

Original Articles.

ON THE TEACHING OF PHYSICAL DIAGNOSIS.¹

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THE educated physician who interests himself in medical conditions in the United States can scarcely fail to be impressed with the fact that those points in which the profession as a body is most deficient depend upon the need of a more thorough early training in the fundamental methods of physical diagnosis and of a more extensive bedside experience in the observation of disease during the instruction in the medical schools. The association of medical schools has lengthened the course of study required for a degree of doctor of medicine to four years, and most of the states have adopted examinations requiring evidence of proficiency on the part of the applicant for a license to practice which in some instances are excellent. Yet none of these laws and but few of our schools insist upon an amount of training in clinical observation equal to that which is demanded, for instance, in England. There is no uniformity in our state laws, and as far as the four-years' work goes, little is required beyond the fact that those years shall have been spent in study or in attending courses of lectures. The student may to-day, as he could forty years ago, graduate and enter into the practice of medicine with a minimum of actual clinical experience.

In the last two decades, however, great changes have come about in our methods of medical instruction. The didactic lecture, the demonstration—forms of instruction designed to bring out facts with as much economy of time as possible before large classes—are rapidly disappearing, giving way to more practical methods of teaching with smaller bodies of men. We seek to-day not so much to lay facts clearly before a class as to teach the student methods by which he can himself control the statements of his instructors and his books, by which he may become independently competent to investigate and to clear up the nature of any anatomical or physiological abnormality with which he may meet. These changes have occurred not only in methods of clinical instruction but in the laboratories themselves. He has a poor knowledge of anatomy who is familiar only with the gross forms, but it is not merely to recognize minute histological changes that the student now demands; he must have a practical familiarity with those methods of preparation and staining without which he is helpless.

And not in medical teaching alone have these changes come about. We seek to teach the child at school, as well as the student of medicine, how to think, how to work, how to investigate, how to help himself; to guide him rather than to push him in the way that he should go. We are but following a method urged by Montaigne about three hundred and fifty years ago.

"*On ne cesse,*" says he, "*de crier à nos oreilles, comme qui verseroit dans un entonnoir; et nostre charge, ce n'est que redire ce qu'on nous a dict: Je voudrois qu'il corrigeast cette partie; et que de*

*belle arrivée, selon la portée de l'âme qu'il a en main, il commenceast à la mettre sur la montre, luy faisant gouter les choses, les choisir et discerner d'elle mesme; quelquefois luy ouvrant chemin, quelquefois le luy laissant ouvrir. Je ne veulx pas qu'il invente et parle seule; ie veulx qu'il escoute son disciple parler à son tour. Socrates et depuis Arcesilaus, faisoient premierement parler leurs disciples et puis il parloient à eux. . . . Qu'il luy face tout passer par l'estamime, et ne loge rien en sa teste par simple auctorité et à credit . . . s'il embrasse les opinions de Xenophon et de Platon par son propre discours, ce ne seront plus les leurs, ce seront les siennes: qui suyt un aultre, il ne suyt rien, il ne treuve rien, voire il ne cherche rien."*²

These methods of instruction are bringing to us a different class of men, men trained to independent thought, who are no longer contented with bare statements of fact, but demand proofs and explanations and ask embarrassing questions.

At the end of the second year in most of our medical schools, these men have been occupied for nearly a year in studying the manifestations of disease in the pathological laboratory. They are now confronted by a new question, namely, the recognition of these same pathological changes in the living subject.

(1) THE NECESSITY OF A GOOD KNOWLEDGE OF REGIONAL ANATOMY AND OF PRACTICE IN THE PHYSICAL EXAMINATION OF THE NORMAL SUBJECT.

For the proper study and comprehension of normal and pathological anatomy a certain amount of technical skill must be acquired,—the technique of dissection and necropsies and the more elaborate technique of preparation of tissues for microscopical examination, as well as that of bacteriology. For the examination of the living subject, a new technique, which may be fully as complicated, is also required. The first step toward acquiring this technique consists in the study of the fundamental methods of physical investigation,—inspection, palpation, percussion, and auscultation.

These methods will, however, be of little or no value in helping the student to determine anatomical or physiological changes in internal organs without an accurate knowledge of their normal position and outline, and of the evidences which they give to the eye, the hand and the ear of their normal function. The middle or end of the second year is, in most medical schools, just the period at which the student should, theoretically, be most familiar with topographical anatomy. Nevertheless, an essential part of the course in physical diagnosis should, I believe, consist in practical demonstrations of regional anatomy. Why is this

² "They [teachers] are eternally dining in our ears as if they were pouring into a funnel; and our part is but to repeat what they say to us. I would have the teacher amend this procedure; and from the beginning, according to the character of the mind with which he is treating, he should endeavor to stimulate its action, making it taste, choose and judge of things of its own impulse, sometimes opening the path himself, sometimes allowing the pupil to make his own way. I would not have him alone suggest and speak; he should allow his disciple to speak in his turn. Socrates, and later Arcesilaus, insisted that their pupils speak first and then took up the subject themselves. . . .

"Let him [the teacher] make him [the pupil] investigate everything and lodge nothing in his head through simple authority and on trust . . . If he embrace the opinions of Xenophon and of Plato through his own powers of reason, these opinions will be no longer theirs; they will be his own. He who follows another follows nothing, finds nothing, nay, he seeks nothing." (Montaigne: *Essais*; Edition variorum, 8°, Paris, 1854, Charpentier, T. 1: *De l'institution des enfants*, pp. 202, 203, 204, 205).

¹ Read before the Suffolk District Section of the Massachusetts Medical Society in Boston on Oct. 25, 1902.

necessary? Let me answer by asking a question. How much of the regional anatomy, which is absolutely necessary for the diagnostician, does the average student at the end of the second year know? Let any one who has not tried it ask a member of his class to mark out, upon the living subject, the outlines of the heart; to draw upon this figure the limits of the different chambers visible when the sternum is removed; the points on the front of the chest opposite which the different valves lie; the outlines of the pleuræ; the lower limits of the lungs; the average extent of the complementary space in the axillary line. Ask another student the position of the left auricle; the direction of the axis of the mitral valve; of the aortic valve, and many other questions the accurate knowledge of every one of which is necessary for the proper interpretation of the information which these new methods of research are to bring, and what surprising answers one obtains! Again, how many students are familiar with the sounds produced during the normal function of the heart and lungs, at the time when they enter upon a course intended to teach them to recognize pathological changes? Few, if any. Why is this? The answer seems to me to be simple. Few minds retain long facts the relations and practical applicability of which are obscure. All these things the student may have been told; all have been before his eyes and ears, but he will tell you, and quite naturally, "he has never thought about them." Once teach him practical methods of determining these outlines on the living subject and testing these physiological functions, — in other words, give him the power of controlling and verifying the statements made by his teachers and his books, — and with little experience he will never forget them. I have often thought it would be an ideal plan to give instruction in the palpation of such internal organs as might be reached, and in topographical percussion at the time the student is occupied with his course in regional anatomy, and in auscultation as he studies the physiology of the heart and lungs.

But, whether this instruction be begun earlier or later, it is, at all events, important for the student to thoroughly familiarize himself with the facts which may be determined by inspection, palpation, percussion and auscultation of normal subjects before attempting to recognize pathological changes. Familiarity with regional anatomy, the normal percussion outlines and the normal cardiac and pulmonary sounds stands in the same relation to physical diagnosis as does a knowledge of normal anatomy and histology to pathological anatomy. If some of us were, for instance, more familiar with the palpation of the normal abdomen, there would, perhaps, be fewer unnecessary nephrorrhaphies.

The first step, then, in the teaching of physical diagnosis, the earliest instruction in the simpler methods of physical research upon the normal subject, should be associated with thorough and practical demonstrations of regional anatomy in the fresh subject, in dissections, in frozen sections and in models.

(2) THE IMPORTANCE OF UNDERSTANDING THE PHYSICAL BASIS OF AUSCULTATION AND PERCUSSION.

The signs elicited by auscultation and percussion are purely physical signs. They give to us informa-

tion only as to the physical condition of the underlying tissues. There is little or nothing specific in any sound brought out by percussion or heard on auscultation. No book or no lecturer can teach the student how to apply the information these methods of research bring unless he has studied and learned, as far as possible by personal observation, the physical basis upon which these phenomena depend. A student who attempts to learn by heart, from a book, the conditions under which dullness may occur in the chest, has accomplished little if he be unfamiliar with the conditions in and outside of the chest under which such sounds may be produced — the nature of tympanitic and non-tympanitic resonance, as illustrated by open vessels, bladders and lungs outside of the body.

No mere statement of these facts is sufficient. The student must control them himself. Indeed, his whole previous instruction, if it has been what it should be, will have taught him to demand an opportunity so to do. The student should have a good practical training in topographical percussion of normal organs; he should be thoroughly familiar with the normal cardiac and respiratory sounds and the theories as to their physical causes before he begins to study the deviations from the normal.

(3) THE NECESSITY OF A GOOD TRAINING IN PATHOLOGICAL ANATOMY.

With a good training in anatomy and physiology, and in the theory and practice of the fundamental methods of physical examination, the intelligent student needs only careful guidance and experience to build up his diagnostic powers — provided he has had a good training in pathological anatomy, and that he has, along with his studies in physical diagnosis, constant opportunities for the observation of disease in the cadaver. Without this, methods and experience are of little value. The most important part of physical diagnosis is learned in the pathological laboratory. No one can hope to learn to intelligently recognize in the living that with which he is unfamiliar post-mortem. It is especially important that the student should see necropsies performed on cases which he has studied clinically; should see the necropsies, if possible, not only the organs after removal. Nothing is so instructive and enlightening as the control of one's clinical diagnoses by the revelations of the necropsy, not communicated by word of mouth, but observed and studied in person. This is the only method by which one can safely count upon improving his diagnostic abilities.

(4) THE IMPORTANCE OF APPROACHING THE SUBJECT OF PHYSICAL DIAGNOSIS WITHOUT PRECONCEIVED IDEAS.

The student now approaches for the first time a patient whose thoracic or abdominal organs show signs of pathological change which may be recognized by physical examination. He begins the study of physical diagnosis proper. The method by which he is introduced to this work may have an important influence on his career, so important that I am by no means sure that many men would not progress better if left to themselves than injudiciously led. "*Obest plerumque iis qui discere*

volunt, auctoritas eorum, qui docent."³ What I sincerely believe to be the most important point for the teacher to remember at this stage was first impressed upon me as a student by one of the wisest clinical instructors I have known. On entering upon the subject his first request to the class was that they avoid all books on the question until the course was over—a piece of advice for which I have always been grateful.

The student may approach his work in two ways. He who is properly led meets the case which he is to study without preconceived ideas. By applying those methods of physical examination which he has already practised on the normal subject, he will discover abnormalities one by one independently of his instructor, or under his judicious guidance; he is compelled to apply his own reason to their explanation—and it is more and more encouraging to me every year to see how quickly and accurately the majority of students reason. And when the observation is over, and the diagnosis made, the observer has in his mind the picture of an actual case. That sound which he has heard replacing the normal second aortic sound would naturally suggest that something had interfered with the proper performance of the physiological act which is the cause of the normal sound—namely, the closure of the aortic valves. But the examination has revealed changes in the size and functions of the heart, all of which might be explained by assuming the existence of an aortic incompetency. How such a sound might well be produced by the reflux of blood through a small opening in the aortic valves is brought out or demonstrated by the instructor. In reaching this conclusion the student will probably enter into considerable speculation as to why this murmur is heard in just the region in which it is audible; why it is transmitted as it is; why it is of greatest intensity below rather than at the aortic orifice. He must pass through many questions of differential diagnosis, and the exercise, the course of reasoning and the clinical picture will long remain in his mind.

Let us suppose, however, that the other course has been pursued. The student has "read up" the subject. He is familiar with the descriptions in books of the character of the signs occurring in aortic insufficiency, and their causes. The case is carefully demonstrated and explained by the instructor. But the mind of this student is already occupied by a picture based upon what he has read and heard a picture which, however near it may approach that which he is to find, can never be identical with it. His task is not one of pure objective reasoning as to the meaning of what he discovers; unconsciously he finds himself comparing two pictures,—that of the reality and that acquired from his books. And then he has a new duty, one which it may be very hard to accomplish,—to forget the erroneously preconceived ideas. But suppose even that he can accomplish this; the exercise has been but the demonstration of a single case. The only real demands which have been made upon his energies have been upon his eyes and ears and hands—little or no appeal has been made to his reason, and he has missed that which is almost the

³ "The authority of those who teach is often injurious to those who wish to learn." (Cicero: *De Natura Deorum*. Quoted by Montaigne, *Op. cit.*, p. 208.)

most important part of the exercise,—the training in differential diagnosis. He has seen a picture; his fellow has made a discovery.

But, alas! it is not easy to forget one's preconceived ideas, and many physicians spend their lives mentally comparing their individual cases with a type founded, not on their own experience or observation, but on some preconceived notion acquired, perhaps, from a lecture or a book before they had ever actually met with the disease clinically. That man who is fortunate enough to have a large hospital service shortly after graduation may acquire the experience which will displace all artificial pictures, but memory through the course of years plays strange pranks. That which we have heard and learned as a fact takes on the form of experience. What was once theory is now doctrine. Statements made to us in our early years, which have remained uncontradicted, become in later life convictions—and then experience comes too late. Typhoid fever and pneumonia have become sharply defined pictures in our minds. That which does not conform to these pictures is strange and new. These epidemics of continued fever "show none of the symptoms of typhoid fever," and must be a "third fever." Pneumonia is wholly different now from what it used to be. It is a melancholy fact that the results of this old way of teaching are to be seen throughout the country to-day. Early training in objective methods is invaluable. The man who can say with the vicair Savoyard: "*Je sais seulement que la vérité est dans les choses et non pas dans mon esprit qui les juge, et que moins je mets du mien dans les jugemens que j'en porte, plus je suis sur d'approcher de la vérité*"⁴—that man has taken a great step forward.

The student, having learned to detect deviations from the normal, should be encouraged to work out his own diagnoses and to rely on himself. In this manner he should be brought face to face with the important thoracic and abdominal abnormalities, and it is desirable that as many instances as possible of each disease be seen in order that he may appreciate the infinite variety of the clinical manifestations of any one pathological process.

(5) THE ADVANTAGES OF SUBDIVISION OF CLASSES INTO SMALL SECTIONS.

To accomplish this the class must be divided into small sections among a considerable number of instructors. This is unavoidable. In order that each student in the section may study every feature of the case, I have found that it is necessary to limit the sections to six or seven students for an exercise lasting two hours. Each student should control every statement or observation made by another. For the auscultation of the heart I have found of considerable use the combined stethoscope with multiple ear pieces, which can be used at the same time by student and instructor. Each student thus hears the same sound at the same time, and the comparison of their statements as to what they hear is often of interest and value.

⁴ "I know only that the truth is in the things themselves, and not in my mind which is considering them, and the less of myself that enters into my conclusions, the surer I am of nearing the truth." (Rousseau: (*Euvres*, 8vo, Paris, Garnery, 1823, T. vii, p. 145 [Emile, livre iv, Profession de foi du vicair Savoyard].)

(6) THE IMPORTANCE OF PRACTICE IN AN OUT-PATIENT DEPARTMENT AS A PART OF THE COURSE IN PHYSICAL DIAGNOSIS.

With the systematic, didactic, or demonstrative exercises the course in physical diagnosis proper often ends—unwisely, it seems to me. Training in an out-patient department in the observation not of selected subjects but of patients as they come along, should form a part of the course in physical diagnosis. Such a training is of particular value in that the student has an opportunity to practice methods of physical diagnosis directly under the eye of his instructor, for this work needs careful supervision. It is in this part of the student's work that he has his main opportunity to practise methods of examination of the abdomen and topographical percussion. It is in dispensary practice, also, that the student first begins to appreciate the relative frequency of the various abnormalities which he has been studying, the relative infrequency of the graver forms of disease which have been selected and placed before him in the set clinics of his school course.

* * *

Such a plan we are attempting to carry out with our classes. The second-year class has, during three months, two exercises a week upon the simpler methods of physical diagnosis applied to the normal subject. These exercises are informal and are carried on partly as recitations and partly as demonstrations. A number of students are, for instance, asked to put their hands upon the trachea of the patient while he is talking and to describe the sensation. They are then asked for the physical explanation of what they have found. From a discussion of the opinions expressed the true explanation is finally elicited. The pectoral fremitus is then studied in a similar manner. The entire class, in a number of sections, compares the vocal fremitus on the two sides of the chest in the infraclavicular region. The individual opinions as to whether the vocal fremitus on the two sides is equal, and if not so, what variations have been found, are then recorded on the blackboard. A comparison of the conclusions brought out in this manner usually emphasizes the truth.

The causes of the difference between the fremitus on the two sides are then considered and illustrated by the demonstration of models and anatomical specimens. At the end of the exercise I always elicit from the class, by questioning, a list of the physical conditions under which the vocal fremitus might be expected to be increased or diminished.

The theories as to the physical causes of percussion sounds are illustrated by bladders, fresh lungs and receptacles of various sizes.

The practice of topographical percussion on the cadaver is of special importance. I always endeavor to have several exercises in which the outlines of the heart are percussed out on the fresh subject in the necropsy room; these are fixed by the introduction of pins, the positions of which are later revealed by dissection. Such an exercise teaches more than the demonstration of many models.

Auscultation is taught in a similar manner. I have been in the habit of asking the student to listen to the respiration over the trachea and in the second

interspace in the mid-clavicular line and to note (1) the general character of the sounds; (2) the difference between inspiration and expiration (*a*) as to general character, (*b*) as to length, (*c*) as to pitch, (*d*) as to accent. The matter is then discussed and the opinions recorded in tabular form on the blackboard. Points about which there is a difference of opinion are settled by reference to selected normal cases. The theories as to the physical causes of vesicular and tubular respiration are then considered, and, as in connection with palpation and percussion, the class is questioned as to the physical conditions which might cause deviations from the normal type of respiration.

At the end of the course the class is given several hours' work in sections under a number of instructors in the topographical percussion of the normal subject and in careful comparison of vesicular and tubular breathing.

In connection with the subject of auscultation of the heart, especial attention is paid to the anatomical arrangement of the valves and cavities and their relation to the character of the heart sounds. Of great value in this connection are preparations of the heart made by injecting the cavities with a formaline solution and hardening while the heart is yet unopened. Windows cut into the cavities at various points show in a very satisfactory manner the relation of the different valvular orifices one to another.

At the beginning of the third year the question of physical diagnosis proper is taken up. The class is divided into small sections, each containing about six men. These sections have one two-hour exercise a week—fifteen to sixteen exercises in the first half year. These small sections study, in the dispensary and in the wards, typical cases of the more important diseases of the heart and lungs, while once a week the entire class meets for a recitation in which the whole subject is systematically taken up, beginning with a recapitulation of the studies which they have previously made upon the examination of the normal subject.

In addition to this, there are, throughout the year, two one-hour dispensary clinics a week before the whole class, in which attention is paid mainly to diagnosis.

During the second half-year the students do a regular out-patient department practice. The instruction is divided among seven men in such a manner that no instructor shall have more than three men at an exercise. Each student receives a schedule of the instructors to whom he is to report on each given date. This arrangement is made in such a manner that the student meets every instructor as far as possible an equal number of times. The students are given cases just as they come to the out-patient department, and are expected to take the regular history and to make a thorough physical examination, percussing out the heart, lungs, liver and spleen. When this is done they report to the instructor, who goes over their work and superintends the final record which is made upon the dispensary history and signed by the student. There are sixteen such exercises.

A class book is kept in which there are recorded: (1) the work done by each section during the first half-year, with the names, hospital numbers and

diagnoses of every case shown; (2) the record of each student during the second half-year, each case which he has seen being recorded in the same manner.

At the end of the year, we have thus a full record of the character of the work done by the student, as well as of every case which he has seen.

(7) THE NECESSITY OF BEDSIDE EXPERIENCE AS A PART OF THE SCHOOL TRAINING OF THE STUDENT OF MEDICINE.

With the course in physical diagnosis proper the training in diagnosis usually ends, except in so far as it is kept up by dispensary experience, by clinics and, perhaps, by ward visits; but this is not enough. Clinics once or twice a week with occasional ward visits cannot fit a man for practice. Some supply this want by spending a year or more after graduation in a hospital, but this opportunity is not open to all, and many enter practice every year who have never followed a case of pneumonia or typhoid fever from beginning to end. These men are not fitted to begin the practice of medicine. They are acquiring experience at the expense of the public, which has, it seems to me, a right to demand more. There is much that actual clinical experience alone can teach, and a reasonable amount of this can and should be compulsory during the course in the medical school. An instance occurring under my observation not many years ago impressed me with the real harm which must often be done by men compelled to enter practice immediately upon graduation from the ordinary medical school. The physician was a graduate of one of the best schools in this country, a man of average ability and intelligence. Shortly after the beginning of his hospital service a case of pneumonia of extreme gravity was admitted to his ward. The patient, a man of forty or fifty, was in a state of profound prostration, dull and apathetic, while on one side there was a small area of dullness with increased fremitus, bronchophony and tubular respiration. The student recognized the consolidation, but not the general picture. Struck by the fact that the scanty urine contained a large trace of albumen and very numerous granular casts, he was led to the conclusion that the man was uræmic and that the pneumonia was the lesser element in the case. The patient was given a hot-air bath and pilocarpine—hardly orthodox treatment for pneumonia. The necropsy on the following day revealed an extensive pneumonia, the kidneys showing no changes other than those which might be expected under such circumstances.

The house physician was not a fool; he had seen but a very few cases of pneumonia on occasional ward visits; he had never followed a case throughout its course, and he knew nothing of the stupor of the profound intoxication in some severe cases. A few months' experience as clinical clerk in the wards of a large hospital, and daily or frequent ward visits with the instructor through at least the same period of time, would have been worth more than several years' instruction by clinics given to large classes.

Objection has been made in this country to the adoption of the English system of clinical clerks. There is a feeling that students in the wards are annoying to the patients, and interfere with their proper

treatment. No fancy can be more unjustified. Four or five students under proper restrictions, in a ward of twenty patients, are of invaluable assistance. Such students are so many more trained assistants. I have never known them to injure a patient, while their assistance in carefully and accurately studying the manifestations of disease is very great. More than one life has, I am sure, been saved in the past several years in Professor Osler's wards, owing to the increased means of investigation afforded by their presence.

The student who has pursued a four years' course in one of the better schools of this country, the entrance requirements of which amount practically to the "*Physicum*" of the German course, should thus accumulate a fair experience in the observation of the more important diseases with which he is to meet, and while further hospital experience is desirable, yet he should be in a condition to safely begin practice, and to profit by the experience which he may acquire. Without practical objective training in physical diagnosis such a physician is more than likely to make many unnecessary and, perhaps, costly errors, and to lose a large part of the benefit which he might gain from just this experience.

But I have already spoken at sufficient length. And I have, perhaps, said little or nothing that is new. The problem in teaching physical diagnosis is exactly the same as that involved in the teaching of any branch of learning, namely, to find that method which will best excite the interest of the student and stimulate him to work, to study and to investigate. Such methods cannot be set or fixed, and my desire here is only to emphasize certain general points which I believe to be important.

(1) An essential part of the teaching of physical diagnosis consists in the demonstration of those points in regional anatomy, an accurate knowledge of which is necessary to the diagnostician. Such demonstration should be accompanied by exercises in the application of the fundamental methods of physical examination to the normal individual.

(2) It is desirable that the student should learn, as far as is possible, by actual observation and practice, the physical causes for the signs to be noted on inspection and palpation and elicited by auscultation and percussion of the normal subject; without this a proper interpretation of pathological deviations from these signs is impossible.

(3) A thorough training in pathological anatomy is an absolute necessity for the student of diagnostic methods, and frequent demonstrations in the necropsy room of the lesions with which the student is meeting in the living individual form an important part of the course in physical diagnosis.

(4) The study of physical diagnosis should be approached without preconceived ideas, beyond those acquired from the study of the normal individual. The student should not be allowed to consult books upon the subject until he has already learned to detect upon the living individual the more important physical manifestations of disease. He who begins the study of diagnosis in the textbook is in grave danger of acquiring habits of mind which may seriously affect his diagnostic abilities in later life.

(5) To properly train the student in this manner necessitates the subdivision of a class into small sections, in order that each man may personally control every observation which is made during the exercise.

(6) As a part of the course in physical diagnosis the student should have a fair experience in the examination of patients as they come, in the ordinary course of events, to an out-patient clinic, in order that he may acquire skill in the taking of histories, in the practice of topographical percussion and in the habit of forming his diagnosis without help or assistance. This work should, if possible, be under the direct supervision of instructors.

(7) No man is properly fitted to begin the practice of medicine who has not had a reasonable amount of actual bedside experience in the observation of the more important diseases which he is to meet in his practice. This can be easily accomplished (1) by insisting, according to the English system, that the student shall have several months' experience as a clinical clerk in the wards of a hospital; (2) by providing for daily or frequently repeated ward visits with an instructor for at least an equal length of time. The presence of medical students as clinical clerks in the wards of a general hospital is in no way detrimental to the interests of the patients or of the institution. On the contrary such an arrangement is perfectly feasible and of great assistance to patients, physicians and hospital.

But, after all, the exact method of teaching is perhaps the smaller part. Much, indeed, the greater part depends upon the instructor. We are not trying to inculcate knowledge in the minds of passive listeners. Medicine can neither be studied nor practised in a perfunctory manner. The men to whom we address ourselves must be interested and enthusiastic students of an absorbing subject, and the same interest, the same methods of thought and action they must carry into their later practice, for there is no essential dividing line between the study and practice of medicine. The teacher's main task is to excite and stimulate such a spirit in his pupils, and to accomplish this he must himself possess it in at least an equally high degree.

The words of Rostand's⁵ priest are as applicable here as to any other aspect of life:—

Frère Trophime.

"Ah! l'inertie est le seul vice, maître Erasme!

Et la seule vertu, c'est . . .

Erasme.

Quoi?

Frère Trophime.

L'enthousiasme!"

TWO CASES OF SO-CALLED LANDRY'S PARALYSIS: AUTOPSIES.

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THE patient which forms the basis of this communication was carefully observed at the Long Island Hospital over a period of several days preceding her death. The case is of interest because of the difficulty in diagnosis, the positive though relatively slight postmortem findings, and also as a further contribution to the increasingly vague

symptom-complex known as Landry's paralysis. Through the courtesy of Dr. J. J. Minot and Dr. W. R. Brinckerhoff, a somewhat similar case observed for a brief period at the Carney Hospital is added, in which, after a rapidly fatal clinical course, no noteworthy alterations in the spinal cord were found.

E. M. H., unmarried, twenty-seven years of age, was admitted to Long Island Hospital May 6, 1902. She was a Nova Scotian by birth and a factory girl by occupation. Her family history contained nothing bearing on her illness. She had always been well until three months before, when awakening in the night she found herself unable to move. It was said that just previous to this, for a period of about two weeks, she had not been well. On one occasion she had eaten oysters, which was followed by vague intestinal disturbances. Others in the family had also eaten oysters, but without effect. Following this sudden paralysis of motion, she was confined in bed for five weeks with a gradual amelioration of symptoms, and was at the end of that time able to return to work. The exact nature of this paralysis was not forthcoming. She denied alcohol and venereal disease.

The history of the present illness was essentially as follows: After working for five weeks previous to the present attack, she had requested to get away from her work because of feeling ill, but permission was not granted. Following this, the patient, on getting out of bed in the night, became weak and dizzy, and fell to the floor. She was assisted to bed and found she could move neither arms nor legs. The extremities felt numb and prickling. She is said to have vomited persistently for the first few days, but this passed off, leaving her in a very weakened condition. Up to her admission to the hospital she had been confined in bed and is said to have been mildly delirious at times.

Physical examination on entrance to the hospital seventeen days after the onset of the present attack showed the following conditions: Her general physical condition was good. There was some slight tremor of the tongue, which was protruded slightly to the right. Otherwise there was no involvement of the cranial nerves. The pupils were equal and of normal reaction. The lungs and heart showed nothing of importance. The abdomen was also negative. The knee jerks were absent. There was no ankle clonus nor Babinski. There was slight plantar reflex, somewhat more marked on the right than on the left. Reflexes of the upper extremities were absent. Sensation at the time of this examination is reported to have been diminished both on arms and legs. There was no difference in surface temperature of the skin. There was absolute loss of motion in both arms, though the fingers of both hands could be slightly flexed and the fingers of the left hand partially extended. Both knees could be flexed a few degrees, and in both feet there was motion in all directions, though muscular action was very weak. Both legs and arms were flaccid. The chest moved normally on respiration. The abdominal reflexes were absent. Sensation was diminished in the same proportion as in the extremities. During her stay in the hospital she had incontinence of urine, and a specimen could not be obtained for examination. No tubercle bacilli were found in the sputum. At no time was the temperature above 99°.

Examination two days later showed essentially the same conditions, with the exception of a phenomenon which resembled an ankle clonus, excepting that the movements of the feet were lateral. It was observed on this occasion that there was embarrassment of respiration, but no cranial nerve or brain involvement was discovered. There was much general weakness, but the mind was clear.

The following day the patient failed rapidly and, in spite of taking nourishment fairly well, grew worse throughout the day, and died quietly in the evening. She was apparently conscious up to ten minutes before death.

Autopsy (1xvi-02.48) by Dr. G. B. Magrath, May 10, 1902, twenty-nine hours after death.

⁵ Rostand: *La princesse lointaine*, 8vo, Paris, 1898, Charpentier et Fasquelle, p. 11.