

covered with a considerable layer, too thick to be nourished by the vessels in the underlying tissues. From malnutrition, therefore, the cells in the superficial layers undergo degeneration, and are converted into pus cells, and thus suppuration takes place. At the same time the deeper layers become vascular and converted into granulations, which undergo cicatrization, and so the wound is healed. There can be no question, I think, that the cause of the prolonged irritation is the presence of septic micro-organisms in the wound.

Time will not permit me to describe the process in detail, but sufficient has been said for my purpose, which is to point out the close analogy between the process of union by first intention, and union by second intention. In both there is inflammation; in both this is attended with exudation, though varying in amount; and in both this exuded material forms the bond of union.

In union by secondary adhesion or "third" intention we have the same exudation of inflammatory material acting as the bond of union. We have inflammation, exudation, and the conversion of the exudation into granulations. If these granulations are now brought in contact they coalesce together, just in the same way as the exudation does in union by first intention. The vessels grow through this coalesced material from side to side of the wound, the cells of which it is composed undergo developmental processes, and are converted into scar tissue and the union is complete.

Such, then, Mr. President and Gentlemen, are briefly my views with regard to this important question of inflammation in connection with the union of wounds. The whole subject hinges on the one point of what we mean by inflammation. If we agree with Hueter and Kocher that no injury alone is competent to produce inflammation without the intervention of micro-organisms, then my whole argument falls to the ground. But if we believe, as I do believe, that inflammation may be induced without the concurrence of organisms—an inflammation, I admit, different from that excited by these bodies, for it neither tends to spread to contiguous parts beyond the area of injury, nor to infect distant parts through the blood stream or otherwise—then I say I have brought forward conclusive evidence to prove that the union of wounds is an inflammatory process. At least, if it is not, I know not what it is.

REFERENCE.

- ¹ Hunterian Oration, 1893, Bryant.

ABSTRACT OF
THE HARVEIAN LECTURES.

ON

DISEASE AND ITS TREATMENT, AND THE
PROFESSION OF MEDICINE IN THE
YEAR 1899.

Delivered before the Harveian Society of London, December 1898.

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LECTURE I.

THE PRESENT ASPECTS OF DISEASE.

THE NINETEENTH CENTURY.

FROM the year 1899 we shall soon be looking back upon the greatest century medicine has ever known, a century of labour and of results. But our recent vicissitudes, our changes, and our prospects will be sufficiently illustrated by a review of a shorter period, that which is included within the memory of our own generation.

Gradually the class distinctions have become less marked, and now, in the closing years of this century, the physician is only distinguished from his fellow workers in more general subjects in that he is credited with a more ample knowledge of the matters to which he restricts his attention; while the humble apothecary of the early days of the century, who was not paid for his professional advice but solely for the medicines which he supplied, has given place to the highly accomplished practitioner of medicine and of surgery.

He is to be found everywhere through the land, well taught, with a great knowledge of his profession, careful and judicial, wanting but little outside assistance in his work, and then only to help to solve some of the difficult or insolvable problems that present themselves in the practice of the profession. "*Fin de siècle*" is not an idle term. The whole world is conscious of changes, profound and rapid, and to these none are more keenly alive than ourselves who stand by and watch.

THE CONTRACTION OF THE FIELD OF MEDICAL PRACTICE.

Another great fact around which my remarks will centre is the increasing limitation of disease and the contraction of the field of medical practice. It will be seen that in many cases ailments which hitherto had belonged to the exclusive care of the general practitioner have had a tendency to escape from his undivided control. The causes of this change are various, its ultimate consequences of considerable importance, and to them some attention will be devoted in due course. Other changes no less remarkable have occurred, influencing the status, the practice, and the prospects of the profession.

THE GRADUAL DIMINUTION IN THE PREVALENCE OF
DISEASE, AND ITS CAUSES.

The prevalence of disease has considerably diminished within the memory of the present generation, and, if its characters have altered in any degree, the change has been rather in the direction of attenuation. The notion of the parasitic origin of disease dates back to a remote antiquity; but the full proof of its correctness has been delayed until our own times, and with it the idea that their spread can be controlled and even arrested.

Etiology loses its use unless disease be recognised. In diagnosis also the most brilliant advances have been worked out in the laboratory. Bacteriology has given us tests for some of the most virulent affections, and the other sciences have been drawn into the service of the physician. Diagnosis must always be an art, but it is becoming more and more a science, needing technical knowledge and skill and an increasing supply of instruments of precision. One of our most striking innovations is the employment of scientific aid by the practitioner, and the adequate means which have come into existence to supply his requirements. At hospitals all this is provided by the clinical laboratory, which is therefore an essential part of their equipment, irrespective of any educational object.

It is to Jenner we owe the great idea that a disease may be practically stamped out by a thorough application of some universal protection. I need not weary you with figures, but you are aware that wheresoever efficient vaccination and re-vaccination are performed the mortality from small-pox is almost *nil*, and its incidence is restricted both in numbers and degree. In our own country it survives only by the will of the people.

THE SHARE OF HYGIENE IN THE PREVENTION OF DISEASE.

To hygiene, inspired of bacteriology, are due most of our practical measures of prevention. The suppression of cholera, of relapsing fever, and of typhus, the limitation in the spread of the common exanthems, our successful though still fractional results in the limitation of phthisis, and, not least, the improved health and strength of the rising generation; all this has been the direct fruit of a faithful application of its principles.

Again, we are indebted to it for the suppression of the epidemics of puerperal fever and septic peritonitis. This great progress was initiated by Semmelweis, but the modern life-saving reforms did not become part of practical gynaecology until Lister's great work had shown us how the previously unchecked spread of septic infection could be absolutely prevented. Pyæmia and septicæmia, which claimed so many victims, are now almost unheard of. Moreover, suppuration itself, with its long delays, its risks and sequelæ, has now ceased to be regarded as part of the process of healing.

Bacteriology has in some instances supplied us both with the prevention and the cure. The treatment of diphtheria is the most brilliant example of the curative value of the serum of immune animals. Less successful, but not wanting in promise, are other forms of serum treatment. The strepto-

coccus serum, the pneumococcus serum, the antitubercle serum, and the antitoxin treatment for tetanus and for plague are instances in point. Within quite recent years the immunisation of those likely to be exposed abroad to the infection of such virulent diseases as cholera, plague, and typhoid fever has been systematically practised; but in this country, since diphtheria has become amenable to treatment, there is less necessity for any protection of this kind.

The contemporary advances of surgery have been the evolution of an art which had previously desired its opportunity now given to surgeons by anæsthesia and antisepsis. As the opportunity was afforded a new surgery grew up under their hands, characterised by skilful manipulation and by infinite ingenuity of device. A tribute is also due to dental surgery, the improved methods of which are of incalculable service in the rational treatment of some lingering ailments.

Whilst the brilliant record of surgery has tended to eclipse everything else, the achievements of medicine have been unnoticed or minimised. To place things in their true light, the province of surgery would seem to be essentially curative. It may save life or limb, but this is a gain to the individual only. Medicine has done more in prevention. Its dealings with the individual are not always brilliant, but it has succeeded in protecting not the individual alone, but the community, against decimating diseases. The suppression of a single disease, such as typhus, small-pox, or cholera, would alone outnumber the surgical total of lives saved.

In phthisis the combination of two infections, the specific bacillus and the organisms of suppurative, explains the need for the perfection of ventilation. There seems to be at last in this country, after a long and regrettable delay, an earnest resolve to provide this remedy. We are now dealing closely with the agent of the disease in its various modes of dissemination—by the sputum, by food, and by milk. The importance of the purity of the milk supply has been revealed by the researches of Professor Delépine, which are now leading towards practical legislation. Since the tuberculin test enables us to detect disease in the cow before it has become otherwise obvious, there is no reason why the spread of tubercle by milk should not be efficiently prevented.

The prospect as regards the further limitation of disease would seem to be that one after another our parasitic diseases must yield to this never-halting progress, that much disease of a non-infectious kind will also be prevented, and that the ratio of instances of disease to the number of the healthy population must steadily diminish.

The increasing healthiness of the community is a notorious feature of the day; and we need not review the long list of the general infections. More important are some of the "trade" diseases which modern hygiene has taken into its care, and in which a distinct reduction has been brought about, as, for instance, in the destructive lung diseases from inhalation of dust, and in the affections due to intoxication by lead, mercury, and phosphorus.

DISEASE CANNOT ENTIRELY DISAPPEAR.

There is, however, a finality in this encouraging prospect; although we may in the distant future live healthier lives and die of old age, some diseases must remain always. The most virulent diseases are those most easily prevented; but others are incapable of being suppressed, and they are apt to be perpetuated by our success in saving the weaker lives.

The climacteric periods—pregnancy and childbirth—need watching with special care, and gynæcological practice must continue to flourish as it has done in the past.

The diseases of old age, of infancy, of childhood, and of puberty must claim as heretofore the services of the profession. In middle and advancing life the later developments of syphilis will continue to prevail so long as neither the State nor science can cope with this scourge. Many visceral degeneracies are also traceable to infective disease, to wear and tear, to unevenly apportioned labour, and to the thousand risks of life, but most of them to human perversity in turning food and drink into poison. The dietetic diseases of the alimentary, the renal, the cardio-vascular, the nervous, and other systems are likely to remain, like gout itself, more prevalent in this than in any other country, in proportion with its

growing prosperity, and in spite of the wiser counsels now prevailing.

Lastly, cancer, insanity, and the nervous diseases are held by some to be on the increase.

DRUG AND FOOD DISEASES.

There is a source of nervous ailments entirely special to this age, and the unexpected outcome of our nineteenth century chemistry and advertising. Intemperance in drugs is becoming more common, and it may possibly outstrip the abuse of alcohol in its evil results. The manufacture of new chemical products is supplying the public with endless carbon derivatives of high molecular power, and of imperfectly known physiological action. Fortunately, many advertised medicines are harmless, but their prolonged use is detrimental, if only by delaying the treatment required by the original affection. Others are most dangerous, and their continued indulgence leads to confirmed neuroses or hopeless neurasthenia, and it thus comes to pass that as the therapeutic activity of the profession tends to abolish disease, that of the public is manufacturing it.

Whilst the increasing purity of natural foods has reduced our mortality, modern ingenuity has been the unintended means of occasionally supplying poison in food. Fortunately, ptomaine poisoning is an unusual accident. A much more serious and widespread evil has been the indiscriminating substitution by mothers of condensed milk and manufactured foods for the fresh supply of milk. This neglect of fresh milk and the untutored administration of artificial foods, even of the best kind, without due regard to proportion and to suitability, have been disastrous. To this cause may be attributed the fact that, in spite of modern hygiene, infantile mortality from diarrhoea and marasmus has shown no adequate decrease, and sometimes an increase over that noted before these modern inventions.

THE DANGER FROM THE TROPICS.

Our chief danger, in these times of rapid travel and traffic between the old and the new worlds is the importation of epidemics of virulent diseases, as in the case of cholera of old, and recently of influenza with its peculiarly lasting effects; and the plague is our present nightmare. But short of so calamitous an invasion, we may expect the arrival of a growing number of patients returning from the tropics with impaired health. The study of the tropical diseases is therefore most opportune, for not only must they call for a considerable staff of medical advisers in the newly-developed centres, but their sequelæ cannot fail to require considerable treatment in this country.

Nothing short of the creation of a large and central hospital, readily accessible from all the medical schools, for the treatment and the study of these affections would seem to be adequate for the fulfilment of our long-neglected imperial responsibilities, for the needs which coming years will multiply, and for the requirements of this vast metropolis viewed as the centre of an immense tropical empire.

OUR SCOPE OF USEFULNESS AND OUR OPPORTUNITIES IN THE FUTURE.

It cannot be gainsaid that the limitation of disease is an increasing factor in the pressure which is felt in the ranks of the profession, yet we need only look around to see that a doctor is neither rarer nor less employed. Two modern developments tend to render him indispensable, and both are the reflected result of the modern work and progress of science: I refer to the dread of disease and to the desire of prevention.

A wholesome dread, in some cases almost amounting to panic, has seized upon the educated classes. For instance, the fear raised by the mention of scarlet fever might be thought immoderate, but that it serves an excellent purpose both for the public and for the profession. The educated classes have also learnt another valuable lesson; they have now been roused to the idea of the preventability of disease, and the doctor is often welcomed to conjure away its mere ghost. Nor is this limited to the case of the zymotics, which isolation tends to remove from the sphere of private practice. He is largely consulted for discomforts rather than for disease, for alarms rather than for ailments, most of them trace-

able to a too full enjoyment of the privileges of health and of the good things of this life. Thus his attention is now drawn by the patient to a different clinical condition, and this enlarging display of minor suffering may be one reason why nervous disorders are supposed to be more prevalent.

But in other directions also—including that of public health—important work awaits our highly trained students. A system of almost universal life assurance under State supervision, analogous to that which has been largely introduced into Germany, does not exist in this country; but if it were to become established among us it would make a considerable addition to professional work, in connection with the examination of candidates. Certificates of sound health and of freedom from contagious, and in particular from any tuberculous taint, will be more in request as the public becomes more educated in matters of hygiene, and more sensitive as to the risks of the dissemination of phthisis. For the selection of careers the profession is already largely consulted, and the State exacts qualifying medical examinations for the Services; but in this direction there is room for much more work than is at present done.

The soundness of future generations, and the exclusion of heritable disease, are duties which may not be mentioned, yet lie dormant near the conscience of the profession. But the profession is not anxious to invite any responsibility of this sort.

And again, on the subject of practical Malthusianism, which is probably opposed by the conscience of the profession as a false notion, politically, socially, and morally, its attitude has also been one of reserve. It has, I believe, always been in favour of the principles which are consonant with the best interests of humanity and with the greatest sum of happiness and power.

More advice will be needed by the State than has been hitherto taken, or at any rate acknowledged, by it in regard to ethnological and colonising questions—a mere sample of the large department of State work in which the profession is destined to take a share.

COMPULSORY EDUCATION.

The medical supervision of education is another important question which affords considerable scope for professional activity. Where so many children are congregated, and where parents are deprived of all means of selecting associates for them, a serious onus is incurred by the State, and nothing short of the greatest care can cover its responsibilities.

The fatal transmission of scarlet fever and of diphtheria is the worst evil, and the question arises whether anything further might be done to prevent their spread. Are all children who are allowed to return to their schools after an attack of diphtheria sufficiently disinfected in one of the most likely directions? The nasal cavities, which are nearest to the seat of affection, and in themselves often affected by the disease, may sometimes be overlooked as a persistent nidus. Again, it is since the children of the poorest have been forced into the Board schools, in the company of children of respectable and cleanly artisans, that vermin has invaded homes carefully kept, and that the health, or even the life, of many a delicate child has been sacrificed. All this is preventable by insisting that the hair of all children under a certain age attending these schools shall be kept short.

THE CHANGES WHICH HAVE OCCURRED IN THE CONDITIONS OF PRACTICE.

Whilst disease has greatly diminished, treatment has grown, and is on the increase; and the labour of treatment is greater than at any previous time. This is true both for the general practitioner and also for the hospital physician and surgeon.

THE RESTLESSNESS OF PATIENTS.

In the behaviour of those who are compelled to consult us, there is noticed a restlessness in their desire for the advice of various authorities, and a corresponding instability in the relationship between them and their medical adviser, which is much to the disadvantage of both. There is an old saying that "it is much easier to treat the patient than to treat the patient's friends," who often speak with an assurance about medical matters which is generally proportionate to their ignorance of the subject, and which it is particularly difficult

to overcome. A patient who needed only to trust and persevere on the well-considered lines which had been laid down, may thus be passed from hand to hand, with little chance of benefit, and without any chance of carrying out the systematic treatment which is necessary. In this way the field of practice has been lessened for the family attendant, often to the detriment of his patients. But other causes have also led to a diminution of his opportunities. Too often the patient is mistaken as to his own troubles, and his most obvious symptom, that which attracts his notice, may be but a small part of the case. Nothing will satisfy him till he has had the opinion of someone who has a reputation in reference to the particular system which has caught his attention; and this is a process apt to be repeated indefinitely. By the concentration of the specialist's observation upon this prominent symptom, the important and essential elements of the case may pass unnoticed, a risk capable of avoidance had his adviser, familiar with his conditions, been at hand to reveal the less obvious essentials to a complete diagnosis.

Thus the patient's advantage lies in a co-operation between his regular medical attendant and his occasional adviser; but this also works for their advantage and comfort. The cultivation of this mutual professional intercourse tends to strengthen the bond of professional brotherhood; and well might we say, in the words of a great physician, "When doctors differ who shall decide; but when doctors agree who shall venture to differ?" This reminds us that combination is that which we must look to to ease many of our difficulties, and it is a remedy which brings with it pleasure as well as strength.

A CARDIO-PULMONARY MURMUR; OR A RESPIRATORY MURMUR RHYTHMICAL WITH THE HEART BEATS.

By J. EDWARD SQUIRE, M.D., M.R.C.P., D.P.H.,
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IN March, 1895, I had the good fortune to be in the chair when Dr. William Ewart read an interesting paper, on the Dorsal Auscultation of Heart Sounds and Murmurs, before the Harveian Society. In opening the discussion I took occasion to make the following remark:—

In reference to murmurs heard in the back, there was a murmur, systolic in point of time, which was well heard just below the angle of the scapula and sometimes in other situations, and which was produced in the air tubes, and, therefore, not strictly cardiac, though caused by the beating of the heart. It was a "whiffing" sound, and was most plainly heard during inspiration or only during this act. It was well to bear this murmur in mind, as it might be mistaken for a true cardiac murmur.

I subsequently collected a good number of cases illustrating this murmur, but unfortunately sixteen months ago an attack of scarlet fever caught me with the notebook containing the references to these cases in my pocket, and disinfection destroyed the germs of an article on the subject, as well as any microbes. I have, however, been able to find notes of some of the cases and have added others within the past few months.

In examination of the chest it is noticeable how, in certain conditions of the lungs, the heart sounds may be heard in parts far removed from the cardiac area. Consolidation from whatever cause conducts sound from the heart or from large vessels to the surface of the chest, so that such sounds are heard in unexpected places, and when so heard, furnish valuable information as to the interposed organ. Thus we may have the heart sounds conducted towards the right apex in tuberculous disease of the lung of that side, and we may hear the heart sounds clearly in any part of the chest wall over the position of a good-sized lung cavity. When, therefore, we hear sounds corresponding in rhythm to the beat of the heart, at some distance from that organ, or from any large vessel, we are at once led to suspect that there is some consolidation of the intervening lung.

There is, however, as I have already indicated, a source or fallacy, which, though frequently present, has received little notice from writers and is perhaps less recognised than it should be. It, however, deserves wider recognition; for the physical sign of which I speak may, if misinterpreted, mis-