

to him. And I hope to live to see the day when our now overgrown zoological and botanical societies shall languish while groups of men devoted to a common subject and investigating it with the most diverse material will meet together to discuss results of common interest. When a subject no longer demands vigorous investigation and the center of activity is shifted elsewhere I should like to see the old associations abandoned and new ones formed to advance the newly risen problems. Our large societies are a hindrance, I sometimes think, rather than a means of advancement to science. We want smaller meetings with more acute interest. And, finally, I can not but remark on the vastness of the preliminary training which the present ramifications of every science make necessary. Research in the fields between the old sciences has rewards for the investigator, but he who would reap those rewards must prepare himself through years devoted to gaining the mastery of many sciences.

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*THE PROBLEMS OF INTERNAL MEDICINE.**

To recognize, to prevent, to protect, to heal—these are, in the broadest sense, the tasks of internal medicine now as ever. But how different are the problems which occupy our attention to-day from those of the period commemorated by this congress. Let us for a moment glance back at the medicine of the close of the eighteenth and the beginning of the nineteenth centuries. For over two hundred years the blind and binding faith of the middle ages, the faith that had so long fettered the human mind, had been slowly giving way before the

forces of reason and truth. Now and again with ever-increasing frequency, great and courageous minds had risen above the clouds of medical tradition and dogma, which had smothered the understanding and reason of mankind, as if, indeed, medicine were a part of the religious doctrine which ruled the world. For truly the medicine of the middle ages was largely a matter of faith, and as a matter of faith one in which reason beyond a certain point was heresy and sacrilege. Vesalius with genius and courage had begun to withdraw the veil from naked and iconoclastic truth. Harvey had made his great discovery. Glisson had demonstrated his theory of irritability. Mayow with his 'Spiritus nitro-aereus' had anticipated the discovery of oxygen. Leeuwenhoek and Malpighi and Hooke had opened to the human eye the realm of the infinitely small. Bacon and Descartes and Newton and Locke had introduced into the world a rational and natural philosophy. Locke, himself, indeed, a wise physician, had pointed clearly to the true path of medical progress. "Were it my business," says he, "to understand physick, would not the safer way be to consult nature herself in the history of diseases and their cures, than espouse the principles of the dogmatists, methodists or chymists."

But the clouds of medical tradition were slow to clear away. Gradually, however, the first 'lonely mountain peaks of mind' had been followed by an ever-increasing number of earnest and untrammelled students. In the seventeenth century the opportunity to give one's life freely to the search for truth had become more and more open to all. The mysticism and animism of Stahl which, in the early part of the eighteenth, hung over the medical world, was already breaking away. The study of the natural sciences was pursued more eagerly and generally than ever before.

* Address delivered before the Section for Internal Medicine of the International Congress of Arts and Sciences, at St. Louis, September 22, 1904.

Reaumur and Black and Haller and Spallanzani and Hunter and Priestley and Lavoisier had lived. Morgagni, sweeping aside the dogmatism of the old schools, had demonstrated the local changes in many diseases and had opened the way for the objective pathological anatomy of Bichat. In the field of practical medicine such men as Sydenham and Morton and Torti and Lancisi practised and taught much which holds good to-day. Boerhaave had introduced clinical instruction. Cullen and Cheyne and Huxham and Pringle and Heberden and Van Swieten and De Haen were all in many ways true and faithful students; yet methods and doctrines that were often strangely fantastic still held general sway—such, for instance, as the Brunonian system. A perusal of the writings of Stoll, one of the wisest practitioners of his day, can not fail to impress one with the meagreness of the basis of anatomy and physiology, normal and pathological, on which medicine rested, the almost entire lack of diagnostic methods, the absence of a rational therapy—how much of the conjectural, how little of the scientifically exact there was in medicine.

Diagnosis, based largely upon gross clinical conceptions, was necessarily vague and uncertain.

Prophylaxis, in the absence of any certain knowledge of the causes and manner of origin of disease, was devoid of any sound basis.

Treatment was almost wholly empirical, and, where it was not empirical, it was frequently based upon some theoretical system so arbitrary and dogmatic that the unfortunate sufferer was too often stimulated or purged, fed or bled, as he fell into the hands of a Brown or a Broussais rather than according to the nature of his malady.

In the Dictionnaire de l'Académie française for 1789, a year which marks the end of an era in the world at large, one finds

the following definition: "Médecine. s. f. L'art qui enseigne les moyens de conserver la santé & de guérir les maladies (La médecine est un Art conjectural * * *)." Medicine, a conjectural art! Such was the estimate placed upon our profession by the French Academy a little over one hundred years ago.

But the seeds of a new life had been sown and the germination had already begun. Even as these words were written Lavoisier, too soon to fall a victim to the premature explosion of the forces of pent-up freedom, was in the midst of his great work. In 1796 came the introduction of vaccination by Jenner, and but a few years later Bichat, with his wonderful genius, took up the thread dropped by Morgagni and placed anatomy and physiology, normal and pathological, on a basis of accurate observation and experiment. Hand in hand with the introduction of exact methods of anatomical and physiological observation, Auenbrugger in 1761 had demonstrated in his 'Inventum Novum' a method of physical investigation which, for the first time, enabled the physician to determine changes in size, shape and consistency of the thoracic organs. At first unnoticed by the world, this important discovery was destined to gain a sudden general recognition in the early days of the nineteenth century. With the spread of knowledge of the gross pathological changes in disease which followed the inspiration of Bichat, the work of Auenbrugger, expounded by Corvisart, became a common possession of the medical world, and less than ten years later, Laënnec, by the introduction of mediate auscultation, opened possibilities for accurate physical diagnosis such as had not been dreamed of in the ages which had gone before.

With the great school of French observers which followed Laënnec, Andral, Chomel, Louis, Bouillaud and Trousseau,

with Skoda and Schönlein in Germany and Addison and Bright and Stokes in England, the exact association of clinical pictures with local anatomical changes made great advances. Typhus and typhoid fevers were distinguished; the relation between albuminuria and renal disease was demonstrated; the association of endocarditis with acute rheumatism was discovered; the corner-stone of our knowledge of cerebral localization was laid. Clinical diagnosis was becoming more than a conjectural art.

In the meantime physiology was making great strides. Majendie, Bell, Johannes Müller, Beaumont and finally Claude Bernard, and a host of their followers, were shedding light upon many obscure corners of our knowledge of the vital functions. In the hands of Müller the microscope began to open up new fields of study which were destined in a few years, through the cultivation of the genius of a Virchow and a Max Schultze, to bear a noble harvest. The 'great reform in medicine' which followed the introduction of the cellular pathology laid solid foundations for much which is most vital in our anatomical and physiological and pathological knowledge of to-day, and the correlation of these observations with the results of accurately recorded clinical studies, the application of the microscope to the study of the urine, the sputa, the blood, to pathological neoplasms, to exudates and transudates, soon brought new material for the rising edifice of a rational, exact diagnosis. The sphygmograph, the thermometer, the ophthalmoscope, the laryngoscope, the binaural stethoscope, the stomach tube, the various means for studying the blood pressure, all have brought their aid, while but yesterday the discovery of Roentgen has given us new and un hoped for diagnostic assistance.

At the same time, physiological chemistry which, with the work of Berzelius on

the urine, had taken its place by the side of the more purely physical methods of investigation, has year by year given us greater diagnostic assistance in the analysis of the different secretions and excretions of the body and in the explanation of the various metabolic processes of the economy.

The development in the hands of Duchenne and Erb and Remak of electrical diagnosis, together with the great advances in physiology and pathology of the nervous system, have afforded explanation for much that was previously incomprehensible and have given us powers of diagnosis which, a few generations ago, would have seemed almost magical.

Finally Pasteur and Koch, with the introduction of bacteriological investigation, opened the way to the discovery of the causal agents of a large group of infectious diseases. These discoveries, followed rapidly by the evolution of methods allowing of the clinical demonstration of many pathogenic micro-organisms, afforded an early, exact and positive diagnosis, on the one hand, in conditions where previously the disease was recognizable only at a stage in which it had made inroads into the system so great as to be often beyond relief, as in tuberculosis, and, on the other, in maladies the existence of which, without these methods, was to be definitely determined only after the onset of an epidemic, as in cholera, plague and influenza. When one thinks of what the last quarter of a century has taught us with regard to tuberculosis, anthrax, tetanus, diphtheria, typhoid fever, cholera, plague, dysentery, influenza, not to speak of the great group of wound infections, we may begin to realize what bacteriological methods have done for diagnosis—how many diseases have been cleared up—how many symptoms have been explained.

In like manner Laveran with the discovery of the parasite of malarial fever,

did much to bring certainty and precision into a field in which many had gone astray, while opening the way for the important observations of Theobald Smith and all the knowledge which we have gained in recent years with regard to the hæmatozoa of man and animals.

As a direct result of the introduction of bacteriological methods, the study of the manner of action of infectious agents and their toxic products upon the animal organism, as well as of the powers of resistance of the economy against infection, has given us, with the discovery of specific agglutinines and precipitines, diagnostic methods of the greatest value, not only for the recognition of various infectious processes, but for the identification of specific sera, affording in particular a test for human blood destined, probably, to prove, when properly applied and interpreted, of great medico-legal value.

This is, indeed, a gain over our knowledge of one hundred years ago. In how many fields has the conjectural given way to the exact! At the end of the eighteenth century the diagnostic effort of the physician, unaided by instruments of precision or even by the simplest physical methods of auscultation and percussion, was directed toward the detection of gross anatomical changes. To-day with our increased knowledge of anatomical, physiological and pathological processes, with our growing insight into the chemical and physical features of vital activity, our duty no longer ends in the recognition of physical changes in organs, in the determination of the presence of a specific lesion or infection; it is, further, our task to search for the earliest evidence of disturbance of function which may later lead to grosser, more evident change, to separate the physiological from the pathological, to estimate, as far as may be, the power of resistance of the different organs and

tissues and fluids of the body to insults of varying nature, to determine the functional capacity of a given organ—its sufficiency or insufficiency. In addition to increasing opportunities in the field of pathological anatomy we find ourselves drawn further into the study of pathological physiology—and knowledge in the field of pathological physiology leads of necessity to power in functional diagnosis.

It must be acknowledged that with regard to many organs the determination of the limits of functional power and the estimation of the degree of impairment in disease, are matters most difficult to appreciate, yet with improved methods and persistent research progress is being made.

We are, after all, but beginning to realize a few of the possibilities before us, but even this is a step in advance which holds out no little promise for the future and offers new and tempting opportunities for study and investigation.

At the end of the eighteenth century but three important, rationally conceived measures of prophylaxis had been practised—the dietetic measures of protection from scurvy, the older inoculation and Jenner's great contribution of vaccination against small-pox. It was not, indeed, until the development of bacteriology that prophylaxis took its place as a scientifically exact branch of medicine. The recognition of the specific cause of many infectious diseases, the knowledge of the life history of the pathogenic micro-organisms, the discovery of the portals through which they gain entrance to the animal economy, and the conditions under which infection occurs, have brought to us material powers to prevent and protect. The first great result of this new knowledge was the development of antiseptic surgery and all that it represents. But apart from this we have but to remember what has been gained by a scientifically evolved prophylaxis against

tuberculosis and typhoid fever—to reflect upon how far cholera and plague have lost their terrors—to contemplate the brilliant results of the discovery by Ross and the Italian school of the life history of the malarial parasites as manifested in the anti-malarial campaigns carried on in various regions by Koch, and in Italy by the Society for the Study of Malaria, a noble institution of which our Latin brothers may well be proud, and lastly, to look upon the beneficent and far-reaching influence of the recent work of Reed and Hazzard and Carroll and Agramonte with regard to yellow fever, to realize what bacteriological and parasitological studies are doing for preventive medicine.

But beyond this external prophylaxis, the studies of the problems of immunity beginning with Pasteur's inoculations against anthrax in 1881, have given us, so to speak, an internal prophylaxis, a functional prophylaxis if one will, in the possibility of producing a greater or less degree of individual immunity, such, for instance, as is now possible in diphtheria, cholera, plague, typhoid fever and dysentery.

The enforcement of scientifically planned and accurately deduced prophylactic measures has become to-day one of the main duties of the practitioner of medicine. It is as much the task of the physician nowadays to guard over the disposal of the sputa of his tuberculosis patient, of the excreta of the sufferer from typhoid fever or cholera or dysentery, as it is to attend to the immediate wants of the invalid. How rapidly has the exact replaced the conjectural in this branch of medicine!

But while diagnosis and prophylaxis were being removed from the domain of conjecture to the field of exact observation and reason and research, while the possibilities of surgery were rapidly widening through the discovery of anæsthesia and the introduction of antiseptic methods,

medical treatment, until the last two decades, still remained largely empirical. The development of exact clinical methods of observation and the statistical tabulation of experience for which we are especially indebted to Laënnec and Louis and their followers, gradually brought about, to be sure, many advances, while a large number of useful therapeutic agents introduced by the newly developed science of pharmacology, and exactly tested by improved methods of physiological study added greatly to the armamentarium of the physician for the relief of symptoms. The power to combat disease specifically, however, remained much as it was at the beginning of the century. Mercury in syphilis, quinine in malarial fever, were the only specifics known to the medical world—and the action of these was unexplained.

The introduction by George Murray, less than fifteen years ago, of the treatment of myxœdema and allied conditions by extracts of the thyroid gland, was a direct application of the results of physiological observation to the treatment of disease. If this gave rise to hopes of the possibility of obtaining like results from roughly obtained extracts of other ductless glands, which have hardly been fulfilled, yet this discovery was the first step toward the rational scientific therapy to which we are beginning to look forward to-day.

But a moment ago I spoke of the importance of the influence of the discovery of the causal agents of the infectious diseases upon the development of exact diagnostic and prophylactic methods. Great and impressive as these have been, yet the studies which have followed as to the manner in which these agents act upon the human organism, and of the powers of resistance which the body exerts against them, the investigation of the problems of immunity, have opened out a far wider field. The early studies of Metschnikoff and Buchner

and Nuttall were followed with rapidity by the epoch-making work of Behring and Kitasato and Roux with regard to tetanus and diphtheria. The diphtheria and tetanus antitoxines were not chance discoveries of empirically determined virtue, but true specific, therapeutic agents, the results of experiment scientifically planned and carefully prosecuted. Widespread investigations of the various phases of immunity, bacterial and cytotoxic, have given us in a few short years a mass of physiological knowledge, the full import of which is scarcely yet to be comprehended. Few things in modern medicine are more impressive than a survey of the work of the last twelve years done under the inspiration of Ehrlich.

Beside the antitoxines of diphtheria and tetanus and the power of producing a greater or less degree of immunity, as has already been mentioned, by preventive inoculations against cholera, plague and typhoid fever, we have come to possess a bactericidal serum of a certain value in combating the actual disease, plague, while the favorable influence of Shiga's anti-dysenteric serum seems to be undoubted. There is much reason to hope that the recently promised anti-crotalus serum of Noguchi as well as the anti-cobra serum of Calmette may prove to be real boons to humanity. But it is not alone in the production of specific anti-sera, that the therapeutic value of the modern studies of immunity lies. There are signs which justify us in looking forward to the possible discovery of an explanation of the mode of action of substances long empirically used, knowledge the value of which may be readily appreciated.

When we consider these facts it is, indeed, easy to appreciate to what an extent the exact has driven the conjectural from this last field of medicine. A hundred years ago we were depleting and purging

and sweating and bleeding according to theories often strangely lacking in foundation, the prevalence of which depended rather upon the individual force and vigor of the expounder than upon their intrinsic merit. To-day from the study of the pathological physiology of bacterial and cytotoxic intoxications, we are rapidly evolving scientific preventive and curative measures, while searching out the rationale and mode of action of our older therapeutic agents.

But a few days ago, I happened to open a copy of Littré* bearing, by a curious chance, the date of 1889, and read "Médecine. (mé-de-si-n') 1° Art qui a pour but la conservation de la santé et la guérison des maladies, et qui repose sur la science des maladies ou pathologie"—an essential modification of the definition of one hundred years before and indicative of the changes of a century.

To meet the manifold problems of to-day the training of the physician must, of necessity, be very different from what it was a hundred years ago. The strong reaction which set in in the earlier part of the nineteenth century against philosophical generalization in medicine, the insistence upon a strict objectivity, all the more emphatic because of the prevalence of anatomical methods of research, have held very general sway. Medicine, no longer resting upon a basis of philosophical speculation, stands upon the firmer foundation of the exact natural sciences. Almost from the beginning the student of to-day is taught methods, where a hundred years ago he was taught theories. The enormous expansion of the field which must be covered has led, naturally, not only to an ever-increasing specialism, but to the fact that the course of study which is regarded as properly fitting the physician for practise is reaching backward farther and farther into the earlier years of his school training.

* Dictionnaire de la langue Française.

On the other hand, in this country at all events, there is heard a common cry that the academic medical training is extending on the other side into years which should be given to practise; that the expense and duration of a medical education so-called will soon be such as to shut out from the profession many a man who might be a useful physician and perhaps a valuable contributor to the world's knowledge. To remedy this it is advised that the prospective student of medicine should be led from the earliest stages of his training through the paths of exact research into the domain of the natural sciences to the greater or less exclusion of the classics—the old-time humanities, the study of which, useful as it may be from a standpoint of general mental training, is believed by many to be time wasted in the education of the student destined for a scientific career.

But there are not wanting voices which question the wisdom of the full extent of some modern tendencies. May the affectation of too strict an objectivity bred though it may be of a wholesome skepticism, the more general cultivation of the natural sciences to the exclusion of the humanities, the search for facts and facts alone, circumscribe the powers of synthetical reasoning without which the true meaning of many an important problem might pass unnoticed? May they, perhaps, tend to smother the development of minds capable of grasping large general problems? Do the tendencies of the times justify the epigrammatic observation of a recent French author: "Autrefois on généralisait avec peu de faits et beaucoup d'idées; maintenant on généralise avec beaucoup de faits et peu d'idées"?*

That the cultivation of a strict objectivity in research has materially impaired our powers of reason—that the exact meth-

ods which are largely responsible for the enormous advances of the last fifty years in all branches of medicine have bred a paucity of ideas, I am not inclined to believe, despite the seductive formula of our Gallic colleague. But that when, in the period of so-called secondary education, it is proposed to *substitute* the study of the natural sciences for a good training in the humanities, there is danger of drying up some of the sources from which this very scientific expansion has sprung, seems to me by no means impossible. The study of the classics, an acquaintance with the thoughts and the philosophies of past ages, gives to the student a certain breadth of conception, a stability of mind which is difficult to obtain in another way. A familiarity with Greek and Latin literature is an accomplishment which means much to the man who would devote himself to any branch of art or science or history. One may search long among the truly great names in medicine for one whose training has been devoid of this vital link between the far-reaching radicles of the past and what we are pleased to regard as the flowering branches of to-day. Greek and Latin are far from dead languages to the continental student. They are dead to us because they are taught us as dead. With methods of teaching in our secondary schools equal to those prevailing in England and the continent, 'twould be an easy matter, in a materially shorter period, to give our boys an infinitely broader education than they now receive. There should be much less complaint of time wasted, much less ground for suggesting the abandonment of the study of branches which are invaluable to any scholarly-minded man.

The assertion that the time spent in the study of the humanities results, in the end, in the encroachment of the academic training upon a period which should properly

* Eymin, 'Médecins et philosophes,' 8°, Lyon, 1903-4, No. IV.

be given to one's life work is, it seems to me, often based on an old idea—founded all too firmly, alas, on methods that yet prevail in many of our medical schools—that with his degree in medicine the student has finished a theoretical education, that he must now spend five or ten years in acquiring experience—at the expense, incidentally, of the public—before he can enter into his active life; that, therefore, unless some other branches of early instruction be sacrificed to courses leading more directly to medicine so that he may enter upon his strictly professional education at a period considerably earlier than is now the case, the physician of to-morrow will become self-supporting only at a period so late in life as to render a medical career impossible to other than those well supplied with the world's goods. With proper methods of instruction this is a wholly false idea. Under fitting regulation of our system of medical training, with due utilization of the advantages offered by hospitals for clinical observation, the experience necessary to render a man a safe and competent practitioner should be not only offered, but required for a license to practise; and even if the length of the strictly medical curriculum be extended one or two years beyond that which is at present customary, it will not be time lost. If one but look around him he will find, I fancy, that few men who have had such a training wait long before finding opportunities for the utilization of their accomplishments; the public, in most instances, soon recognizes the man of true experience.

But there is yet another side of the question which has hardly been sufficiently emphasized, a side of the question which must come strongly to one's mind when he considers the general education of many of the men who are entering even our better schools of medicine, a point of view which has been especially insisted upon by a re-

cent French observer. A large part of the success and usefulness of the practitioner of medicine depends upon the influence which he exerts upon his patients—upon the confidence which he infuses—upon his power to explain, to persuade, to inspire. It can scarcely be denied that these powers are more easily wielded by the man of general culture and education than by one of uncouth manner and untrained speech however brilliant may be his accomplishments in the field of exact science. I can do no better than quote the words of Professor Lemoine: “C'est qu'en effet l'action morale qu'il peut exercer sur le malade, et qu'il exerce d'autant plus qu'il est supérieur par son intellectualité, est un des principaux éléments de guérison. On guérit par des paroles au moins autant que par des remèdes, mais encore faut-il savoir dire ces paroles et présenter une autorité morale suffisante pour qu'elles entraînent la conviction du malade et remplissent le rôle suggestif qu'on attend d'elles. Ne fut-ce que pour cette raison, je me rangerai parmi ceux qui demandent le maintien d'études classiques très fortes comme préparation à celles de la médecine, car le meilleur moyen de rehausser le prestige du médecin c'est encore de l'élever le plus possible au dessus de ses contemporains.”*

* Indeed the moral influence which he [the physician] is capable of exercising upon the patient and which he exercises to an ever increasing degree with his intellectual superiority, is one of the most important of therapeutic agents. One heals by words at least as much as by drugs, but one must know how to *say* these words and to exercise a sufficient moral authority, that they may bring conviction to the patient and carry the full weight of suggestion which is intended. Were it but for this reason I shall range myself among those who demand the maintenance of extensive classical studies as a preparation for those of medicine for the best means to uphold the prestige of the physician is still to raise him as far as possible above his contemporaries. Congrès Fran-

These words express, it seems to me, a large measure of truth. May it not be that in the tendency to the neglect of the humanities we are taking a false step? May it not be that if, on the other hand, we teach them earlier and better, we shall find in the end that no essential time is lost, while we shall gain for medicine men not only with minds abler to grasp the larger and broader problems, but with materially fuller powers for carrying on the humbler but no less important duties of the practitioner of medicine?

In that which I have just said I have touched upon the necessity of the requirement of a considerable amount of clinical experience as an essential for the license to practise medicine. To meet the enormously increased demands of the present day, medical education has become, of necessity, much more comprehensive, and must therefore extend over a longer period of time. The methods of research, anatomical, physical, chemical, which the student must master, the instruments of precision with which he must familiarize himself, are almost alarmingly multifarious; and experience in the application of these methods and in the use of these instruments demands increased time. Many of these proceedings, it is true, the physician will rarely be called upon to use personally in practise, for such measures must in great part be carried out by special students or in laboratories provided by the government. Nevertheless, with their significance and value he must be familiar—familiar from personal observation and experience.

But after all there are few diagnostic signs in medicine and not so many of the improved methods of clinical investigation yield diagnostic results, while to familiarize one's self with methods and instruments of precision is a very different matter from *cais de médecine*. VI. Session. Paris, 1902, 8°, T. II., p. xli.

acquiring real experience and skill as a diagnostician or a therapist. It is only by gathering together and carefully weighing all possible information that one is enabled to gain a proper appreciation of the situation and approach a comprehension of many conditions of grave import to the patient. And in forming a sound judgment with regard to these vital questions, that which comes from experience in the close personal observation of the sick is far the most important element. Bedside experience constitutes to-day, as it always has, and always will, the main, essential feature in the training of the physician. But this experience if it is to bear its full fruit, must be afforded to the student at a time when his mind is still open and receptive and free from preconceived ideas—under conditions such that he may be directed by older trained minds into proper paths of observation and study, for few things may be more fallacious than experience to the prejudiced and the unenlightened.

That such experience may be freely offered to the student, there is a grave necessity for a more general appreciation, by institutions of medical training as well as by the powers in control of public and private hospitals and infirmaries, of the mutual advantages to be gained by a cordial cooperation. It must be acknowledged that, in this country at least, despite the cultivation of improved methods of clinical investigation, there still prevails in the mind of the public the perverted idea that this bedside observation, this application of new methods of research and study, are for the advantage of the student or in the interest of general science rather than for the benefit of the sufferer himself. It must further be recognized that a wholly mistaken conception of the true function of a hospital is widely prevalent. It is all too common to see large and ornate institutions

with every arrangement for the comfort and even luxury of the patient, with a medical staff utterly insufficient in number or training to properly study the individual case, not to speak of carrying on scientific investigations—the service, usually under the direction of a busy, driven practitioner with barely time to make a short daily visit—large wards under the direct control of one or two young men whose time is wholly occupied by routine work—every care taken for the present comfort of the patient—little provision for enlightened study or treatment of his malady—no opportunities for a contribution on the part of the institution to the scientific progress of the day. Better far for the sufferer were he in the dingy ward of an old European hospital where he might be surrounded by active inquiring minds recording the slightest changes in his symptoms, ever ready to detect and, as far as the power in them lies, to correct the earliest evidences of perversion of function. What our hospitals need is men, students, whether or no they have arrived at the stage in their career—which, after all, is but a landmark, not a turning point—that entitles them to the right of independent practise, the enthusiastic, devoted student who, in watching and studying the patient, is contributing alike to the interests of the sufferer, the hospital and himself.

The three main functions of a hospital, the care of the sick, the education of the physician, the advancement of science, are not to be met alone by the building of laboratories and operating rooms and lecture halls, by the furnishing of the refinements of luxury to the patient, useful adjuvants though these may be. What the hospital mainly needs is men, men to study and think and work—*students of medicine*.

It can not be denied that in this respect we in America are behind our cousins of the old world. Despite our many honor-

able achievements, the part which we are taking in the modern study of the physiology of disease is still not what it should be.

Ere long we must come to realize that our duty to the sick man consists in something more than to afford him that which most sick animals find for themselves—a comfortable corner in which he may rest and hide from the world; that our duty to the public is to give them as physicians, men of the widest possible general training, ready to enter upon independent practise with an experience sufficient to render them safe public advisers; that our duty to ourselves is to miss no opportunity for the study of pathological physiology at the bedside of the patient; that the accomplishment of these ends depends in great part upon the appreciation by our universities and hospitals of the mutual advantages of cooperation in affording every opportunity for the scientific study of disease while offering to the patient the privileges of enlightened observation and care.

But there are everywhere signs of a future rich in achievement. An improving system of medical education, the increasing opportunities for scientific research offered as well by the generosity of private citizens as by the wisdom of state and national governments, the community of effort which results from closer fellowship among students of all nations, are omens of great promise. The remarkable developments of the last twenty years in all branches of the natural sciences have brought a rich store of suggestion and resource for application in our laboratory, which is at the bedside of the patient. Let us look to it that our clinical methods keep pace with those which are yielding so abundant a harvest in these neighboring fields of scientific research.

WILLIAM SYDNEY THAYER.

BALTIMORE.