, the same old black frock coat, buttoned up to the chin, and which was well stained and saturated with blood and discharges." But all this was soon to be changed, and that, too, from an entirely unexpected quarter. The new era dates from Pasteur's investigations as to the causes of fermentation and to his discovery of the part played by vegetable cells in producing the series of chemical changes which accompany the process. Carrying his inquiries further, he found that putrefactive changes were fermentative in character and caused by agencies of a like kind. It now remained to apply this discovery to the changes that took place in wounds, and to see how far inflammation and its consequences were due to similar causes. To Lord Lister belongs the credit of this expansion and development of Pasteur's theory. The bacterial origin of septic processes in wounds and injuries was proved, and now the problem was reduced to finding how far it was possible to keep blood serum and injured tissues in wounds free from living germs.

After laborious experiments, carried out with exemplary patience and earnestness, Lister convinced the most sceptical that septic changes could be prevented by the use of carbolic acid. From this epoch-making discovery dates the parting of the ways; the new surgery commenced its career, and its progress has been one of unchecked advance ever since. It is quite true that modifications of the original method of obtaining germ-free wounds has been found desirable, and our aim now is to secure conditions which render the use of strong antiseptics

unnecessary. It is obvious that if a germ-free environment could be obtained, if all possible avenues of infection could be closed, the use of antiseptics could be dispensed with or reduced to a minimum, for these powerful germicides lower tissue vitality and are better kept out of a wound. This is a natural development of the Listerian system, and the evolution of the aseptic from the antiseptic surgery is one of direct logical sequence, and involves no change of principle. Perfectibility is of slow growth, as is very evident in the gradual transformation from the necessarily imperfect and rather clumsy appliances of the earlier days to the simplified technique now in use.

It is not my intention to weary you with a description of the means used to bring about sterilisation of instruments, dressings, &c., to ensure aseptic surroundings under which to operate. You will see all this in daily use in the hospital. I am anxious, however, to impress this fact upon you, that if you have grasped the principles of aseptic surgery, no complicated paraphernalia is needful to efficiently carry out its requirement; but it is absolutely essential you should bear in mind the manifold routes by which infection can travel, and guard them all. This will call for sustained vigilance and minute attention to detail. Herein lies a great part of the surgical art, and the necessary training is only to be acquired by practice, until the multitudinous details become, from frequent repetition, a matter of habit.

Under the stimulus of Lister's labours the progress of surgery was rapid and certain. This advance was everywhere in evidence, but was more especially manifested in the treatment of surgical affections of the abdomen. It was here that the earliest and most signal triumphs were achieved; a region formerly shunned, and interference with which resulted in disaster, was now freely dealt with, and with impunity. In quick succession every abdominal organ was submitted to surgical treatment. Take, for instance, the operation of ovariectomy. In the pre-antiseptic days the victims of this disease were condemned to a lingering death; palliative measures of the

feeblest kind were all that the surgical resources of the period could do to alleviate their suffering. It is quite true that some few successful operations had taken place at the hands of operators who must have had, in addition to sound surgical instincts, great good luck and much hardihood. Such a one was Ephraim MacDowell, of Kentucky. This enterprising surgeon had many imitators, and a certain number of successful cases were reported. Still the mortality was deterrent, so much so that the operation was condemned as unjustifiable. What a contrast to-day! These cases are now operated upon by the thousand without a single fatality, and that, too, in the early stage, before the tumour has caused inconvenience or suffering. Results of an equally encouraging kind were found everywhere.

To take another example. Consider what has been done within the last few years for diseases of the kidneys amenable to surgical treatment. The late Sir Henry Thompson—an authority of world-wide repute—said, in discussing the possibility of removing stone from the kidney, that the prospect of affording surgical relief to the sufferers from this affection was small. He spoke and wrote most discouragingly, and altogether took a very pessimistic view of the future in this field of work. Under the protection of the new method of wound treatment the operation was very shortly afterwards—with complete success—performed, and has since become a standard one, and ceased to excite any special interest. The records of hospital and private practice conclusively prove that with increasing experience and recognition at an earlier stage a steadily diminishing mortality is obtained. In this connection I may add that I had the good fortune to assist at what I believe was the first successful operation of the kind performed in Dublin. Sir Thomas Myles was the operator. The stone was very large, and the extraction difficult. The patient, a young lad, recovered rapidly. Results of a like kind are found in the surgical treatment of other organs, notably in the cranial cavity, liver, gall-bladder, pancreas, and throughout the entire alimentary tract. The record is one of con-

tinuous and unbroken progress; each succeeding year marks an advance; every new achievement is the herald of some still bolder attempt to grapple successfully with disease. The new surgery, based upon proved scientific principles, guided by a technique that excludes disaster, and fortified by past successes, can, without fear, explore the inmost recesses of the body and efficiently deal with disease in situations hitherto deemed impossible. It is perhaps in the treatment of urgent conditions, in which life is placed in immediate peril, that the beneficent effects of the new surgery contrast so strongly with the older methods. In this field of work striking results have been obtained and innumerable lives saved. Within recent memory peritonitis was a word of dread import. The diagnosis was limited to recognising the facts that there was inflammation of the peritoneal lining of the abdomen, and as the cause was not known or sought it was inevitable that it should be called idiopathic, and it was duly so labelled, doubtless with that glow of satisfaction that accompanies the consciousness of well-directed diagnostic acumen—"idiopathic peritonitis." How final and satisfying! And the treatment—well, it was on a par with the rest. Mercury, leeches, opium—and the patient was narcotised into insensibility, and passed away. What a revolution has been effected by the more accurate views that now prevail, and how radically different the treatment. We now know that peritonitis is the result of the destructive action of different kinds of organisms, and that the low temperature and rapid pulse which appeared so anomalous from the old standpoint of inflammation are the clinical evidences of the absorption into the system of toxins—the results of bacterial agencies—and we then proceed to find out the source from whence these organisms gained access to the peritoneal cavity. By the systematic investigation of the history and mode of onset of the symptoms we find the cause of these peritoneal catastrophes to be due to appendicitis or gangrene of this structure, perforating gastric ulcer or some lesion of the intestinal tract, by which a communication has been established between the mucous and serous membranes.

The rest is simple. The abdomen is opened, the rent discovered and stitched up, or the appendix removed, the peritoneal cavity cleansed and the wound closed, or drainage established, as the nature of the case may require. That is the *rationale* of the treatment—stripped of technicalities—and a wonderfully simple and common-sense sort of procedure it must seem to you; and yet that very obvious way of managing such cases is the final result of the accumulated labours and experience of surgeons and pathologists for the last twenty years. The practical outcome of these views is very well shown in the treatment of perforated gastric ulcer. Until very lately all these cases terminated fatally. Now, by the early recognition and prompt interference, the mortality is—considering the gravity of occurrence—small. It rises steadily in exact proportion to the time that has elapsed before surgical help is obtained. If operated on at once the mortality would be trifling; if with twelve hours of rupture it would be 16 per cent., and if with twenty-four hours 60 per cent., and if delayed for forty-eight hours it is very rarely successful. Next in importance to the time limit in determining the issue is another factor:—Has or has not the patient in the interval been judiciously treated? If opium or purgation has been tried before the surgeon sees the case the outlook is distinctly bad. Nevertheless, all such cases should be submitted to operation, no matter how desperate, as to do otherwise is to deliberately withhold the only possible chance of life. And here it may not be amiss to remind the non-professional friends who honour us with their presence on this occasion that when a patient succumbs after an operation for one of the emergencies under consideration it is not the operation, but the delay in performing it, that is responsible for the fatal issue. Parenthetically I may add that the above statement is capable of a much wider generalisation. On an occasion such as this it is not possible to more than cursorily indicate the nature and scope of the advance made in the art and science of surgery. I shall select one or two other examples which vividly illustrate the great change that has been effected.

It is not too much to assume that everyone, medical and non-medical alike, has heard of a disease known by the wholly indefensible name of appendicitis, and yet—very familiar as the name appears to be—it is very lately that this affection, with all its complications and varieties, became the subject of effective treatment. This malady, which in its clinical manifestations ranges from a strictly localised form of peritonitis to the most destructive and rapidly fatal form of peritoneal infection, was until quite recently very little understood. It is now thoroughly well known, and countless lives have been saved by timely operation. It is sometimes said that the pendulum has swung too far in the opposite direction, and that operations are performed upon indications of insufficient gravity. The removal of the appendix has been denounced as a fashionable craze, a sort of fleeting surgical fashion which will soon cease to be the mode, and the advocates of the operation have been assailed in no measured terms. These are not the views of those entitled to speak with authority; all experience, pathological and clinical, proves beyond doubt that the proper course is to remove during a quiescent period—that is to say, after a first attack—this functionally useless and potentially dangerous structure. The operation under these circumstances involves no risk, and removes what at any moment may be a source of grave peril to life.

Let me glance for a moment at what has been done for surgical affections of the stomach. It is not my intention to recapitulate the brilliant series of successes that can be placed to the credit of our art in this sphere of work.

The treatment of pyloric stenosis, dilatation, and gastric ulcer, by the establishment of an intestinal anastomosis, are now recognised procedures of admitted utility in suitable cases. But you may not be prepared to hear that even certain forms of dyspepsia in which, to use the language of the advertisement, “physicians were in vain,” have yielded to surgical intervention. It is now well known that certain disorders of the stomach are due to bands constricting the organ and hampering those movements necessary for complete gastric digestion. Many

such cases have been submitted to operation with results which fully justified resort to such heroic means. And patients who have for years suffered from so-called dyspepsia, and who have run through the gamut of remedies, orthodox and otherwise, have found prompt and permanent relief at the surgeon's hands. I feel I am treading here on delicate ground, and I hasten to explain to my medical colleagues that I do not think every patient with dyspeptic symptoms should be wrested from the gentle care of the physician and have his abdomen incontinently opened.

Within the last few months a communication of remarkable interest and importance was read by Professor Mikulicz before the West London Medico-Chirurgical Society, in which he described the results of a series of experiments undertaken with the purpose of showing how far it was possible to prevent wound infection by increasing the natural powers of resistance to infective processes. While it is true that the aseptic treatment of wounds is able to cope efficiently with infection, it must be remembered that this applies only to wounds where the infection comes from outside. But take the case where the stomach or intestine is opened and a communication established between the peritoneum and tract, swarming with micro-organisms, with all our care we can only limit the amount of infective material that escapes, and were it not for the natural powers of resistance of the invaded tissues to deal effectively with a small dose of infection such operations would be impossible. Are there then any means by which this inherent resistant power can be increased? That has now been answered in the affirmative. Mikulicz has found that the injection of a 2 per cent. solution of nucleinic acid before operation raises enormously this power. He has proved this conclusively. This must be regarded as a discovery of the utmost practical importance, and one pregnant with future possibilities of the most valuable kind.

When all has been said about the progress that the last twenty years has witnessed, there is one dread disease the ultimate cause of which we are as yet in entire ignorance

of, and if we are sometimes disposed to vaunt our successes too insistently, to exhibit something of a vainglorious spirit, our impotence in dealing with malignant disease ought to give us pause. In the entire category of "ills that flesh is heir to" there is none that inspires such horror as cancer—a word to be whispered with "bated breath" and, considering the futility of our means of dealing with it, "whispering humbleness." It is the veritable knell of doom. When the unhappy victim hears the sentence he is overwhelmed with the despairing consciousness that no reprieve is possible, that his fate is irrevocably sealed, and that the short remainder of his life in the fell grip of this awful malady must be one of lingering suffering. Up to the present the real nature of the organism, its origin, its life history, its mode of entrance into the human system, are not known.

The parasitic origin of cancer has not been definitely proved. Theories have been advanced, and to some extent supported by experimental proof, but the evidence is as yet insufficient to affirm anything definitely. In the matter of this vital importance probability will not do. Nothing short of conclusive proof can be admitted. The causation of cancer is now the subject of ardent investigation by trained experts in every part of the civilised world, equipped with the means of carrying on their researches by all the methods that modern science can place at their disposal. And surely it is not too much to hope—judging by what has been done in tuberculosis, diphtheria, &c.—that the quest will end in the discovery of the *causa causans* of this widespread scourge. Till that result is obtained we must possess our souls in patience and retain our attitude of passive expectancy. We know that in other sciences questions which have baffled the ages have been answered not by happy guesses or sudden inspirations, but by trained and patient inquiry. While fully aware that prophecy is the most gratuitous form of fatuity, I yet venture to hazard the opinion that the solution is one that the near future will bring forth.

An old established custom has ordained that occasions like the present should be utilised for the purpose of con-

veying in appropriately solemn language large quantities of wholesome advice to the medical student, and many a well-meant homily has been delivered with this laudable purpose. I am conscious of not possessing the requisite aptitude for this *rôle*, and, besides, I think it at the present day unnecessary. The custom in question is a survival of the time when Mr. Bob Sawyer was the accepted type of his class. He is gone, quite as much as Sairey Gamp, and how entirely extinct that gentle ministrant is can best be realised by contrast with the trained nurse of our time.

The medical student has my sincere sympathy. He is the most lectured, examined and generally harassed member of the student class. It is by no means an easy task to complete the required curriculum in the prescribed time. No student can afford to be idle. His entire time is occupied by hospital, attendance upon lectures, and in preparing for the various examinations. Failure to pass is penalised in time and money. The increased difficulty in obtaining the necessary qualifications has operated beneficially in many ways. It has brought better educated men into the ranks than were formerly found, and has raised the standard of general education and professional efficiency in a marked manner.

I freely admit that there is much to repel, even to disgust, the student—often a mere lad from school—who for the first time sets foot in the dissecting-room or operating theatre of the hospital. His natural instincts are revolted by close contact with disease and suffering, and then the study of anatomy cannot at the outset be described as alluring. If he be of a sensitive disposition perseverance for the first few months requires some fortitude. But if he is made of the right mettle all this soon passes off. He begins to take a keen interest in all that he sees and hears, for there is no study that possesses the same fascination as that of medicine, which is concerned with the solution of problems of pressing interest for all humanity. I earnestly desire to impress upon you the paramount importance of diligent attendances at hospital, for that is the place where you will learn the business of your future lives. The only true foundation for the know-

ledge that is of any avail in helping us to treat disease efficiently is that acquired at the bedside. In the wards of the hospital you will learn the art of physical examination and develop the faculty of observation—an absolute essential for the practical appreciation of the relative values of physical signs and symptoms. Do not be discouraged by the difficulties you will meet; such are inevitable at the commencement of a study which embraces so extensive a field as that of Medicine. In a surprisingly short time—considering the intrinsic complexity of the subject—a certain skill is acquired in the recognition of the more frequently recurring types of disease, and this acquisition gives confidence and creates interest. Systematic case-taking is valuable; it teaches accuracy and encourages self-reliance by making the student an independent investigator. A diagnosis is a conclusion drawn from certain premises, and the art of accurate diagnosis implies the necessary skill in eliciting the data from which to draw the conclusion. And remember that this kind of training cannot be derived from books; no amount of reading can supply deficient hospital experience. Believe me, it is by the wise use of the few years devoted to hospital work that your future will be chiefly influenced.

I attach very little importance to the parrot-learning of the student who contents himself with reading and neglects his hospital. Such a one may answer an examination paper fairly well and reply glibly enough at the oral, and be unable to diagnosticate a simple case at the bedside. Cases of this kind are familiar experience with examiners. Consider the awful consequences want of practical knowledge may entail: the issue of life and death may be in the balance, and the penalty of error is lifelong remorse. I can imagine no more pitiable plight than that of the medical man who from culpable ignorance fails in the management of a case which, with ordinary skill, should have had a different issue.

Having triumphantly passed the examinations, a very important question presents itself for decision—namely, the selection of your future field of work. Do not be

precipitate in this matter. While deeply sympathising with the natural and manly desire of recently qualified members of the profession to become self-supporting as soon as they possibly can, I deem it my duty to warn them against hastily adopting the first means of obtaining a livelihood that presents itself. The choice is for them a momentous one, and will, in all probability, prove the determining factor in their future career. This especially applies to appointments in the Irish Poor Law Medical Service as at present constituted. You are all familiar with the agitation for the redress of the evils under which the service labours at present so ably carried on by the Irish Medical Association. It is not my intention to discuss these grievances at any length; suffice it to say that they are manifold. The service is a hard, thankless, and unremunerative one, and the marvel is that the attempt to procure a remedy for the existing state of things was not entered upon long since. The time for action has now arrived. A vigorous, and I rejoice to think a successful, effort is now being made to arouse members of our profession from the apathy and supineness which have hitherto characterised their attitude towards those of our brothers who have so long and patiently endured the intolerable hardships and disabilities of life in this service.

The demands formulated by the Irish Medical Association are moderate and reasonable. They ask for a living wage, a few weeks' holiday in the year, and a modest pension when no longer physically able to satisfactorily discharge their hard task. That, surely, is a modest minimum, and it seems incredible that claims so temperately urged and of such manifest equity should meet with such determined opposition. We are told, amongst other things, that the law of supply and demand regulates professional remuneration. Well, it is in your power to regulate the supply of those applying for posts in this service, and you can best do this by becoming members of the Irish Medical Association and loyally adhering to the conditions prescribed by that body. I am not in the least afraid of the reproach of trades unionism, and if we

are compelled to resort to combination to obtain redress for existing grievances it will be because all other means have been tried and failed. Combination under these circumstances is defensive, and, as such, perfectly legitimate. Pause well before entering this service. Fortunately, there are many other careers open to men of enterprise and capacity, and you should weigh well the consequences of bartering your future for the uncommonly scanty mess of pottage grudgingly doled out by the combined liberalities of the Local Government Board and the Poor Law Guardians.

There are many fields of active work open to you—such as the Army and Navy Medical Services, the Indian Medical Service, the Colonies, and practice in England, where professional competence and industry are certainly better rewarded than in the service under consideration. It is, of course, a matter of deep regret that so many should be compelled to seek fortune outside their native land; but facts are stubborn things, and if you must go remember thankfully that you have a British Empire ready-made by a kind Providence for the special benefit of many Irishmen and some Scotchmen.

And just one word in conclusion. You aspire to become members of the most arduous and exacting of all professions. The onerous demands of medical practice furnish incentives of the most stimulating kind to continual industry, to the ceaseless acquisition of professional knowledge. It will be your duty to keep yourselves abreast of the ever-advancing tide of Medical Science. To acquit yourselves worthily will call for whole-hearted and zealous devotion to work. Now is the time to prepare yourselves to meet with confidence and that self-reliance that conscious efficiency gives the labours and responsibilities of your future lives.

LITERARY NOTE.

MR. HENRY J. GLAISHER, of Wigmore-street, has just published "X-rays: their Treatment in Cancer and other Diseases." By R. J. Cowen, L.R.C.S.I., L.R.C.P.I., &c.