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OSLER
AND
OTHER PAPERS

OSLER AND OTHER PAPERS

BY

WILLIAM SYDNEY THAYER, M.D., LL.D.,
DR. HON., SC. D., F. R. C. P. IRE. HON.

*Professor Emeritus of Medicine at
The Johns Hopkins University*



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To
MY DEAR AND VALUED
TEACHERS
THE STUDENTS OF
FORTY YEARS

PREFACE

These pages contain a collection of addresses and papers delivered or published at intervals during an active professional and university life, comments, for the most part, on men and things medical. Several of the chapters are biographical, short pictures of the lives and works of great men; reminiscences of dear and inspiring masters. On the title page I have dared to place the name of one of the dearest and wisest.

ERRATA

Page 9. The quotation from Anatole France after the third line should read: "L'Ironie et la Pitié sont deux bonnes conseillères; l'une, en souriant, nous rend la vie aimable; l'autre, qui pleure, nous la rend sacrée. L'Ironie que j'invoque n'est point cruelle. Elle ne raille ni l'amour, ni la beauté. Elle est douce et bienveillante. Son rire calme la colère, et c'est elle qui nous enseigne à nous moquer des méchants et des sots, que nous pouvions, sans elle, avoir la faiblesse de haïr."

Page 32, line 10. For "extrordinarily" read "extraordinarily."

Page 72, line 12. For "ws" read "was."

Page 79, line 2. For "necrospy" read "necropsy."

Page 279, line 15. For "women" read "woman."

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I

OSLER THE TEACHER¹

Observe, record, tabulate, communicate.

Use your five senses. The art of the practice of medicine is to be learned only by experience; 'tis not an inheritance; it cannot be revealed. Learn to see, learn to hear, learn to feel, learn to smell, and know that by practice alone can you become expert. Medicine is learned by the bedside and not in the classroom. Let not your conceptions of the manifestations of disease come from words heard in the lecture room or read from the book. See, and then reason and compare and control. But see first. No two eyes see the same thing. No two mirrors give forth the same reflexion. Let the word be your slave and not your master.

Live in the ward. Do not waste the hours of daylight in listening to that which you may read by night. But when you have seen, read. And when you can, read the original descriptions of the masters who, with crude methods of study, saw so clearly.

Record that which you have seen; make a note at the time; do not wait. "The flighty purpose never is o'ertook, unless the deed go with it."

Memory plays strange pranks with facts. The rocks and fissures and gullies of the mountain-side melt quickly into the smooth, blue outlines of the distant panorama. Viewed through the perspective of memory, an unrecorded observation, the vital details long since lost, easily changes its countenance and sinks obediently into the frame fashioned by the fancy of the moment.

¹ From The Johns Hopkins Hospital Bulletin, 1919, XXX, 198-200.

Always note and record the unusual. Keep and compare your observations. Communicate or publish short notes on anything that is striking or new. Do not waste your time in compilations, but when your observations are sufficient, do not let them die with you. Study them, tabulate them, seek the points of contact which may reveal the underlying law. Some things can be learned only by statistical comparison. If you have the good fortune to command a large clinic, remember that one of your chief duties is the tabulation and analysis of the carefully recorded experience.

The collection and study of your own observations is much, but he who works in his own small compartment leads, after all, a restricted and circumscribed life. Go out among your fellows, and learn of them. The good observer is not limited to the large hospital. The modest country doctor may furnish you the vital link in your chain, and the simple rural practitioner is often a very wise man.

Respect your colleagues. Know that there is no more high-minded body of men than the medical profession. Do not judge your confrères by the reports of patients, well meaning, perhaps, but often strangely and sadly misrepresenting. Never let your tongue say a slighting word of a colleague. It is not for you to judge. Let not your ear hear the sound of your voice raised in unkind criticism or ridicule or condemnation of a brother physician. If you do, you can never again meet that man face to face. Wait. Try to believe the best. Time will generally show that the words you might have spoken would have been unjust, would have injured a good man, and lost you a friend, and then—silence is a powerful weapon.

When you have made and recorded the unusual or original observation, or when you have accomplished a

piece of research in laboratory or ward, do not be satisfied with a verbal communication at a medical society. Publish it. Place it on permanent record as a short, concise note. Such communications are always of value.

Mix with your colleagues; learn to know them. But in your relation with the profession and with the public, in everything that pertains to medicine, consider the virtues of taciturnity. Look out. Speak only when you have something to say. Commit yourself only when you can and must. And when you speak, assert only that of which you know. Beware of words—they are dangerous things. They change colour like the chameleon, and they return like a boomerang. Do you know the story of the young physician, about to enter practice, who was sent by his father to his old friend, Dr. William Stokes, for advice? A pleasant conversation, and, at the doorway, a last word: "Charley, don't say too much." Then, at the gate, a voice: "Charley, come back a minute; I'm very fond of you, my boy; don't *do* too much."

"Don't do too much." Remember how much you do not know. Do not pour strange medicines into your patients. Our greatest assistance is given by simple physical and mental means, and by the careful employment of such drugs as have been adequately studied, with regard to the action of which we have real information. Do not rashly use every new product of which the peripatetic siren sings. Consider what surprising reactions may occur in the laboratory from the careless mixing of unknown substances. Be as considerate of your patient and yourself as you are of the test-tube.

Familiarize yourself with the work of others and never fail to give credit to the precursor. Let every student have full recognition for his work. Never hide

the work of others under your own name. Should your assistant make an important observation, let him publish it. Through your students and your disciples will come your greatest honour.

Be prompt at your appointments; that is always possible. Many are always late at a consultation; few miss a train. There is no excuse for tardiness.

Live a simple and a temperate life, that you may give all your powers to your profession. Medicine is a jealous mistress; she will be satisfied with no less.

Save the fleeting minute; do not stop by the way. Learn gracefully to dodge the bore. Strike first and quickly, and before he has recovered from the blow, be gone; 'tis the only way.

If you can practise consistently all this, and then, if you can bring into corridor and ward a light, springing step, a kindly glance, a bright word to every one you meet, arm passed within arm or thrown over the shoulder of the happy student or colleague; a quick, droll, epigrammatic question, observation or appellation that puts the patient at his ease or brings a pleased blush to the face of the nurse; an apprehension that grasps in a minute the kernel of the situation, and a memory teeming with instances and examples that throw light on the question; an unusual power of succinct statement and picturesque expression, exercised quietly, modestly and wholly without sensation; if you can bring into the lecture room an air of perfect simplicity and directness, and, behind it all, have an ever-ready store of the most apt and sometimes surprising interjections that so light up and emphasize that which you are setting forth that no one in the room can forget it; if you can enter the sick-room with a song and an epigram, an air of gaiety, an atmosphere that lifts the invalid instantly out of his ills, that

produces in the waiting hypochondriac so pleasing a confusion of thought that the written list of questions and complaints, carefully compiled and treasured for the moment of the visit, is almost invariably forgotten; if the joy of your visit can make half a ward forget the symptoms that it *fancied* were important, until you are gone; if you can truly love your fellow, and, having said evil of no man, be loved by all; if you can select a wife with a heart as big as your own, whose generous welcome makes your tea-table a Mecca; . . . if you can do all this, you may begin to be to others the teacher that "the Chief" is to us:

An eye whose magic wakes the hidden springs
Of slumbering fancy in the weary mind.
A tongue that dances with the ready word
That like an arrow seeks its chosen goal,
And piercing all the barriers of care,
Opens the way to warming rays of hope.
A presence like the freshening breeze that,
As it passes, sweeps the poisoned cloud aside.
An ear that 'mid the discords of the day,
Swings to the basic harmonies of life.
A heart whose alchemy transforms the dross
Of dull suspicion to the gold of love.
A spirit like the fragrance of some flower
That lingers round the spot that this has graced,
To tell us that although the rose be plucked,
And spread its perfume throughout distant halls,
The vestige of its sweetness quickens still
The conscience of the precinct where it bloomed.

II

OSLER¹

As the accumulating tragedies of the aftermath of war gather fatally one on another, a puzzle and a mystery to the thoughtless masses whose imperfect eyes seek in vain for the cause, the old dead ache that we have borne for these last interminable years—the old dead ache which it is our dream to outlive, breaks out now and again in new and cruel crises.

Such a crisis was the death of Sir William Osler, as much a tragedy of the war as if he had fallen by the side of his boy, “. . . . forward as fits a man.”

Son of a canon of the Church of England, born in Bond Head, Ontario, in 1849, he was at the outset destined for the clergy, but his inclination carried him toward medicine, and after four years in Toronto and Montreal, he graduated at McGill University in 1872. For the two years following he studied in London, Berlin and Vienna, and in 1874, he returned as Lecturer and later as Professor of the Institutes of Medicine at McGill University. In 1884 he was called to the University of Pennsylvania as Professor of Clinical Medicine, and in 1889, to the Johns Hopkins University as Professor of Medicine and Physician in Chief to the Johns Hopkins Hospital. In 1905 he left America to become Regius Professor of Medicine and Student of Christ Church at Oxford. Such is a brief outline of his academic career. He held honorary degrees from a large number of American and foreign universities. He was a Fellow of the Royal Society.

¹ Reprinted, with additions, from *The Nation*, January, 1920; Bull. Med. & Chir. Fac. of Maryland, 1920, XII, 72-78.

In the two years spent in Europe he made important original studies on the blood. Wherever he went his devotion to work, his remarkable power of observation—for throughout his life he was an observer rather than an experimenter—his extraordinarily quick grasp of the significance of that which he saw or read, his clear vision and sound, sane judgement, his simplicity and sincerity and honesty impressed his colleagues and the public, and he became a much sought for consultant.

In 1892 he published his treatise on *The Practice of Medicine* which, largely because of its personal quality, because it represented the fruits of actual observations and experience, has been for so many years the standard text book of medicine in America. He delivered many lectures before learned societies, the Gulstonian lectures in 1885, the Cartwright lectures in 1886, the Harveian lecture in 1906. He published a number of short volumes on different medical subjects—*Chorea*, *The Cerebral Palsies of Children*, *Cancer of the Stomach*, *Angina Pectoris*, and a very large number of notes on a great variety of pathological conditions observed in his constant clinical activities. He delivered many addresses and was the author of a considerable number of charming and valuable historical and biographical essays.

His work in the organization of the new medical clinic at the Johns Hopkins Hospital in 1889, his insistence that for the proper care of the patient as well as for the improvement of the teaching of medicine, the student should be used, as in England and France, as an assistant in the wards, his practical abandonment of barren, old didactic methods, were steps of great importance in the advancement of medical instruction and in the improvement of hospitals in

America. These were notable achievements; they have been abundantly recounted in the last few weeks. But if one turn to the notes of those who knew him and were close to him, such as the tributes by eighteen of his associates in the *Johns Hopkins Hospital Bulletin* for July, 1919, he may perhaps be struck by the lack of stress laid on the scientific and material aspects of his work; for it was in the human side of this man that lay his true greatness.

It is probable that there has, in America, been no medical man so universally revered, no man whose power, whose inspiration has reached so many, no man so loved.

Wherein lay the secret of his power? What was the manner of the man? His father was Cornish, and Osler was a true Celt. A Celt in appearance, of a very dark, almost olive complexion, with a rather long, drooping black mustache—a Celt in his charming vivacity and brilliancy, and in his sparkling wit. Not large, but well built, with a wiry, athletic figure, a long, swinging, active gait, a peculiarly mobile face, serious and almost stern when at rest, and deep, dark brown eyes, with an irresistible humorous twinkle; deep clear eyes, so clear that although they might sometimes seem unfathomable, they told at a glance of a pure, kindly, loyal spirit behind. As a teacher he was wholly simple and devoid of circumstance or the least attempt at studied eloquence or theatrical effect. He taught mainly by the bedside. His alert eye missed little. His few, kindly, often droll words gained the early confidence of the patient, and kept the student on his tiptoes. His talks in the wards were replete with epigrams. The right adjective, often quaint and unusual, was always on the tip of his tongue, and to a rare degree he possessed the power to inspire in

patient confidence, courage and hope, in student, enthusiasm. The equanimity that he preached he exemplified—nothing perturbed him. “Let not the *Crooked Things that can't be made streight* encumber you,” said Cotton Mather.¹ Few followed this wise maxim as did Osler. Of the hopeless and irritating dilemma he always saw the humorous aspect, and 'twas dismissed in the twinkling of an eye, with the one word that might almost—indeed sometimes did—accomplish the seemingly impossible. These “Oslerisms,” as his disciples called them, were a delight to his pupils. Indeed, at one time two had almost published a collection.

Plus je songe à la vie humaine, plus je crois qu'il faut lui donner pour témoins et pour juges l'Ironie et la Pitié, comme les Egyptiens appelaient sur leurs morts la déesse Isis et la déesse Nephthys. L'Ironie et la Pitié sont deux bonnes conseillères. L'une en souriant nous rend la vie aimable; l'autre qui pleure nous la rend sacrée. L'Ironie que j'invoque n'est point cruelle? Elle ne raille pas ni l'amour ni la beauté. Son rire est doux et bienveillant et c'est elle qui nous enseigne de nous moquer des méchants et des sots que nous pouvions, sans elle, avoir la faiblesse de hair.—Anatole France—*Le Jardin d'Epicure*, Paris 12°, Calmann Lévy, p. 121.

This gentle “*Ironie*” for which we have no word in English, this gentle “*Ironie*” which neither wounds nor embitters—how well he understood it! In nearly thirty years of friendship, in fifteen years of daily association with Osler, the writer has never heard from his lips an unkind word about a brother practitioner. He saw and he appealed to the best in every man. More than this, no one could speak ill of his neighbour in his presence. He who forgot himself once never did so again. One evening among the group of students who gathered about his table on Saturdays,

¹ *Manductio ad Ministerium*, etc., 12°, Boston, Hancock, 1726, p. 147.

an old college mate began to ridicule a colleague. In a moment Osler turned, and pointing to the photograph over his fireplace, said: "Do you not think that Innsbrück statue of King Arthur a fine figure?" The colleague flushed, the students shivered, the subject changed. And it was ever so.

He loved his fellow men and they loved him. His table was always filled with passing guests, colleagues from a distant point, the country doctor, the student who coming to visit the clinic was stunned to find himself carried away to luncheon with the great man to whom he had expected only to listen from afar. "The master word in medicine," he says in one of his most beautiful addresses, "is work." But efficient work, he says in another, means inevitably, system. He knew not idleness, and he put into his life and maintained in a manner which can only be described as masterful, a remarkable system.

At seven he rose; breakfast before eight. At a few minutes before nine he entered the hospital door. After a morning greeting to the superintendent, humming gaily, with arm passed through that of his assistant, he started with brisk, springing step down the corridor toward the wards. The other arm, if not waving gay or humorous greetings to nurses or students as they passed, was thrown around the neck or passed through the arm of another colleague or assistant. One by one they gathered about him, and by the time the ward was reached the little group had generally grown like a small avalanche.

The visit over, to the private ward. For the many convalescents or the nervous invalid whose mind needed diversion from self, some lively, droll greeting or absurd remark or preposterous and puzzling invention, and away to the next in an explosion of merriment,

often amid the laughing but vain appeals of the patient for an opportunity to retaliate. For those who were gravely ill, few words, but a charming and reassuring manner. Then, running the gauntlet of a group of friends or colleagues or students or assistants, all with problems to discuss, he escaped. How? Heaven only knows!

A cold luncheon, always ready, shortly after one. Twenty minutes' rest in his room; then his afternoon hours. At half past four in the parlour opposite his consulting room, the clans began to gather, graciously received by dear "Mrs. Chief," as Lady Osler was affectionately known. Soon the "Chief" entered with a familiar greeting for all. 'Twas an anxious moment for those who had been waiting long for the word that they had been seeking with him. After five or ten minutes he would rise, and perhaps beckon to the lucky man to follow him to his study. More often he slipped quietly from the room, and in a minute reappeared at the door in his overcoat, hat in hand. A gay wave of the hand, "Good-bye," and he was off to his consultations.

Dinner at seven, to which, impartially and often, his assistants were invited. In the evening he did no set work, and retired early to his study where, his wife by the fire, he signed letters and cleared up the work of the day. Between ten and eleven o'clock, to bed. Such were his days. Three mornings in the week he gave to work at home. He utilized every minute of his time. Much of his summer vacation went to his studies. On railway, in cab on his way to and from consultations, in tramway, and in the old bob-tailed car that used to carry us to the hospital, book and pencil were ever in his hand, and wherever he was, the happy thought was caught on the wing and noted down. His

ability at a glance to grasp and to remember the gist of the article that he read was extraordinary.

His power to hold the mastery of his time was remarkable. There was more to be done in the day than he could accomplish. The kindest of men, he would willingly have given more time to others had it been his. It was not. There was but one moment in the day in which he could talk to his assistants and colleagues of their affairs, tea-time and that which followed it if, by chance, there were no outside consultations. When could one see him for a minute? "At tea." And generally there *were* outside consultations. Men tried to catch him at other times. It was impossible. No one could hold him. He escaped as by magic, but so graciously, so engagingly that despair though one might, he could hardly be irritated. No one could speak consecutively to Osler against his will. How did he do it? I know not.

For the great world he had no time. He gave none to society. But at medical meetings, and gatherings of his colleagues, he was a constant attendant and a central figure. Too often these gatherings trailed on to late hours, but before one knew it, by ten o'clock, he was gone.

His humour was irrepressible. It cropped out in everything. Now it was in medical articles, published under an amusing pseudonym, which were excruciatingly funny—reports of amazing cases, subjects which could lead no man seriously astray, but have been gravely and solemnly quoted. Now it was a sly thrust at a colleague in the absurd title of a medical paper which mysteriously found its way into the program of a society meeting. Now it was the elaborately prepared counterfeit of a new journal, presented at a dinner, with a whole table of contents which brought

horror to the hearts of the victims—and the rest a blank. His assistants had always to be on their guard. The genial practical jokes played on his friends were endless, and so notorious that, alas, they have grown sadly with repetition. In a tight place he would pass under his *nom de plume*, unknown to the puzzled bore who had sought to nail him down. His generosity to his students was unending, and almost every gift, every act of kindness was accompanied by some droll and often really humorous mystification.

Wherever Osler went the charm of his personality brought men together, for the good in all men he saw, and as friends of Osler all men met in peace. Under his inspiration the Medical and Chirurgical Faculty of Maryland took on a new life, and a new harmony reigned among all about him.

Throughout all his life Osler was a student of the lives of those who had gone before. Biography was to him of compelling interest, and in his numerous biographical essays, some of which have been collected in *An Alabama Student*, he stimulated in his disciples a reverence for the great names of medicine, and an interest sometimes as deep as his own, in the search for the recondite in the history of our art.

But above all this Osler was a scholar. In early life he had given little time to the classics. But few men have lived more completely in the atmosphere of the great minds of the past. An insatiate reader, his memory was remarkable, and the timely and happy quotation was always on his lips. Nightly, for half an hour, he communed with that which was best in literature. He loved books, and early laid the foundations of the great collection which was his at the time of his death—a collection at the outset of the first editions and early publications of the masters of medicine and

later of like treasures in all branches of science and the humanities. At the time of his death he had accomplished the impossible—Osler, doctor of medicine and practitioner of his art, was President of the British Classical Association.

His occasional addresses, collected in part in *Aequanimitas and Other Addresses* were the mirror of his own ideals and his own character. Written in an engaging and forceful style, they contain much that is beautiful. But that which is more beautiful and more impressive than the words is the thought that Osler lived and practised to the letter the precepts that he preached. He rarely spoke of himself, but at the great farewell dinner in New York he talked briefly and touchingly of his own ideals. These ideals he realized.

Some have criticized Osler for his reluctance to enter into combat against that of which in his heart he disapproved; some were inclined to regard him as one who shunned disagreeable complications instead of facing them. Osler did hate and did shun useless strife, but when the time came, and he was a very wise judge of the proper moment, no one was more fearless or more outspoken than he, as more than one of his colleagues may remember. When the word must be spoken, he was ready to speak it regardless of what it might mean for himself.

His home life could scarcely have been more beautiful, and Lady Osler was hardly less dear than he to the immense circle that came to call them their friends.

In Britain as in America, Osler's charm and brilliancy, his learning and his skill brought him the same universal affection and respect.

He was made a baronet; a deserved honour. His house at Oxford became the Mecca of Americans. His

hospitality knew no bounds. Sometimes forty or fifty guests would gather for afternoon tea.

There was but one child, Edward Revere Osler, a lad of but ten when they left America. In this boy Osler's life was centred. Always attractive and fond of out-door life, he developed into a singularly charming character, with an interest in and an understanding of that which is beautiful in art and literature rare in one of his age. He began to collect books and to collect them intelligently. To his father his development was an inexpressible joy.

* * * *

Surrounded by honours and love abroad, and with perfect happiness at home, a figure of growing significance among his colleagues of the old university, active in his profession and in the gathering and cataloguing of his wonderful library, the sky was clear—and the war came.

Whole-heartedly and without a bitter word, he gave himself as ever to the duties of the hour. In the medical department of the army his advice was sought on all manner of questions. He was consultant to a number of hospitals, and in our hours of hesitation and delay he was active in stimulating his old students to come to the aid of those who were fighting our battles. Lady Osler was no less active than he. The boy worked first at a hospital in France, then entered the Training Corps, joined the artillery, and left for the front. It was a strange picture, this man, who all his life had been the apostle of "Unity, Peace and Concord" (*Aequanimitas and Other Addresses*, 2 ed. 8°, Philadelphia, Blakiston, 1906, 447) flung suddenly with all that was nearest and dearest, into the vortex of war. True to his own precepts he consumed his own smoke; there was never a lament nor a complaint. But in his

letters to those near to him the ever present anxiety for his boy was manifested by the inevitable reference made in brave, cheerful words to the sword that hung over their heads.

In August, 1917, cruelly wounded, Revere died, cared for, mercifully, by dear friends who chanced to be at his side. The blow Osler bore with calm dignity and beauty. The old life continued; his house, as ever, was open to all. In the last year of his life over sixteen hundred guests sat at his hospitable board. But it was a crushing blow from which he never recovered, and it killed that exuberant vitality which had promised so many long and fertile years. With the same old cordiality he greeted his friends—with the same outward air of enthusiasm he went about his many activities. His address as President of the Classical Association was a contribution in which those who strive for the maintenance of high standards of scholarship in medicine may take comfort.

The twelfth of July was his seventieth birthday. Two volumes of contributions to the medical sciences prepared in his honour by pupils and friends were presented to him by his colleague Sir Clifford Allbutt. His old students and companions in Baltimore united in dedicating their affectionate tributes to the beloved master. Testimonials of gratitude and affection poured upon him from all sides. On few in their lifetime has such honour and love been showered. He was deeply moved. But his heart was broken. And when the test came, the old bodily vigour and resistance were gone.

In his last days he remembered as ever his associates of former years. Week by week he dictated or wrote letters from his sick-bed first to one and then to another of his old friends. And when he could no longer write, he asked those by him to write in his stead.

He was a keen observer, a brilliant clinician. His contributions to medicine and medical education were important. He was a great teacher. But his main strength lay in the singular and unique charm of his presence, in the sparkling brilliancy of his mind, in the rare beauty of his character and of his life, and in the example that he set to his fellows and to his students. He was a quickening spirit.

At the meeting following his death the Medical and Chirurgical Faculty of Maryland adopted this minute.

DIED

On 29 December, 1919, at Oxford

WILLIAM OSLER, Baronet.

Physician, teacher, guide, lover of his fellow men.

Noble exemplar of charity and tolerance and temperance and work and love.

Untiring stimulator and generous benefactor of this Society,

Whose sparkling wit and genial, subtle humour smoothed the rough way of life for so many weary spirits;

Whose presence banished discord and suspicion.

The gap which his absence leaves among us will forever be warmed by the glow of that all-embracing love which radiated from his presence like a halo of light, and brought to all about him something of the Peace that now is his.

III

REMINISCENCES OF OSLER IN THE EARLY BALTIMORE DAYS ¹

To have been a disciple and assistant of William Osler for fifteen years, to have shared his friendship until the time of his death, more than fourteen years later, has been one of the privileges of my life.

How well I remember the moment when first I saw him, the figure which in later years became so familiar. 'Twas in Berlin, nearly thirty-nine years ago, at the ninth International Medical Congress. We were standing near the entrance to one of the halls in which the Congress was in session. Among the throng of members passing to and fro, my eyes were attracted by a figure which stood out from the rest. Why?

I have often asked myself. It is not easy to answer. Why, in our early memories, do certain vignettes of face, figure or scene, remain clear and sharp against the haze of the vanishing background?

It may have been the name that was already his. It may have been that my association with him began so soon afterward. Be that as it may, it is the one figure that remains in my memory. My companion I have quite forgotten. Indistinctly I see the building. It was, I think, a temporary, wooden erection. Vaguely I see men wandering about or chatting in small groups waiting for the hour of re-assembly; it must have been at the end of the midday recess. But as clearly as if it

¹ Read before the California Medical Association, in general meeting, at the Fifty-Eighth Annual Session, 6-9, May, 1929. From California and Western Medicine, 1929, XXXI, 161-168.

were before my eyes, one figure stands out—the figure of a man who was not wandering about, who was not idly conversing. Alone, seemingly oblivious of those about him, with an easy, elastic, swinging stride, rapidly but without haste, his open frock coat flowing in the breeze, a package of papers in his left hand, he passed by and entered the hall. He was not a large man. Rather spare but well built, he gave one the impression of vigour and energy. He wore a silk hat and carried a stick. He was obviously well dressed. Among the idle groups, talking together, observing and commenting on their neighbours, he passed, a figure apart, plunged in his own thoughts. The oval, dark, almost olive face, with the long, drooping, black moustache, was calm and composed, and the deep, thoughtful, dark eyes betrayed the serene, intent and active mind.

“Do you know who that is?” said my companion, who had followed my gaze, “That is Osler, professor of medicine at Johns Hopkins.”

How much of Osler there was in that first glimpse! Of how little was I conscious at the moment! How little did I fancy that in three months I should be sitting at his table, and that to him I should owe so large a part of the blessings of my life!

In less than three months the occasion came. One evening, after dinner, I was sitting alone in the little room which, for three weeks in Boston, had served me at once as study, consulting room and bedroom. The door bell rang and my friend C. entered. He had come to say “Good-bye.” He had just finished his internship at the Massachusetts General Hospital, and was on his way to Europe to spend a few years in special study. At the doorway on leaving, as an afterthought, he asked me if I knew a young man who had had an internship,

who might care to take a position in Osler's new clinic. It was not an important position, but it offered opportunities for study, and a residency, with the privilege of being one of Osler's staff.

In a few days my old comrade Finney, who had already been in Baltimore a little over a year, and I were supping with Osler and his niece. How well I remember him as he was in those days, the same figure that I had seen in Berlin—the "Chief" as we all called him—lithe, vigorous, handsome. The eyes I remember most clearly; deep, dark, rich, brown eyes; at rest grave, even sad; sometimes, when he looked up suddenly from his work in a moment of deep thought, almost severe. The genius of Sargent caught such a moment in his well-known crayon, a passing expression familiar only to those who knew Osler best. Severe at such moments, grave and inscrutable when at rest, they were warm and glowing and kindly and direct as they met one's glance, and singularly mobile, in a flash sparkling and dancing with merriment as he seized with lightning rapidity the humorous aspects of the situation, and broke into a quick, nervous, or more rarely, when taken off his guard, into a loud, short, hearty laugh. His glance never evaded another's. Steady, penetrating, his eyes looked deeply into your own. Indeed, as was said amusingly and epigrammatically, by Julia Arthur, of the eyes of his favourite pupil, John Hewetson, eyes that were not unlike his own, "They looked through you and buttoned behind!"

His manner of speaking was charming. His voice was quiet and even, but rich and sympathetic. His movements were easy and measured; his gait, rather rapid with long, swinging strides. His composure and poise were unusual. He talked quietly, simply, and not very much. He practised himself a virtue which he

often praised, the "virtue of taciturnity." But he was a good listener and had an unusual skill in guiding a conversation. If the conversation took a turn of which he disapproved, he could cut it short or change the subject with ease.

I had been told that he had a rather quick temper. This may have been true, but not in the ordinary sense of the word. In the fifteen years during which I saw him nearly every day, I never heard him speak a hasty or an ill-considered word. On very few occasions, three or four only, have I heard him speak severely or sharply. Once, when a silly woman talked to him about his eyes, he seemed to lose his temper and said: "Woman, don't you dare to talk to me like that." His self-control was perfect. Better I think than anyone that I have known, he practised what he preached.

When in thought he had a habit of holding his head a little on one side and stroking his moustache which, in his earlier Baltimore days, was long and drooping. He had a quick wit and a delightful sense of humour. Especially sensible to the incidents of human behaviour, his eye missed little of that which went on about him. When, one hundred years after his death, the little silver-clasped volume in which he set down early incidents in the history of the Johns Hopkins Hospital is opened, there will be revealed, I fear, with that humorous exaggeration with which he loved to embellish these little histories, more than one incident which might embarrass some good citizens of yesterday and today. We who were his assistants had an uncanny sense of mental and moral nakedness in his presence. How we should like to see those pages and to laugh or blush at ourselves as we appeared to others. One day he read us what purported to be an extract from this

volume, describing the effect of the appearance of Miss Isabelle Hampton as an applicant for the position of superintendent of nurses on the original board of trustees, a group of more than mature and serious-minded worthies. A killingly funny picture it was. Miss Hampton was a pleasing object, and the behaviour and instant capitulation of the Board was told in a fashion that will make some of its members turn in their graves.

To this sensitiveness to the amusing incidents of human behaviour was allied Osler's love of all manner of little practical jokes and mystifications of which so many have been told. For this, at the outset, most of us were unprepared. But we learned soon!

Sometimes, alas, there was method in his innocent appeal to our memory. "Oh yes. Of course, you remember that lovely thing in Walters' Gallery, over the door in such and such a room, etc., etc. . . . " Woe to the wretched youth whose embarrassment tempted him to acknowledge a spurious recollection! At the first hesitation he was trapped and exposed.

One cannot think of Osler without the thought of incident after incident of that playful bantering with friends with which his life was filled. Cushing has recorded many.

One day, soon after arriving in Baltimore, he dropped in to see his distinguished colleague, X, like himself a bachelor. When the excellent hostess, who looked up to X as did all, with unbounded respect, said that he was not at home, Osler asked for "Mrs. X and the children." Before the amazed lady had an opportunity to explain, he apologized profusely and, in feigned confusion, hurried away.

That enigmatic character Dr. Egerton Y. Davis of Caughnawauga dogged his path. After the morning

session of a medical congress in Washington in 1893, as we were on our way to luncheon, a stranger greeted him as "Doctor Osler," but, struck by his blank expression, hesitated and said: "This is Doctor Osler, is it not?" "No," replied Osler, "this is Doctor Davis." The stranger was surprised, would have sworn that he had heard him speak but a few minutes before, apologized and passed on. A half hour later at our table at the Arlington, the same man stopped to speak to Jacobi, greeting "the Chief" as "Doctor Davis," Jacobi cast a sly glance at me, and Osler's eyes twinkled.

During his Philadelphia days a patient had been sent to him from Canada, an exceedingly attractive and highly neurotic woman, who was transferred to his friend Doctor S. for a rest cure. At the consultation, as, in the presence of S., he said good-bye to his patient, she suddenly threw her arms around his neck and kissed him. He escaped and went, immediately, to the Philadelphia Club, where, to a group of friends, he told the whole story—*about S.* Later in the day when S. sought to tell the true story about Osler, he was greeted with derision.

He was the despair of reporters. On one occasion when Doctor Jacobi of New York was to give a lecture in Baltimore, and a reporter asked him for information he described the tiny little man with his leonine head of gray hair as a "great athlete."

On another occasion at a meeting of the Association of American Physicians, a reporter came up to the group where he was sitting, and asked if anyone could give him information about the celebrities present. Pointing to Delafield with his long square-cut beard and serious face, Osler told the reporter his distinctions, and added that one of the most remarkable things about him was that he was an enthusiastic ball player; that it

was almost a mania with him; that, even then, he could not see boys playing ball on the streets of New York without rushing out of his house and joining in the game.

And again, there was the patient sent to Doctor M. of Asheville, brilliant, active, enthusiastic, with the explanation that Doctor M. was a charming man, able and learned and particularly kindly, but very diffident and rather taciturn; at first, the patient might find him a little difficult to approach. Several days later a special delivery letter arrived from the patient saying that Doctor M. had been all that he had been prepared to expect in sympathy and kindness, but he feared there must have been some serious mistake, for he said: "This Doctor M. began to talk so soon as I arrived, and he hasn't stopped yet."

Dear E., the purveyor of the hospital, knew and appreciated the possibilities of the Baltimore markets better than any of us. Living alone in an apartment of two rooms in the hospital, he chose his friends with care and discrimination, and gave them, from time to time, dinners that we are not likely to forget. The "Chief" used to love to talk to him seriously of the unquestionable pathological influence of certain favourite Maryland dishes—of the indubitable relation between crabs and cancer, oysters and arterio-sclerosis, terrapin and impotence; and E. later, with laughter which ill concealed a slight reserve of mental perturbation, would say: "There's nothing in that, of course, is there?"

One evening Fitcher saw the Chief in a sharp attack of renal colic which, as he used to relate most entertainingly, had begun just as he was reading a paper of Ebstein's on the passage of round worms marked by bands caused by spasm of the *ductus communis chole-*

doctus. On the following morning, in the urine, which had been saved and sent to Fitcher's consulting room, was a small stone, a tiny, round, white pebble, which he had picked up in the garden and dropped into the specimen before its delivery.

The Chief's visits were made at nine o'clock—at exactly nine—for he was never late at an engagement. At about five minutes before nine he arrived at the entrance of the hospital and, leaving his hat and stick in an ante-room, stepped into the superintendent's office for a word of greeting, and then to the wards, often stopping on the way to wave his hand to the superintendent of nurses as he passed the door.

For the first seven years there were no undergraduate students in the wards. The visits, however, were always followed by a group of post-graduate students, among whom were men who have since become figures in the medical profession. As he entered the ward, followed by the little group which had gathered about him, Osler accosted the nurses usually with some facetious or pleasantly bantering observation, and as he approached the first bed, it was generally in an atmosphere of pleased smiles if not, indeed, of frank laughter.

At the bedside the house officer read the history of the new cases. Usually before this was begun, the confidence and sympathy of the patient had been gained by some odd, quaint, kindly remark. The history read, the Chief examined the patient, always objectively, never demanding information from the laboratory until he had first formed his own impression. If it were a question of an examination of the blood, he always took a glance at the fresh blood himself. He dictated a note as he went along and with great discretion, sometimes briefly, sometimes at considerable length. The sim-

plicity of his teaching was very striking. He never lectured. He discussed the picture informally with those about him, often appealing to their opinion. It was easy, as he talked, to see that that of which he spoke was the result of wide and well digested experience. His interpretation of physical signs was based on his own anatomical and pathological observation and physiological knowledge. Always, when possible, he followed his patient to operating room or necropsy table where, again, his experience was clearly apparent.

In that, the second year of the hospital, his consulting practice was not very absorbing and he was much at the hospital; nearly every day. After an hour or two in the wards he paid a short visit to the several private patients, and then passed to the out-patient department, where he walked from room to room, examining and commenting on the interesting cases. These visits also were followed by some of the post-graduate group.

At twelve o'clock on Saturdays he gave a public clinic in the amphitheatre, where one or two patients, brought from wards or out-patient department, were presented. At these clinics again, the Chief spoke with informality and simplicity. There was no attempt at oratorical effect. So entirely informal and simple, indeed almost conversational, was his manner, that in the beginning those who had expected to hear finished, rounded, carefully prepared clinical lectures were almost disappointed, and rather puzzled at the reputation Osler had acquired in his five years at Philadelphia.

One day during the early weeks of my Baltimore experience, as we were walking "down town," a distinguished colleague of Osler's in another branch of medical work said to me: "This man Osler. What do you think of him? Do you not think he is an overesti-

mated man?" I agreed that I was surprised at the informality in all senses of the one or two public clinics that I had heard, and that I was a little puzzled at his great reputation as a teacher; but I told my friend that I was struck by the way in which, at the bedside, he went to the core of things, and that I could not help feeling that he was a remarkably wise clinician. I wonder if my dear old friend remembers that conversation? It was not long before we were one in our feelings about Osler.

Week by week, these simply conducted clinics impressed his auditors more and more. Smoothly prepared exercises they were not. They were far better. In the informal comments of the teacher, in his dialogue with patient, student, and house officer, there was always meat, and his short, quick, spontaneous, epigrammatic comments were sometimes dramatic. Five years later he began what were, I think, the most characteristic and delightful of his hospital or university exercises, namely, the twelve o'clock clinics given in the out-patient department. These clinics were for third-year students and were supposed to be purely diagnostic. One or two patients, of whom Osler knew nothing, were set apart from those who came to the out-patient department that morning in order to be brought before the Chief. The history was briefly presented, and very often largely elicited by the Chief himself, who examined the patient before the class. These were beautiful demonstrations of how to approach a patient, personally and medically. In the course of time these exercises were often used by outside physicians who brought interesting patients unable to meet the expense of a formal consultation. The delightful personal relations between the Chief and the individual, his quick apprehension of the kernel of the situation, the regular

manner in which he proceeded from history to examination, to the discriminating consultation of such further investigations as were necessary, was of invaluable assistance to the students.

Especially striking was Osler's historical interest and knowledge. He was not one who loved to roll under his tongue some meaningless name in connexion with a symptom, but he used to refer us to the original description of many pathological processes or methods of clinical investigation with which we were concerned in such manner as to excite our interest in the man and his work. In later years, at the twelve o'clock clinics, he frequently asked the student whom he had called up in connexion with the examination of the case, to report a week later, in a brief five-minute paper, on the history of some symptom or clinical phenomenon, referring him to the original book or article. In this way he taught his class far more about the history of medicine than they would have learned from a dry, systematic course of lectures.

At the hospital historical society, which met once a month, he used to request his assistants to read short papers on this or the other distinguished figure in medicine, papers which he discussed always in a fascinating manner, illustrating them commonly with original editions of the works of the individual under discussion. My first real acquaintance with Laennec and Bichat I owe to just such tasks as this set me by the Chief. Interest once awakened was generously rewarded. My little paper on Laennec brought me, as gifts from the Chief, the first four editions of the works of the master.

The first and third Monday evenings of the month were given to medical meetings held, in the early

years, in the northeast corner room on the ground floor of the main building and, later, in the amphitheatre. The second Monday in the month was given to the historical club. Informal gatherings about the table in the old library, they were attended by most of the staff. Interesting cases from the wards were presented and discussed, and the progress of work in the pathological and bacteriological laboratories was reported. Welch and Osler always came; often Halsted and Kelly, and sometimes Newell Martin from the physiological laboratory across town.

The medical school had not yet opened, the laboratories were few, and the gatherings were small and intimate. How delightful were those evenings! Occasionally outsiders reported their observations. Some who can look back to those days will remember an amusing occasion in which the Chief's humour and tact were particularly well illustrated. Dear old Doctor V. appeared that evening with a large package done up in newspapers. Doctor V. was a charming old man chiefly famed for his rippling laugh, and for having read at an important public meeting a paper in which he had referred repeatedly to "the malarial orgasm." He desired on this occasion, he said, to speak to us of an interesting instance of habitual abortion at about the third or fourth month, with regard to the cause of which he had been in doubt. The woman, if I remember, had aborted three times. He had suspected syphilis, but the foetuses, he said quaintly, "were perfectly formed, without spots or eruption." He did not mention the placentae. Finally, in the patient's stools, he had found "the proglottides of a tapeworm." He described minutely the preparation and treatment of the patient while unrolling from their abundant covering of news-

papers two large preserve jars, and, as he poured the contents into two tin basins, he concluded with the words: ". . . . and at 12:15 noon, she passed this worm," adding plaintively: "I couldn't find the head."

He then raised the question as to whether the worm might not have been the cause of the abortions. The audience had a hard time but behaved with reasonable dignity. When the proper moment came, the Chief, with a quiet twinkle in his eye, stroking his moustache, expressed his interest in the story but said that he could but remember having heard old Sigmund in Wien say that syphilis was the snake that lay at the root of all evil. "I am rather inclined, Doctor V.," said he, "to think that, in this instance, it was, after all, the other worm." The old man chuckled and shook, and the audience gave full vent to its pent-up amusement.

Ah, those library meetings! Few who remember them can think of them without a tender regret. We were all young then, "Popsy," the "Chief," the "Professor," Doctor Kelly, "Counc," Abbott, Nuttall, Barker and all the rest. All were keenly interested in everything, and each in something in particular. It seemed to us then that there never was such a group.

The Chief was charmingly cordial with his staff. Often he invited one or another to dinner; and at midday dinner and supper on Sunday evening, there were always several of the boys. At first he was at the hospital daily, but outside of the hours in ward or outpatient department, and those meals to which the boys were so happy as to be invited, we rarely saw him. To no one alone did he give much time.

One day Lafleur, then his first assistant, speaking of him with the affection that all felt, said: ". . . . but he is the most impossible man! I never get a chance

to speak with him. Weeks often go by without my having an opportunity to talk with him!"

This was very true, as I came to know before long. Osler knew how to conserve his time. In the fall of 1890, when I arrived in Baltimore, he had already begun his book on the "Practice of Medicine," a work the value of which depended largely on the circumstance that it was the production in great part of personal experience. He had lived for fifteen years by bedside and in laboratory. He had devoted himself single-heartedly to the study of physiology and pathology in its broadest sense. He had himself seen, during life and after death, most of that of which he wrote.

The two years, from 1890 to 1892, were happy moments for such work. His consulting practice was not yet large. In the summer of 1890, when his niece had become engaged to be married, Osler gave up his house and, during the school year, 1891-1892, he lived with us in the hospital, and devoted almost his whole time to the wards, to teaching, and to his book. That was a delightful year for us who were then internes and assistants living in the hospital. His capacity for concentrated work was remarkable. The greater part of his book was written during that year. As I look back it seems to me that his only moments of repose must have been an occasional evening snatched from the usual routine, and a half hour before bedtime which he generally spent in Councilman's room in conversation which was rarely serious, and always delightful.

One evening he had been to the theatre to see Richard Mansfield in "A Parisian Romance." After a few bantering words with Councilman he said, as he left the room, "Oh, by the way, there were two deaths today." "Ah," said Councilman, "what were they?" "Both," replied Osler, "were instances of arterio-

sclerosis; one, a hemiplegia." "Are there to be autopsies?" said Councilman. "Yes." "At what time shall I do them? Will ten o'clock do?" "Yes, that will do." As we walked down the corridor Osler chuckled. At ten o'clock on the following morning Councilman came to the ward to remind us of the necropsies that he was about to do on the two fatalities in "A Parisian Romance."

One could not live with Osler without being captivated by his personal charm, his extraordinarily quick wit, without being impressed by his learning and his wide general information. He had a remarkable memory. Never have I known one who could read a scientific article so quickly and detect and remember its essentials so surely and so accurately. But he was not so accurate or systematic in recording his references, and some of us can remember hunting long for this article which had appeared in that journal at such and such a date. The memory as to the article and the author were almost always correct. The journal and the date—that was another matter.

He refused flatly to waste time in futile controversy and discussion, and it was hard, if not impossible, to persuade him to enter into any controversy with nurse or superintendent. There were abuses which he preferred to endure rather than risk unpleasant discussion, and, as Smith has said, on one occasion, in connexion with a situation which seemed to us rather dangerous, he advised capitulation because of the threats of the nursing authorities. But he did it skillfully, and within a year the suggestions which had been objected to were proposed spontaneously by those who had been objectors. As he capitulated he said to me: "I long ago made up my mind that the only way to deal with a woman is never to take her seriously." This procedure

was with him an art, restricted in its application to neither sex nor age. If he refused to take you seriously, you were helpless and, vexed though you might be, you could not lose your temper with him.

Throughout his life he was master of his own time to a remarkable extent. I know not how he did it. He seemed to be able to slip away when he would, and one could not talk to him of that which he would not hear. Not even his assistant could catch his ear. In his moments of leisure, at meal times, on his way to and from the wards or when talking to private patients, he was always gay and amusing, but neither patient nor friend nor stranger could hold him if he were busy. How he escaped them I could never quite discover. It was almost always through some quiet, amusing, diverting remark which caused a laugh or suddenly changed the subject. And in a second he was gone.

His visits in the private ward were delightful, a round of laughter and gaiety. In one room our poor, old, arthritic friend, Mr. D., who suffered through so many months, was always, through some new bit of nonsense, reduced to laughter till he cried out for some twinge of pain caused by the physical activity provoked. And here it was the charming but very loquacious nurse with brittle bones, who suffered, on several occasions, from fractures of rib or arm or leg, who was always greeted by a solicitous inquiry about her jaw. Or again the sad-faced hypochondriac with a treasured store of questions, who was approached with some salutation so surprising that his train of thought was exploded as by a mine. Or the anxious psychasthenic, who was so quickly engaged in a playful discussion as to the colour of the ribbons on her nightgown that she quite forgot the number of hours that she had or had not

slept—and always he was gone. How? Where? No one wholly knew.

All the while, on the basis of good anatomy and physiology and pathology, he was showing us boys as he was showing his students later, that he was a masterly diagnostician and, on broader lines, a very wise doctor.

There were those who called him a “therapeutic nihilist” and complained bitterly that he paid little attention to the treatment of the patient. It is true that in his ward teaching, as in the private ward, he did not dwell particularly on certain lesser details of treatment which are often important in daily practice. This part of the instruction he delegated to others. In the private ward he always left these duties to his assistant, saying that he wished to be considered as a consultant. But in relation to special conditions which he was studying, such as malarial fever, amœbic dysentery and typhoid fever, he went into the treatment with care. If, however, he did not in his teaching give time to the discussion of the details of medication, to the character or the colour or the taste of the menstruum in which the drug might be administered, he did, through his daily intercourse with patients, public or private, teach us how to conduct ourselves with the patient and how to practise medicine. This was quite in character with the conduct of his life. He taught by example, not by precept. He taught us very quickly that medicine could not be practised and that disease could not be treated by rule or rote. He taught us that the treatment of the patient was the most important element in the treatment of disease, that the patient not the disease was the entity. He taught his students to use their minds and stand on their own feet. He taught us not to give medicine unless we had a real reason for it. How often

have I heard him say that if one wanted to find a disease for which there was no known treatment of special value, we had but to look at the index in a book on therapeutics for that with the longest list of recommended therapeutic agents.

His therapeutic influence was very wise. He was not interested in the reckless use of newly introduced preparations, and he was always insistent on the careful and intelligent use of those which were tried. His recognition of the importance of rest as an adjuvant to *vis medicatrix naturae*, and his clear demonstration that the efficacious dose of a specific, as of quinine in malaria, may be materially reduced if the patient be given that rest and general treatment which is desirable, was an important contribution, which is not appreciated sufficiently in general practice. Many physicians in those days, as today, felt a curious sort of obligation to give the patient medicine. Osler taught his students very clearly the irrationality of this old tradition. He taught us to feel the obligation to be honest with our patients, and especially to avoid doing anything meddlesome or harmful.

At the end of his year in the hospital in 1892, on the completion of the book, Osler was married, and that beautiful, happy, fruitful life at 1, West Franklin Street began. Mrs. Osler, who, as I have said, was his perfect complement, brought with her Morris, the melanotic butler, a personage of great affability, discretion and respectability, who guarded the Chief with rare skill. Almost immediately the house became the home and the haven of assistants, house officers, and visiting physicians from all parts of the world. The Chief unfailingly practised what he preached, and his life was remarkably regular. Breakfast a little before

eight; to the hospital at nine, three days in the week. On the other days the mornings were spent in work at home. A cold luncheon at quarter past one, followed by from twenty minutes to half an hour's sleep or rest. Consultations at home from two to five. Outside consultations, thereafter. Dinner at seven. At half-past four, tea, over which Mrs. Osler graciously presided. Some of those who gathered at afternoon tea were always waiting for a coveted minute with the Chief, which was realized only if he had no outside consultations. More commonly he dropped into the drawing room for a few minutes, talking pleasantly with the group before he left for the few outside consultations before dinner. In the evening he did no set work.

In later years we, who had keys to his house, rarely interrupted these evening hours. When we did run in for a few minutes, Mrs. Osler was generally sitting before the fire and the Chief at his desk, signing the letters of the day, or writing short notes or reading. There was no telephone in his house. Those who desired to make appointments could write or telegraph. This spared him much. He was usually in bed by half-past ten. This was true whether the evening had been spent at home or dining at some medical gathering, for he rarely dined out in society. Wherever he was, he generally disappeared at about ten o'clock.

His life was a rare example of temperance in all things. He smoked, without inhaling, I think, two or three cigarettes after luncheon and dinner. He ate sparingly. There was always wine on his table, usually a decanter of sherry, sometimes red or white wine, but he never drank more than his glass of sherry or, at a large dinner, an occasional sip of wine in addition. Vigorous and naturally athletic, he realized that he who is doing heavy mental work should not burn the

candle at both ends. One morning when he was in his fifty-first year, the picture of health and vigour, we came, on the golf course, to a little stream, not more than three feet wide. He started to jump it. Then, reflecting for a second, he stopped and turned to the bridge, saying: "No. I made up my mind that at fifty I would stop jumping streams." The memory of his tolerance and his moderation shines in these days of fanatical and self-righteous intemperance. . . .

Nothing could have been more charming than Osler's relation to undergraduate students. Every Saturday evening the group doing their ward work in medicine gathered at his house. Assembling about the dining table, they discussed the interesting cases in the wards, over beer and sandwiches, while the Chief talked informally of medicine, of men, of books, of history. His talks were illustrated often by the demonstration of treasures from the library that developed into that great collection which surrounds his ashes at Montreal. At these meetings the students came to know the man and to feel his full charm.

In after years Barker and Janeway and I carried on these same evening gatherings. At one of these, as I spoke to the group of Osler, and happened to say that I had never heard him say an unkind word of a colleague behind his back, and more than this, that he never allowed an unkind word to be spoken in his presence, a graduate of some ten years' standing who was visiting me, said: "I know that to be true. One night Doctor —— of ——, an old associate of the Chief's at McGill, was with us at a Saturday evening meeting. He started to remind Doctor Osler about some rather absurd incident at the expense of a colleague, when the Chief abruptly turned and, pointing to the picture behind his back, said: 'Do you not think

that statue of King Arthur in the church at Innsbruck is remarkably fine?' The old colleague stopped, flushed and embarrassed, while Doctor Osler quickly started another subject."¹ This was a characteristic incident. Osler taught his students that only he whose tongue was guiltless of criticism could be the friend of every man. The severest word he ever spoke of another was laughingly to refer to him as a "Son of Belial."

But now and then, in the garb of the jester, he told the truth in an unexpected fashion. One evening X. knocked at the door of Y.'s room, where the Chief was sitting. X. was not welcome, a truth of which he had no conception.

Y. groaned and, uttering under his breath some highly uncomplimentary remarks, shouted: "Come in!" "Mercy, X.," said the Chief, "you'd not have come in had you heard what Y. just said about you!"—a remark which confounded Y. but amused the unsuspecting X.

On another occasion a notorious charlatan within the profession, Doctor T. of C., brought me a sealed letter of introduction presenting "Doctor Schunck."

He respected his colleagues. He loved his fellow men. He saw the best in them, and in his presence the best in them always came out. He recognized and by his actions taught us the dignity of medicine as a profession. Sordid discussions as to fees or as to the financial side of practice were particularly unpleasant to him. I am sure that he never speculated on a patient in his life. He knew the honorarium that he expected for a certain service. Naturally, as he grew older and the demands on his time increased, his charges were higher, but he never raised his fee to a rich man simply

¹ This story I have told elsewhere more than once. Vide p. 10.

because he was a rich man. He had a horror of the commercialization of medicine. Fee tables, especially, were anathema to him.

He was one of those rare practitioners of medicine who could easily have made a fortune. His professorship brought many obligations in the entertainment of visitors of all sorts. These he met with charming generosity. After fifteen years he took from Baltimore not a cent more than he brought with him, save the income from his book. He loved his profession; he was jealous of its reputation. To think of medicine as a mere trade would have disgusted him.

As the years went by he became an exceedingly busy man. With all his skill in controlling his time the moment arrived, as he once wrote me, when he could no longer have stayed in Baltimore "above ground." And so he went to Oxford.

Some of us who had lived with him day in and day out had always realized that he must one day return to the "old home," which was always the home of his spirit. We loved him dearly. He had become a part of our life, but few of us, I think, were prepared for the shock that the news of his impending departure gave us. It brought an unexpected sense of personal loss and sorrow, leaving with us something of that strange sensation of age and loneliness and responsibility which comes with the loss of a parent. He had grown into our lives to an extent that we had not realized. How deep this feeling was, was shown by the remarkable spontaneous gathering of his old students which greeted his first visit to Baltimore.

In Oxford, Osler's days were spent in a congenial atmosphere of scholarship among students and books. They were still very active days. His quickening spirit surrounded him with new life wherever he went. Cush-

ing has told us of his open house. I say "his," perhaps I should have said "theirs." From the day of his wedding one could hardly think of Sir William and Lady Osler apart. Revere, the only child, grew to be a charming, promising figure.

The war came out of a clear sky. To Osler, whose international associations were so wide, this was a heavy blow. To this was added the cruel anxiety about his son; and then the crowning tragedy of his death. All this and the broken heart he bore with a high head, and she by his side. With death in their heart, life went on as before. The house remained open to all.

A year later, just after the Armistice, I saw him for the first time in four or five years. It was a shock. Affectionate and cordial as ever, older, his moustache white, there was a quiet, subdued look in his eyes when at rest that was not his, a look that haunted me: ". . . . He looks small and although charming and like himself at moments, he has lost the real, sustained snap. He looks small and—how shall I say it—almost like any other nice old man." These words, which I find in my "Notes by the Way," tell a story. The Chief to us was unlike anyone else. To think that he could look like anyone else seemed almost sacrilegious.

But life went on as before. He was among the first to stretch forth his hand to greet and help those who had suffered, without regard to the memories. A physician, he was elected president of the Classical Association. Spring brought new life, and in his beautiful address, "The Old Humanities and the New Science," there was all the ring of the "Chief" of our memory.

In the summer came his seventieth birthday and the July fasciculus of the hospital bulletin, which gave him some conception of what he meant to his friends and students, and made him very happy.

In the fall came the railway strike, and the long, cold journey home from Newcastle, and the empyema. With December and winter came the end.

And then, the nine years of work by his dear cousin, Francis, on "*Bibliotheca Osleriana*," the great catalogue of his library. And the same open house, and the same joyous gatherings of students and disciples, young and old, and Lady Osler as gracious and bright and lovely as ever. The same dear, familiar fireside that was home to so many.

Finally the catalogue was done. The packing cases stood waiting. The morning arrived on which the books which held so much of his heart were to be taken from their shelves and put away for their long journey.

Then, when all was ready, peacefully, Lady Osler left a lonely world, and joined the Chief in the cradle of our loving memories. It was as if his spirit had lingered in her until the work was done.

IV

THE HEART OF THE LIBRARY ¹

Earth, also, has its immortalities; the immortality of inheritance; the immortality of repute; and that other, surer immortality which lies in the transmission through generations of the beneficent influence of a noble life. The memory of the man may perish; his influence can never die. The message that was his is carried on through the years, hidden though it may be from the consciousness of mankind; mute but quickening.

Yet the familiar and profound truth that in this life it is deeds and not words that count, seems sometimes, a paradox. For 'tis so easy, today, by voice or image or written character to impress one's name on the public conscience, that to the myopic masses, the word seems all powerful. To the initiated, however, the true significance of a man's words, as they are uttered, is clear only when one may look in his eyes. Even in life the word, "unless the deed go with it," is ephemeral. Empty words are soon forgotten. After death 'tis strange how quickly the word and the speaker pass out of memory. Sterile seeds perish in the womb of time.

The unwritten message of man endures only when it is a message and not a mere sound. Books are men's messengers. They alone preserve, through a precarious existence, the name of the many; and it is not unhappy that the life of the arid pulp of the average product

¹ An address on the occasion of the dedication of the Osler Library. From *The Canadian Medical Association Journal*, 1929, XXI, 1-4.

of the modern literary flux is as brief as is the message it bears exiguous. But words instinct and vital with the spirit of one who dreamed lofty dreams, whose life measured up to his ideals and his dreams—such words live, and through them breathes the essence of him from whom they sprung. They not only live; they grow. Happy the book pregnant with such words!

The full message of a man's life, while yet he lives, is often as a seed sown in the earth, hidden from the eyes of the world, apparent only in the blossom of its resurrection. Osler has been dead nearly ten years. He is just as much alive to us who were his students and his fellows as he ever was. His figure looms larger. His message is clearer, far more familiar and far better understood by the world than it was in his lifetime, for it is the message of a truly great character. I venture to say that this has surprised some of his friends and students. They loved him; they admired his skill; they respected his learning; they looked up to his simplicity, his industry, his charity, his tolerance, his temperance, his equanimity, his devotion to his vocation and to his literary avocations, to his knowledge of books and history, to his reverence for the past and his confidence in the future; they depended on his advice, rarely proffered, always ready when sought; they relied on his sincerity and candour and loyalty, for as he had never spoken ill of others, so could he never speak ill of them; they delighted in his alert eye, his sparkling wit, his nimble tongue; they marvelled at and envied his power of self-protection and his control of his own time. They thought of him as an ever-present, unfailing friend with whom everyone was at home, no one ill at ease; he was a part of their lives, "The Chief," Sir William Osler.

When he died they felt a great emptiness; they found that 'twas difficult to conceive of life without him. They discovered that he who seemed so simple, so like anyone else, so natural—was unlike anyone else; there was no one else like him. There were others as skilful, others as clever, others as learned, others as witty, others as kindly, others as honest, others, but very few, as simple, others as candid, others as wise; there was no one attribute which, on analysis, seemed wholly unique—but he was different. Certainly his was an unusual combination of qualities and powers, a combination of remarkable perfection and rare charm.

Not all his associates, I am sure, realized all this until he had gone. Man, with his imperfect vision, rarely recognizes pure wisdom when it is at his side. And yet Pallas Athene still lives, hidden in the homely bodies of men, to reveal herself only in the flower of their memories.

“So springs and strives through the soil that the legions of darkness
have trod,
From the root that is man, from the soul in the body, the flower
that is God.”

Thirty years ago Osler said to the students of McGill:

While medicine is to be your vocation, or calling, see to it that you have also an avocation—some intellectual pastime which may serve to keep you in touch with the world of art, of science, or of letters. Begin at once the cultivation of some interest other than the purely professional. . . . No matter what it is—but have an outside hobby. For the hard-working medical student it is perhaps easiest to keep up an interest in literature.

Literature was his avocation. Profoundly human, tenderly humane, he had an innate understanding of his fellows, a keen interest in their hidden virtues, an infinite charity for their failings. Through the book he looked ever for the man. The little notes on fly leaf

or cover in fine, careful, handwriting are full of reference, almost loving, to the life and habits and history of the author. This human interest might indeed be called the keynote of his life. See how it stands out on every page of the story of his career so vividly set before us by the reverent and masterly hand of Cushing! For eight years, during his Baltimore days, class after class of students at the Saturday evening conferences about his dining table, watched the growth of his library. And as the new treasures, "presents from Mrs. Osler" as he used to call them, were shown to them and to us, his assistants, it was generally with stimulating references to the life and character of the author.

Osler's love of his fellow man was shown daily in his never-failing consideration for patient, student, and assistant, and in his reverence for his older colleagues and teachers and for the great figures of the past, a reverence charmingly manifested in his biographical essays such as those collected in *An Alabama Student*.

To his vocation he gave his life. His devotion to his calling never lessened, but, in his Oxford years, he rejoiced in the richly earned privilege of a larger liberty to give himself to his literary avocations, and to enjoy the companionship of scholars. There, books which are not wholly devoid of will, sought him, gathered about him, and took new life from him, life which they still suck from his ashes. And when he ceased to walk with men, they found in her in whose heart his spirit endured, a nurse, a guardian and a comforter.

A striking attribute of human greatness is the sureness with which the master, in the execution of a lofty design, attracts his appropriate complement. The gen-

erous project of the catalogue of the great and growing library conceived and initiated, the guiding spirit gone, the necessary complement was inevitably at hand. In nearly nine years of meticulous labour, his cousin Francis, the devoted and worthy upholder of a noble tradition, has made this work not only the faithful catalogue of a great collection and a loving memorial of its illustrious founder; he has erected a bibliographical monument of unusual perfection and completeness, such as would have warmed the heart of him who was its *fons et origo*. A pious task piously accomplished!

That these books and his ashes should come back to Montreal is entirely fitting. Osler could not have willed it otherwise. It was the natural gesture of loyalty and love. His instinctive, unfailing loyalty was one of the most beautiful of his qualities. Osler loved his fellow man. He was a man and nothing human was foreign to him. He hated narrow Chauvinism in life and in medicine. In all his teachings he referred his students to the man who had led the way. The symptom or the disease became to them associated with the man, not through the vain repetition of a name but through the story of the life of a great student or an intrepid searcher for truth, or a keen observer, and his character and his qualities and his contributions, and the incidents which led to this particular contribution. In like manner, in current medicine, he taught his pupils and associates never to allow the work of a foreign colleague to escape their notice. In the Johns Hopkins Hospital he started, early, a "Journal Club" for the special purpose of keeping abreast of foreign publications. He never failed to give credit to the work of others. He taught us to seek and meet and correspond

with students of other lands. He urged us to travel and often put the means in our way, contributing generously from his own resources. He was completely free from local or national jealousy or prejudice. Wherever there lived, or had lived, men of great heart and fertile mind, there Osler was at home.

He loved to call himself a peripatetic. Twenty of his most active years he spent with us in the United States, where we felt that he was our own. There, as everywhere, he treasured and remembered his associates and his associations, and beyond the sacred memories in the hearts of men, we have, in the medical clinic at the Johns Hopkins University, a precious monument of his genius, and in the Tudor and Stuart Club a fragrant memorial of a fleeting figure of beauty and promise. But deep in his heart there was a love for and a loyalty to the land of his birth and the institution which had nourished his early efforts, that institution to which he had devoted his first years as a teacher; and beyond it all there was that deep, reverent, ineradicable love for the Old Home which is a vital part of more of us of common British ancestry than realize it or confess it. I fancied always that he would end his days in England. The Old Country was, after all, the home of his spirit. That the love of the land of his birth and the nursery of his expanding mind should call back his ashes and the most precious of his earthly accumulations was a beautiful and natural manifestation of that perfect loyalty in which he could not have failed.

In the wide world of today in which we wander afar, we have many homes; the home of our birth; the homes of our activities; the home of our spirit. And we have many loyalties. But strong as the ties may be which bind us to the homes of our activities, deep as our

loyalty may be to the beloved home of our spirit, it is to the home of our birth that the true loyalty generally leads us in the end.

It is not only his ashes that have come home. As I speak I hear the voice of the books. For books can speak. Listen to their voice:

“Men, men, grandchildren of them whose word we bear, you who have built this shrine:—Hearken to the word of the book: Shaped by the hands of mortal men who vanished from the light of day in the hour of our infancy, we are the bearers of their spirit through the centuries. On us depends their human immortality, that immortality which is recognized by men. But another message we bear, a message beyond that which is written, a message borne in our own substance, in our characters, in our garb, a message which tells of times and men and customs and history, an unwritten message expressed in language which is our own, our message.

“Though our history be short, our life is long compared to the life of man. But though we be the guardians of his mundane immortality, the life of the book which depends upon the children of men is uncertain, full of vicissitudes, and beset with danger and care. For man, whose message we bear, is short-lived and fickle, restless and forgetful, intolerant and cruel.

“Born of man, we have perished too often in flames kindled by the hands of the brothers and children of them whose creatures and servants we were, who have sought in fanatical hatred to destroy in us the seeds of that human immortality which we guard. Until but yesterday we spread man’s message in words which every scholar understood, in the language of scholars. But, almost in a day, the children of men, absorbed in worldly things, have forgotten the speech

which was once a common bond, and heedless and un-understanding, have consigned us too often to the cruellest of fates, oblivion, where on dusty and forgotten shelves, pierced and consumed by the silent and relentless *Anobium hirtum*, we have wasted in slow and fatal marasmus.

" 'Tis true that some among us have found refuge and tender care and regal garb, but all too commonly we have been carried far from home to pass our lives in exile among those who, blind to the written message, and deaf to the voice within us, respect but our years. Like princes in their jewelled robes, in all our ease and splendour, we are lonely.

" But in all times there have been those rare spirits who see and read and feel our message, who hear our voice, who love us for what we bear and for what we are; who find in us food for new and higher dreams and aspirations; whose loving and understanding hands add fresh and fecund thoughts to our pages; thoughts that emblazon and consecrate the past and illumine the future.

" For there are some men whose touch is as the touch of an enchanter, a touch which reveals and transmits the love of men and the understanding of men, the love of books and the understanding of books, reverence for men and reverence for books; in whose very ashes lives a spirit which to us is life and peace and home.

" Such a one was he whose ashes we guard. It is such as he that assure us that our labour has not been in vain. In such men is our renaissance.

" We hold his ashes in our embrace. His ashes are our heart. Men say that ashes are dead. The ashes of a great spirit never die! They are as the grateful soil that receives the seed in the fall. They are as the

snow that protects it and keeps it warm in winter. They are as the showers in the spring, and the sun in summer. In them lies the promise to the spirit of man of an ever-recurring harvest.

“His ashes are our heart. So long as they are our heart, so long shall our message live and work in the hearts of men. So long shall we live. Think not that these ashes are dead. The ashes of a great spirit are immortal!”

So speak these books. And so today we dedicate this shrine where they shall live, nourished by his ashes, and deliver to us and to our children their message and his.

V

THE MEDICAL EDUCATION OF JONES

BY

SMITH ¹

Once upon a time a young man—let us call him Jones—entered a school of medicine. He was a good enough sort of fellow, to whom medicine appealed from both its scientific and human relations. He was by nature what one might call a strict-constructionist. He had an inquisitive mind. He wanted to know the reason why; and he was not satisfied if he could not find out the reason why. In school he had been a good mathematician, and he was used to the exact methods of mathematics. He had lived in close association with lawyers. He was familiar with the analytical attitude of the legal mind. His cousin, a little older than he, with whom he had grown up as a brother, was a lawyer,

¹ These pages were first published anonymously in the Harvard Graduates' Magazine for March, 1927, and again in "Physician and Patient, etc.", edited by L. Eugene Emerson, 8°, Cambridge, Harvard University Press, 1929, from which they are reproduced by permission, with a few minor changes.

The author desires to state explicitly that while all the incidents relating to "Fowler," Guillaume l'Oiseleur, are true, "Jones" is a purely imaginary character.

The writer saw many things which Smith relates, and appears himself, under various names at different points in the narrative, but never as "Jones" who is a purely fanciful figure invented to set forth the influence which "Fowler" exercised on all of us.

The reader will perhaps forgive the repetition of several incidents recorded in preceding addresses. It has seemed wise to leave the text as it originally appeared.

W. S. T.

enthusiastically interested in his profession, and the medical student was fascinated with the accounts of some of the cases which were related to him. The human side of these stories appealed to him as well as the precise, inviolable rules of evidence from which deductions were made, those rules which excluded hearsay, opinion or conviction; which demanded the rejection of all excepting that to which the individual witness could testify. These exact rules of procedure appealed to his reason.

He had been brought up to love and trust his family doctor. Somehow or other he had come to regard his family doctor as more or less infallible. Unconsciously he had assumed that in medicine there were precise rules of procedure, of diagnosis, of treatment, similar to those in legal procedure. He had supposed that, if in medicine like careful, exact methods were followed, the way was clear. In a vague manner he had come to feel that a departure from the rules of medicine was as unpardonable as a departure from the rules of legal procedure; that misinterpretations were inexcusable.

His father, an able practitioner of law, had died some years before he had entered the school. His mother and his family, of a rather high-strung, nervous type, were in general cultivated people and well read. Despite this, their conversation was very largely about individuals. At the dinner table and about the open fire in the evenings, he was accustomed to hear and to take part in frequently recurring critical discussions and speculations as to the motives and acts of this, that, or the other man or woman, friend, acquaintance, or public figure. In general the family, though not intentionally unkind, were very free in expressing their opinions and their criticisms of the motives or behaviour of others. His father had been different. Naturally a

student and a scholar with a delightful humour and an unusual sense of the value of words, his conversation had had a peculiar charm. In his day individuals had been little discussed. But that was long ago. Little by little Jones had begun, rather sadly, to feel that, at least in public life, men were rarely sincere. He was often puzzled by the peculiarity and inexplicability of the actions of men, all the more because when, now and then, he was thrown into association with some of these people whose peculiarities he had heard discussed, they seemed to be rather decent fellows. But at home it was about individuals, their faults, their peculiarities, that the conversation turned.

In college and in the school of medicine his early studies of the fundamental sciences he had found most interesting. Even there, however, when he came to the study of pathological anatomy and such questions as the classification of tumours, he was a little annoyed by the lack of exact and definite distinctions. When again he began to approach the question of physical diagnosis, he was rather surprised by the difficulty in reaching conclusions; by the absence of rules by which to proceed and interpret; by the realization that so much depended on individual skill. And uneasily he began to appreciate that his family physician could hardly have been so infallible as he had fancied.

When he approached the applications of pharmacology, he was truly disconcerted by the lack of exact methods in practical therapeutics. He had approached medicine as a science, as he might have continued his studies of mathematics, and it had annoyed him and worried him to hear others say that medicine was not an "exact science." He had resented the use of the term, "The Medical Art." To speak of medicine as an "art" seemed to him to be a disparaging reflexion on

the profession that he had chosen; and now here were his instructors pursuing methods which were anything but exact.

He was a rather sensitive fellow, and among his teachers were men who seemed to him shallow; who didn't measure up to the standards of his ideals. This hurt him.

He did well. He obtained a good internship. He sought, so far as he could, to employ in his work the more accurate methods which he had learned in his earlier training, toward which he turned by nature. He had a good service in a well-conditioned hospital under two chiefs, both good men, who, outside of their practice, gave considerable time to the study of their material and to teaching. The hospital was an active institution, connected with a university, and teaching was carried on in wards and in the small clinical laboratory. During his internship he was himself in frequent association with students; this was good for him.

There were few visitors. A visiting physician who came to that hospital had a rather hard time. Unless he had a letter of introduction, he was not welcome. One of the annoyances to which Jones was subjected was the visits of occasional outsiders who interrupted him in his busy day. His chiefs were busy too, and the unintroduced visitor was soon made to feel that he was in the way and unwelcome.

More and more during his hospital service Jones was impressed with the smallness of the group of men in this country who really knew anything about medicine, and he began to feel that, except by a few men of the immediate circles surrounding the better schools and hospitals, the practice of medicine in America was deplorably bad. The stories that his patients told

him of the opinions and the diagnoses of their physicians outside surprised and distressed him.

The commercial attitude of some of his instructors shocked him. There was Dr. C. whose charges were from all appearances based entirely on the supposed financial condition of his patients. Had not his friend Greene told him how he had warned Dr. C. that a certain patient was well-to-do, which C. had not appreciated; and then, after C. had arranged all the conditions of the operation, had he not gone back to the patient and told him that, on reconsideration, the responsibilities associated with the operation were so great that he should have to change his charges—C. who was regarded in the community as a saint!

From other friends he had heard of their discouraging experiences on entering practice. Everybody was for himself; you could never leave your patients for a needed vacation. You would lose your practice, not to speak of your reputation.

While he was a good deal impressed by the inexactness of medicine and the difficulty in reaching that certainty which had seemed to him so necessary in any serious procedure, here were these "outside" men with indifferent training, enouncing positive opinions, nay assertions, as to all manner of things. This disturbed him; they could not be honest. "Honest!" said some of his friends in practice—"Honest! You never saw such a set of sharks as the men you meet with 'outside.' Ideals? There are none. Don't you ever leave this town. You've no idea how different the spirit is everywhere else."

After his internship, interested but in some ways rather discouraged, he spent a year in the laboratory of Dr. Y. in order that he might strengthen his foundations in one of the branches of natural science which

was beginning to be called upon more and more in the effort to discover the nature of a variety of manifestations of disease. Here was a man working on fundamental problems. And what a fascinating man he was! Master of his own time, removed from the cares of the world and from those distracting human relations which take from the practitioner most possibilities of continued thought or study, his active mind was given wholly to the investigation of special problems by methods of scientific accuracy, and to broad and interesting speculation as to the relations of these problems to life and the universe. The year passed too fast. Of medicine he saw little or nothing. But as the months went by, more and more the thought of the pettiness, the indefiniteness, the unsoundness of the general practice of medicine weighed upon him. How could one practise medicine conscientiously without applying throughout the accurate scientific methods of the laboratory? How could one honestly treat his fellow when obliged to grope in the dark as most men seemed to be groping? And what could one do in practice if one had to treat with such men as the majority of doctors seemed to be? True it was that save for occasional visitors and his instructors, he had met few practitioners of medicine. But he had gone one day with a friend to the meeting of one of the recognized medical societies of the city, and there he had heard a discussion on "dropsy." Men who were caring for human beings had talked in a way that made him shiver. Had he not heard one man describe the transformation of a case of "dropsy of the chest" to a "dropsy of the abdomen" on change of position during which the speaker had heard the fluid "trickling through the diaphragm and dropping into the belly"?

He had heard some learned discussions at one special society. With regard to other associations of physicians he had heard little that was good. The American Medical Association? That, he was told, was run by a "Chicago ring." On one occasion he had met one of the officials of the Association. This man seemed to him "Western." He had never been in the West, but he fancied that these good fellows who hadn't had all the advantages that had come to him, had an annoying tendency to generalize and act hastily. And then—they didn't have the same ideals.

But he had to make his living. Happily, at this moment, an opportunity was unexpectedly opened to him to spend a year of post-graduate study at the Skipwith Hospital in Cecil in the Clinic of Dr. Fowler, who had, for some years, directed the medical service. This chance he gladly accepted, but he left the laboratory regretfully, depressed and despondent. It would have been a joy for him to be able to give his life to studies such as those in which he had been engaged; but that was out of the question.

At Cecil, Fowler soon found a position for him in his service—one which not only afforded him an opportunity to make daily visits in the general wards, but gave him some responsibilities with private patients and made him a member of the hospital family. It was, as it were, a second internship.

It was not long before Jones fell under the spell of Fowler whose personal brilliancy and charm were irresistible. What struck him first was Fowler's simplicity. From the beginning to the end of his daily work, with patients, with students, in laboratory, in lecture room, in public, wherever he was, he was always the same figure. Never a pompous word or gesture or attitude; never an attempt to be flowery in speech. Everywhere

he was his simple, natural self. Occupied without interruption from morning till night, he never seemed to hurry, but he wasted not a minute of time. With a swinging step, thoughtfully stroking his long dark moustache, he moved from ward to ward surrounded by house officers and visitors. There was a word for all, but with never an interruption of his routine. He did not seem to hurry, but one could not stop him or hold him. He was everybody's friend, and the kindly, frank glow of those deep brown eyes with the oft-recurring lightning-like twinkle of humour was indescribably winning. On entering the ward, a greeting to the nurse, tinged perhaps with humorous raillery which left a blush, half of embarrassment, half of pleasure; a quaint remark or a cheerful word at each bed; some clever but never unkind, epigrammatic comment on the patient's appearance or history which caused an explosion of laughter in which all joined. In the private rooms, it was a continuous sequence of gay jest, droll and insistent discussion, discriminating silence, quiet cheer; the patient, generally stimulated to laughter or a mixture of perplexed vexation and amusement in which the latter always predominated, taking him out of himself and the troubles of the moment. He never left a room without leaving behind him renewed hope. There was that in his eyes which commanded affection. He said little. He never moralized or preached. But many a poor wretch felt the momentary touch of his hand and looked into those eyes, and was at peace.

He had a rare power of gaining the confidence and eliciting the confidences of his patients. And when the nervous invalid had once spoken, he had a consummate skill in preventing that repetition of complaints through which, so often, new fuel is added to the fire.

At the outset he gave the sufferer one or more long and patient interviews. Thereafter the fashion in which he frustrated all attempts at repetition was masterly. Day after day the patient would hoard his doubts and his questions. The list, carefully prepared, would be held ready for the next visit. The day of the visit came. The door opened. Fowler entered with a smile and some little, quiet comment so clever, so disconcerting, so funny, so amusingly scandalous perhaps, that in a minute a lively or earnest conversation was under way; and then, usually in a burst of gaiety, he was gone. In the evening when the assistant made his rounds, the patient, with a wrinkled forehead, would complain that he had forgotten to ask Dr. Fowler those questions that were so important. And so it would go on day after day, week after week, until those vital questions had vanished from the consciousness of the refreshed and regenerated convalescent.

He was imperturbable. His self-control was perfect. His gaiety was irrepressible. Excepting when actually at his work, he was rarely serious. He saw the humorous side of everything, and his day's journey sparkled with airy comment made with a peculiar unexpectedness and drollery which were all his own. One day one of his assistants brought him a stupid little boy from the out-patient department who had a dimpling in his neck, clearly the remains of gill-clefts. Fowler was just leaving the ward. He put his hand on the boy's head and said: "Ah, yes! ah, yes! How batrachian! I—I say, my boy, do you ever feel as if you wanted to take a swim?"

Again, in consultation with Dr. R., he saw an entertaining and amusing old alcoholic wreck. After the consultation there were a few minutes of gay banter-

ing, and as he was leaving the room, in the midst of general laughter, the patient cried out: "Hold on, hold on, Dr. Fowler! You haven't told me a word about myself or what I should do!" Fowler tiptoed across the room, picked up the lapel of the patient's coat between two fingers, pointed to the button-hole, and, in a stage whisper: "Put a little blue ribbon in there." That was all.

In the private ward was a young girl with a singularly dull, expressionless, moon-like, bovine countenance. Fowler, forthwith, christened her the "Manatee or sea cow," an appellation which filled him with joy. He never knew her other than as the "Manatee," and in after years at unexpected moments, with a chuckle, he would turn to his old assistant with the exclamation: "Do you remember the 'Manatee'?"

Wherever he was, the most unexpected and often mysterious little practical jokes were played upon his friends. Hananias was a well-known medical romancer. In the middle of the long program of a several days' medical meeting the following number appeared: "On the Catheterization of the Ductus Communis Choledochus, by William B. Hananias."

Once in his early years at Skipwith, before his name had become well known, Fowler was asked by a colleague to look over one of his patients before operation. The patient was a rather amusing, bright, somewhat airy woman. As Fowler entered with his assistant Tanner, he was greeted by a cordial: "Is this Dr. Fowler?" "No," said Fowler, "this is Dr. Tanner. This," pointing to the assistant, "is Dr. Fowler." The patient recognized immediately that "Tanner" was the Chief, and at the end of the examination, looking up rather gaily, said: "Now, Dr. Tanner, what is the matter with me?" With a sweep of the arms Fowler replied,

"Madam, I have not the least idea in the world!" The patient, laughing, exclaimed: "What, the great Dr. Tanner doesn't know what is the matter with me?" Whereupon everybody burst into a gale of laughter, and with a few gay words Fowler and his cortège left the room. It was several days before the patient discovered that "Tanner" was Fowler. Such things were constantly happening.

James and Tanner lived next door to Fowler. One day Tanner was on his way to Tremont. As he came downstairs he was surprised to find by the front door several packages addressed to James and to him. He investigated; there were two cases of claret and several boxes of good cigars and cigarettes; but there was no card; no letter. They appeared to have come from the Cecil Club. He was mystified, but on the train he suddenly remembered a conversation of several hours before. As he was leaving his chief's house, Fowler had said to him, "By the way, Tanner, I saw an old friend of yours at the Cecil Club today. I can't remember his name. An old physician from Tremont—a dear old friend of yours with a long, white beard." Tanner was at a loss. He could remember no such man. "Oh," said Fowler with gentle impatience, "of course you remember him. He spoke of you with particular warmth, and asked me not to forget to give you his love." From Tremont Tanner wrote a line to Fowler to express the hope that the shadow of the white beard would never grow less.

Complications, seemingly insurmountable to others, were dismissed with a wave of the hand, a laugh and a word, a Parthian arrow, which usually turned the apparent surrender into an ultimate victory. He never

entered a disagreeable controversy unless it was necessary. No one knew so well as he when it was actually necessary. This continual gaiety, not to say levity, was at times trying to serious associates who were endeavouring to pin him down. Fowler seemed sometimes to dodge the issue or to give way unnecessarily in order to escape an unpleasant moment. But he knew best, and in the end he generally had his way. His gaiety was a coat of armour which shed bores as a coat of mail shed arrows.

Once when a really serious controversy with a committee of ladies seemed imminent, he gave in—"as usual," said his impatient assistants—but with a laugh and a sly remark which took root in the minds of his opponents. In due time they came back to him with his own proposition. During the discussion, after an annoying interview, he said to his assistant: "Tanner, Sister Maude is more sensitive than sensible. The only way to get along with a woman is never to treat her seriously." And he never did—outwardly.

But when it really was necessary to take an unpleasant stand, he could do it with a vigour which was surprising to those who were familiar with his usual gentleness.

Rarely, very rarely, did his indignation get the better of him, but one day, in a private room, a peculiarly silly woman began to talk to him about the beauty of his eyes. Suddenly the eyes flashed—"Woman, don't you dare to talk to me like that!"—and he left the room.

Fowler always saw to it that his assistants, apart from their routine work, should interest themselves in some special subject in laboratory or ward. The results of their work were sometimes used in his own publications, sometimes published as special articles by the man himself. But wherever or however the re-

sults of these researches or analyses appeared, the author was always given full credit. Fowler never failed to mention the name of the younger man whose labours had contributed in the simplest way toward the accumulation of material for any of his publications.

His assistants appreciated his thoughtfulness and loved him for it, for they well knew how common it was in other clinics for the professor to make use of the work of his assistants with little or no recognition.

Before many months had gone by Fowler asked Jones to present an unusual case before the medical society and later to record the observation in a short note in the "Gazette." He went over the material when it was ready and gave wise advice, particularly as to the elimination of several unnecessary passages. As Jones left the cozy study from the walls of which Linacre, Harvey and Sydenham and Cardinal Newman looked down upon him, Fowler called out: "Oh, by the way, Jones, don't forget to put in a word of recognition of the nurse."

In his great work that went through so many editions, he never failed to mention, wherever possible, even the most modest of his assistants; and to this day, after nearly forty years, the name of the nurse who copied for him the temperature curve illustrative of typhoid fever, is recorded on the chart.

In his simplicity and directness he was sometimes dramatic. Wordley, the distinguished surgeon, when a young man, had a country office at Westerly where he spent a day each week. Once at luncheon a local physician said to him: "Fowler is coming down today to see Mr. V. Should you like to come with us?" Wordley, naturally, was delighted. Together they met Fowler at the station and accompanied him to the house.

V. was a leading citizen, a pillar of society, foremost in good works, an ardent prohibitionist. He was very ill, comatose.

At the end of the examination, sitting by the bedside, Fowler tapped the patient lightly over his liver, shook his head, and, looking up at the brother and the doctor, said simply: "Too much alcohol!"

"Oh, Dr. Fowler," replied the brother, "you've made a serious mistake there! I doubt if my brother ever took a drink in his life."

"Sure?" replied Fowler.

"Why, I'm sure as I am of anything."

"Where's his office?"

"We've offices in the same room. Day in and day out we've been together for years."

"Where is his office?"

"Close by."

"Let's go and see his office."

They went to the office.

"Have you the keys to this?" said Fowler, pointing to V.'s large desk.

"I'll get them."

They opened it. Nearly every drawer and compartment contained empty or full bottles of whiskey.

V. had suffered from insomnia, and nightly for years he had risen from bed and gone "to work" in his office where he had drunk from a pint to a quart of whiskey. He had warned his wife not to mention his troubles and habits to others. They "might suspect him of something." She, loyal soul, had never suspected.

His valued friend Forest once called him in consultation to see Mrs. Q., a lovely woman with grave cerebral symptoms the nature of which were but too clear. Q. was a dissipated fellow. They left the room. Fowler put his coat on and started to open the door when

Forest put his hand on his arm saying: "Wait a minute, Dr. Fowler, you have said nothing. Let us have a word together." Fowler shrugged his shoulders: "What is there to say?" "Well," said Forest, "What shall we do?" Fowler took several quick steps across the reception room toward the clock on the mantel piece. With a gesture as if turning the hands backward, he said: "Five ten fifteen years—and strangle the husband!"

Those medical agents the action of which was well known were used when necessary, and judiciously; but in Fowler's wards there was little experimentation with new and untried products, and in the main it was upon the simpler physical and mental agents that he depended. Rest, massage, fresh air, a proper diet, good nursing, and, above all, the amazing mental stimulation that this man brought. Early in his association with Fowler, Jones was struck by the discriminating art with which this powerful therapeutic arm was employed.

Fowler was human and had his difficulties in diagnosis, which he often expressed, although his clear vision and rapid, lucid reasoning led him generally to the kernel of the situation with remarkable speed and sureness. Somehow, with this simple man who was never pompous, who made no pretense to superior knowledge, who was always ready to confess his ignorance or his doubt, who swung in and out of the hospital with a song—in the presence of this unpretentious, informal man who treated him as a companion rather than as a student or assistant, Jones lost for the first time that lurking disappointment in the inexactness and incompleteness of medicine which had so discouraged him. This man in a way inspired the feeling that he had had for his old family physician. He knew

Fowler was not infallible, but the sting of fallibility was gone; he no longer felt it. More than that, he would not have had him infallible; had he been infallible he would not have been Fowler.

And then there was another new and interesting experience which came to Jones at Cecil. In the hospital of his first internship the visitor had been rare and unwelcome, and the post-graduate student unknown. Here Fowler was always followed by a group of post-graduate students and visitors, for the most part country doctors, and he seemed to enjoy it. Sometimes these men were rather crude and rural, not to say rustic, in their appearance, but Fowler treated them with cordial informality almost as intimates. Frequently one was carried to luncheon or dinner. Almost daily one or more came to his house for tea, and when Fowler spoke of them it was always with regard or appreciation, sometimes warm. Jones was astonished to find so many of these visitors remarkably agreeable and intelligent men.

Fowler's wife was his perfect complement. Handsome, strong, vigorous, bright, understanding, she was an ideal companion and the friend of his friends. She filled every gap in his life. And when, in the midst of a busy day, he appeared with some new and often strange figure for luncheon, it was she who entertained the guest when her husband plunged into the activities of his consulting room.

Once, with laughter and mock despair, she said to Tanner: "I've had a dreadful day! Dr. Fowler brought in a nice, old, white-haired, country doctor for luncheon. He was nearly stone-deaf. Every time he turned his head to speak to me, Dr. Fowler whistled or sang or drummed on the table or told the most dreadful stories you can imagine. Fancy my position! And

then, after about twenty minutes, he ran away and left the old doctor with me!"

One day Jones started to comment in a light vein on something which a rather amusing figure, an old physician from a distant point, had said or done. Fowler changed the subject abruptly. Once again, when he said something about the commercial attitude of Dr. C., Fowler again changed the subject. In his presence gossip, or criticism of a colleague was impossible.

Fowler was a quickening spirit. Wherever he passed the world smiled. Listen to this incident told by one of his dear friends—a wonderful picture of him as he appeared just after his marriage.

"In the deepening twilight of a late autumn afternoon nothing could look harder nor more uncompromising than Jefferson Place. A poor woman, utterly worn, carrying an ill child, laboured up the square, and then suddenly sat down with a sigh on the stone coping bordering the grass slope. The child's heavy head turned restlessly about on the woman's bosom; her whole body sagged over the baby to keep him from falling. About them was the bodily fatigue and mental inertia of the hopelessly poor.

"The square was almost empty—a newsboy or two, a stray cat, and a young woman wondering what she should do.

"Suddenly the scene changed. From being hard and sordid, it became warm and human and radiant. Apparently the gayest of men came up the square, humming to himself, and adroitly twirling his cane. He wore a silk hat and a dress overcoat, his eye glanced here and there, amusedly at the ugly fountain, reverently at a little fleecy half moon, and then fell upon the woman and child. Instantly the twirling cane made a playful dive at the child. Then cane and gloves were

tossed aside, and he tenderly took the child into his arms. A few words only to the woman, a gentle placing of the child back in her lap, a whistle to a newsboy, with an injunction to get a cab 'quicker than he could'—spurring him on with a wink of his eye and a jingle of coins in his pocket—and in a perfectly incredibly short time he had the child and woman in the cab.

" 'Now then,' he said to the driver, 'go to Skipwith Hospital, front entrance. And here'—he dived into his pocket, found a card, wrote something on it, gave it to the woman, laughingly saying 'I have told them the boy is Mrs. Fowler's youngest. That will make them take care of him until I see him tomorrow. And here'—he took out a five-dollar note—'take this, go home after you leave the boy, and make yourself just as drunk as you can with it.'

"He patted her on the knee, pinched the child's cheek, paid the driver, slammed the door, and went whistling on his way.

"The witness of this episode gasped. She caught her breath with the exhilaration that comes when rapid action gives the impression of immense leisure. To her, as to most people, life has brought many disasters; but when almost beaten to the ground, she remembers the woman and the child and the coming of a great physician, and listens for his step."

He was everybody's friend. He never said an unkind word of another man, especially of a colleague, behind his back. And in his presence no unkind word could be spoken. Wherever he went, peace accompanied him. Sometimes it was almost annoying, the cordial way in which he greeted and joked with Hananias, the medical romancer whose profound researches composed at his desk deceived many and so annoyed those who understood. But then, in Fowler's presence, Hananias became inoffensive. Before Fowler his pompous man-

ner and arrogant assertions disappeared. He was quiet and inoffensive, and talked sometimes interestingly of things that he understood, for in some ways Hananias was rather well read and not unintelligent.

The medical community of Cecil was not wholly harmonious. There were two schools of medicine; the old with a distinguished past and a faculty which contained many worthy men, the new with a large endowment and great prestige, to which Fowler and other members of the faculty had been called from distant points. It was not an easy situation, but Fowler was everyone's friend. At meetings of state and city societies Fowler was always on hand. More than this, he was insistent that his associates and assistants should also attend and take their part in these meetings, and Jones began to form associations with a number of men of the other school as well as with practitioners who were its graduates. Before long he began to appreciate how large a body of good practitioners, of men with high ideals and sound common sense, there was in the community. Fowler was everybody's friend. Even Dr. H., the bitterest enemy of the new institution, who seemed to suspect everyone else of ulterior motives, was Fowler's intimate. But in general the profession and the town in its allegiance remained divided—save in the presence of Fowler. Where Fowler moved there was peace.

What was the secret of it all? Little by little a simple but profound truth began to dawn on Jones's mind. So long as you have never uttered an evil word of another, so long you can meet him cordially and openly, with a clear eye; so long you can live with him and work with him in peace; so long you can profit by his experience or accomplishment or judgement; so long you can exercise on him such influence for good as you

may be able to command. Let but your ear hear the word of your mouth which disparages your colleague and peace is gone. You can no longer meet him with the same clear eye; you cannot take his hand without remembering the words you have said behind his back; you are ill at ease; you are no longer his friend; free communion is impossible. The very sound of your own voice has opened the door to further suspicion and doubt, has estranged you and made you an enemy of one you would have helped. And then was it for you to have passed judgement? Fowler never spoke an evil word of a colleague and could look every man clearly in the eye; and every man was better for his association with Fowler.

And then Jones began to realize how with close association in medical societies the differences between men of different schools disappeared. There were no differences. Why had they distrusted one another? Purely from the lack of association. Isolation and separation had opened the door to all sorts of doubts and suspicions.

But the stories which his patients had told him of their doctors still disturbed him. What he had seen this year of country doctors was hardly in accordance with that which his patients and his friends had told him; and yet they were surprising and definite stories, those which his friends had told him. He had had, it is true, one very interesting experience. In connexion with some studies that he had been carrying out, Fowler sent him for a day or two to that part of the country where the particular disease prevailed, a distant rural point, with a letter to the local doctor. He had expected to find rather a crude character; he had found a physician of good training and experience, a scholar among his books, and a gentleman and a high-minded man. But he still had a rather poor opinion of the country doctor as such.

In June, Fowler offered Jones the opportunity to stay for another year and sent him away for a month's vacation. One day, on a cushion of green moss under the spruces and firs and white birches of the northern woods, Jones, with rod and creel by his side, lay on his back looking upward at the blue sky. The little white flowers of the bunch berry and fresh leafy ferns bordered the gray rocks that lay along the banks of the mountain stream. It was still, save for the music of the hermit thrush and the clear notes of the white-throated sparrow as they echoed through the woods. Hospitals and wards and medicine were far away; but now, as he lay gazing dreamily upwards through the leaves, his mind wandered back over the past months. A year before when he had left the laboratory he was wretched; now he was care-free and happy. What had happened? A year before he had been depressed by the thought of what was before him and full of doubt and unhappiness at the realization that medicine was not an exact science, the practice of which could be governed by mathematical rules; full of suspicion of the motives and the character of the average practitioner; full of longing to give his life to the pursuit of definite clean-cut scientific problems in the laboratory. And now he was at peace. Those annoying reflexions which had circled around the words "science" and "art," which had so disturbed him then, how small, how almost comical they seemed now! And medicine, what a wonderful opportunity it offered! Based on the fundamental sciences for the aid of which it was reaching out more and more every day, what a fascinating problem the art of medicine! What curious misapprehensions had been his! How little had he grasped the significance of the human side of medicine! What a childish, ridiculous thought that medicine could be

practised by rigid rules; that the day was near when we could seek the answer to every diagnostic problem by a chemical reaction; that we could treat our patients by rule of thumb! What an absurd fancy that all the physiological and chemical and physical knowledge in the world could give one the art of Fowler without laborious study and practice at the bedside and in association with human beings. And what an immense reward to gain in the end—something of the deftness of touch, the keenness of vision, the sureness of judgement which only experience can give!

One thought sobered him. There was still such an immense need for more fundamental training, and more basic knowledge, and more men in medicine who had a scientific point of view. But the art—and he had resented the word!—how fascinating it was!

He still regretted the quiet life of the laboratory, the exact methods and the special problems to which he might devote his whole time; but he had to earn his living, and now, with the new problem before him of the acquisition of the medical art, he was resigned if not contented.

The second year was a repetition of the first. Fowler's actions were a never-ending source of interest. He had insisted that Jones join the American Medical Association. His previous instructors had not been interested in the A.M.A., devoting themselves wholly to special organizations. Fowler not only attended the meetings, but took Jones with him to a gathering in a large Western city. There he presented him to most of the men of distinction and took care especially that he should meet X., who had just entered upon important duties in the Association and was making efforts to regenerate it and build it up. That trip was a revelation to Jones. The directness and sim-

plicity and enthusiasm of many of the men that he met was an inspiration. One thing especially set him thinking. What had he meant when he had called a man "Western"? Somehow, the thought that they hadn't had the advantages that he had had. And yet among others he had met a man old enough to be his father, born in the West, the graduate of a Western university, not only an able physician, but a classical scholar with a beautiful library, a more cultivated man, by and large, than he was ever likely to be himself. It mortified him to think that, in his ignorance, he had been assuming a condescending air toward his superiors.

Those Western men and some of those very men whom he had heard talked of as the "Chicago Clique" had a vigour and strength, a freshness, a hopefulness and a cleanness that stimulated him greatly. There was something big and healthy and frank and moving about it all. This, after all, was America—and he was proud of his country.

He was impressed by the faces of the members of the Association, earnest, serious, fine-looking men for the most part. It was charming to see the way in which Fowler met and fraternized with all. Jones began to appreciate more than ever the significance of Fowler's insistence on the value of association with one's colleagues.

The year sped by rapidly. Christmas Jones spent at home. It was good to see the family again, but he was annoyed by certain unpleasant tendencies that seemed to have developed. His people appeared to talk only of individuals and their errors. He was besieged with questions as to the local physicians. Had he heard what Dr. X. had done? What could have induced him to do such an extraordinary thing? Dr. Y. had told

them that it was an entirely indefensible proceeding; and so on. And when he smiled and replied: "Dear B., I am sure I have not the least idea. I only know that if X. did this, he had a good reason; and of one thing I am perfectly sure that if X. did do this, his motives were honourable and high, for he is incapable of acting other than honourably"—he was accused of trying to lecture his family in a superior moral tone.

But his cousin the lawyer said one thing that pleased him: "Harry, do you know I was much interested in the reprint you sent me. I did not know that medical men gave accurate references to the authorities on which they based their statements. That really has given me more respect for you physicians."

The vacation was short, but much as he loved his family, he was not sorry to leave. An atmosphere of discussion and criticism of others with which he was quite unfamiliar seemed to permeate the family circle. It pained him and made him uneasy.

At the end of his second year he left to start in practice for himself in Warwick, a city of some 150,000 inhabitants. Here Dr. Thompson, through his acquaintance with S., one of Fowler's assistants, had offered him an opportunity to practise in connexion with his clinic. Warwick, like Cecil, was divided medically. There were two schools and a recognized leader of each school, and the rivalry ran almost to open hostilities. The leaders barely spoke to one another. There were constant rather angry controversies between the two groups and their patients. One of the Cecil graduates had gone to Warwick some years before, an able fellow, a man of apparent promise. He was probably the best-qualified man in his particular line in Warwick. But after a few years he had left, confessing to friends that the atmosphere of constant rivalry and jealousy

was more than he could endure. In reality, he had had small success. He had made few friends. He had not profited by the example of Fowler. He had taken himself too seriously. He had somehow felt that a proper regard for his training and his powers had not been shown. His colleagues had not been slow to detect his high opinion of himself.

Before Jones left he dined one evening with Smith, a plodding fellow, an assistant of Fowler. They talked of many things, but mainly of Fowler and what he had meant to them both. The older man said to him: "There is need in Warwick for just such a man as you. There is a good body of medical men at Warwick and, in general, they are unusually nice fellows. If you remember Fowler's example and above all if you can remember that they are decent fellows, if you can forget yourself and remember only your profession and your patients; if you can, as Fowler does, keep your mouth shut, take an active part in the medical societies, remember how little you know and how much you have to learn; above all, if you keep an ice bag on your head and don't take yourself too seriously, you'll make friends and succeed."

Within a month after Jones went to Warwick, he was invited to speak at a medical society which met in a country district. It was the first time he had ever met a large body of country practitioners. The meeting lasted three days. To Jones it was a revelation. He found himself among an earnest, eager, clear-eyed set of men. Many had had a rather slim early training, but as he talked with individuals he was impressed by their common sense, their intelligence, their openness, their genuine devotion to their profession. And he came back with the conviction that grew stronger with the years, that the average country doctor was a far

better man than the average city doctor. "Of course," he said to himself, "he should be. Some men in the city have unusual advantages. Others perhaps excel in special lines; but can anything better develop the strength and character and sound judgement of a man than the responsibilities which the conscientious country doctor must bear? In the city help is always near: in the country men must help themselves."

The experience which impressed him most was a talk with Dr. H., a manly, clean-looking fellow who sought him and asked if he remembered Mrs. R., whom he had sent to the Skipwith Hospital two years before. Now Mrs. R. he remembered very well. The case had seemed to him a most serious example of neglect by a country doctor who must have been a deplorably ignorant or conscienceless man. The patient had not blamed her doctor, but had told the story of her illness, of what she had been told, and what had been done. The two men sat down and talked it over. When they parted, Jones realized that this man who, for two years, had been to him a painful example of what was worst in medicine, was an unusually fine fellow, who had treated his patient with intelligence; who had sent her to the hospital for good reasons, wisely and at the right time; who had thoroughly appreciated the situation, and had been directly responsible for the happy result which had followed. How had he so misjudged this man? It was simple enough; he had never appreciated how impossible it often is to get at the truth of any story that passes through a third person. How many other men had he misjudged in like manner? What a confirmation of Fowler's wisdom! How vitally important it is to play the game together; to know your colleague and work with him.

Jones succeeded; he held his tongue, he remembered and sought, as best he could, to follow the example of Fowler. He made few enemies and many friends. In the midst of discord he lived in peace. He observed the improvement of conditions in his own city; he saw the American Medical Association grow and exercise its influence for good in bringing together and unifying the profession. Surprising changes had occurred in his own community. Through the local branches of the American Medical Association and many special societies which had arisen, medical men in Warwick as elsewhere had been drawn together more closely. Improvements in methods of transportation had brought the city and country nearer together, and the relations between physicians in city and state were far more cordial than they used to be—simply because the doctors knew one another.

As he came to know men as the conscientious practitioner must know men, the misanthropic doubts of his earlier years began to clear away. As time went on, it was not the selfishness and pettiness and ingratitude of the world that impressed him. It was rather the kernel of sincerity and idealism and beauty that lay hidden in the majority of human beings, curiously concealed, often, by the forbidding armour of atavistic fear or suspicion or by the scowl of naïve self-consciousness, but ready in the emergency to manifest itself in acts of love and self-abnegation and heroism. The world was a better world than he had fancied.

Twenty-five years passed by. Great changes had taken place in medicine. Through the introduction of procedures diagnostic and therapeutic, based on the application of the fundamental sciences, in particular chemistry and physics, the importance of which Jones

had wisely foreseen as a student, remarkable advances had been made in the science and art of medicine. Clinical departments in many schools were beginning to be respectably endowed. The opportunities for post-graduate study were as good at home as abroad. Clinical services which, in his day, had had but a single laboratory equipped only for routine work, now had their own divisions especially equipped for physiological, biological and chemical research. An attempt was being made in the better medical clinics not only to deliver the director by a more or less adequate salary, from that financial anxiety which so interferes with the work of the teacher and the investigator, but also to offer to younger men those opportunities for which he had so longed—opportunities to acquire experience and pursue research in the bosom of the clinic as salaried assistants and associates.

Researches in no way inferior to those carried on in the laboratories of the fundamental sciences were being pursued by members of the clinical staff.

One thing he regretted to observe—the apparent lack of appreciation by some who were especially striving to further higher medical education, of that which his experience with Fowler had taught him so clearly—namely, that a sound basis in the fundamental sciences, however desirable and necessary for him who would be a scholarly physician, was in no way a *short cut* to that experience, practical and human, which always has been and always will be necessary to make a good diagnostician, a good doctor, a good clinical teacher; that no amount of learning can take the place of long, daily association with sick men and women, the constant practice of diagnostic methods, critical observation of therapeutic measures with living human beings, and a personal familiarity with the anatomical changes

of disease gained by following one's patients to the necropsy table. Some seemed to fancy that clinical aptitude and authority could be gained, by a man with good fundamental basis, in a very few years. That was a sad misconception. He had seen some rather pathetic examples of good fellows who had spent too many years away from ward and patient and had discovered too late their error. Not that this disturbed him greatly; the pendulum never stops at the end of its swing; but he hated to see enthusiasm for a good cause hitch its wagon to a pendulum.

Twenty-five years after he had left the hospital he spent a few days at Cecil for the first time in many years. Fowler was dead. The two medical schools remained, each doing its special work. But to his surprise the jealousy and unfriendliness had gone. He found men of one school teaching at the other, sometimes in both schools at the same time; he found students of one school seeking special courses under a noted man at the other. And the town was no longer divided, as it had been before, into separate groups. Incidentally he met a peculiarly attractive young fellow who was doing notable work at the medical clinic at Skipwith. There was something familiar about his face. Who was he? He was the son of Dr. H., who, in his day, would have cut off his hand rather than enter that hospital. It was Fowler, after all, who had done this; his example had taught a generation of students tolerance and human charity.

The night before he left he dined with two internes who were about to enter into practice. He talked of Fowler, of his appearance, his charm, his brilliance, his wisdom, his skill, his learning, of what he owed him, and of what he had learned from him.

“Fowler,” said Jones, “never preached and rarely offered advice unasked. What we learned from him was from the example that he set. He taught us by his example the dignity of medicine as a profession. We are a self-conscious lot, we English-speaking people, and we, at least the better of us, despite the rude and vulgar bragging of our newspapers, are embarrassed by praise. We don’t like to hear people in our presence sing the praises of medicine as a profession and laud the doctor as a self-sacrificing saint. We know it isn’t true. But nevertheless we who saw him realized the beauty and dignity of the art of medicine, and what it does for them who give themselves to it earnestly and with a whole heart. No man can lead the life of a serious practitioner and meet his fellows as does the doctor without becoming a better man. Fowler’s acts spoke to us far louder and clearer than words. Here are some of the things they said:

“ ‘Respect your profession and your colleagues. Hold your tongue!

“ ‘Do not allow yourself to laugh lightly and to jest on medical subjects in the presence of laymen. You would not speak thus of your mother. Hold your tongue!

“ ‘Do not allow yourself to enter into controversies on medical subjects with un-understanding people; it is useless and futile and will often deliver you and your cause into the hands of your opponents.

“ ‘ “Every man,” says Sir Thomas Browne, “is not a proper Champion for Truth, nor fit to take up the Gantlet in the cause of Veritie: Many from an ignorance of these Maximes, and an inconsiderate Zeale unto Truth, have too rashly charged the troopes of error, and remaine as Trophees unto the Enemies of Truth; a Man may be in as just possession of Truth as

of a City, and yet be forced to surrender; 'tis therefore far better to enjoy her with peace, than to hazzard her on a battel;" ¹ Hold your tongue!

" 'Never speak ill of a colleague. If he seem to you to have done wrong, if you disapprove of his actions, show it by avoiding him if you will, but hold your tongue! Nine times out of ten you will find there are explanations for his action of which you know nothing. If you speak, you become his enemy. You can no more associate with him and remain an honest man. Is it worth while?

" 'Respect your colleague. Close your ears. Do not allow others to speak ill of your colleague in your presence. Generally they are mistaken. Remember that most doctors are honest men and decent fellows, even if you don't understand them. Hold your tongue!

" 'There is nothing that poisons the mind like the spoken and repeated word. The reiterated word, be it true or false, becomes ere long a conviction, alike to him who speaks it and to him who listens.

" 'Beware the power of the spoken and repeated word! The Christian Scientists know it. The German General Staff knew it; it was and is the whole story of their propaganda at home and abroad. An assertion, an accusation, a suspicion, repeated and reiterated, soon becomes a conviction. Hold your tongue!

" 'Idle gossip, careless criticism may injure your neighbour; it always poisons you.

" 'Be simple. Be yourself. Don't "pronounce." In the newspapers most doctors "pronounce," which means that too many of us come to deceive ourselves and believe in our own omniscience. Omniscience may not be a crime; it is a serious foible.

¹ Sir Thomas Browne, *Religio Medici*, Sec. vi.

“ ‘Remember how little you know. Don’t be afraid to say you don’t know. Don’t lay claim to superior knowledge.

“ ‘Don’t judge your neighbour. Too often the ill you think of him is but the reflexion of your own faults. “My son,” says Marco to Guido, “each man sees in another individual that which he sees in himself; and each one comprehends that other individual in a different fashion, and precisely from the level of his own moral nature.”¹

“ ‘Don’t take yourself too seriously. Don’t carry a chip on your shoulder. There is nothing so pathetic or so funny as a doctor with a chip on his shoulder. Too often it turns out to be a millstone. You are dealing with ill, difficult, often unreasonable people; but they are free agents. You have no divine right to prescribe to them a code of ethics. Their actions may disappoint you. They may pain you. Never let them offend you. A wise man has said, “A cad is one who when he is not giving offense, is taking it, and . . . a properly behaved person never feels insulted because he never need.”² If you are capable of taking offense and feeling insulted at what your patients do, there is something the matter with you. You have lowered yourself to the level of your unreasonable patient. If a patient wants to leave you and go to your colleague, he has a perfect right to do so. Help him and encourage him to do it if need be. If he has lost faith in you or doesn’t like you, you can’t help him. You have no God-given proprietorship in your patients. They are their own masters. Send them on their way with your blessing; it’s the surest way to get them back.

¹ Maeterlinck: *Monna Vanna*, Paris, 12°, Charpentier, 1902, 26.

² Herringham: *A Physician in France*, Edward Arnold, 8°, London, 1919, 214.

“ ‘Commune freely and frankly and openly with your colleagues. Mingle with them in societies. Seek their aid. Trust them in emergencies, and in the immense majority of instances they will merit your trust.

“ ‘Medicine is a jealous mistress. You can serve her only with your whole heart. Leave her if you will, but don’t attempt to divide your allegiance with rivals, religion, art, politics, however alluring or worthy they may seem in themselves.

“ ‘The master word in medicine is work.’

“These were some of the things that Fowler’s example said to us. They are hard to live up to and they sound like preaching, but—if you had seen him!”

“Doctor,” said one of the boys, “Have you read ‘Arrowsmith’?”

“No,” said Jones, “I have not, but I will.”

He read it, and lay back in his chair and laughed. “By Jove,” said he “I might almost have written that myself twenty-seven years ago!”

VI
RECOLLECTIONS OF THE OLD MASTER ¹

BY
ONE OF HIS BOYS

September, heat, dust, noise, the F—— railroad. A red-cheeked boy of twenty at the car window, dreamily watching the passing panorama. The sordid little wooden houses had gone and a lovely river was winding its way through the evergreens and maples, clear and dark as it eddied and tumbled in crisp foam along its rocky bed. And the boy dreamed—dreamed of the past, of the simple life of his childhood in the country, of the handsome figure of his father starting in the early morning on his daily ride to town with his neighbour F——. Erect on their cantering horses, Inverness capes flying in the wind, they sped away over the hill. Of his mother, so beautiful, so simple, so perceptive; of her life of devotion to her husband and her children; of the example she had set of purity and beauty with barely a word of precept; of how, amid her absorbing domestic duties, she had yet found time to help him in his studies—in his Cæsar and his Sallust and his Cicero in the days when he was wasting the opportunities he so little appreciated; of how, after the little spurt in which he had sought to repair some of the wasted hours, he had fallen back in college; and of her wisdom and sweetness and tolerance and loyalty and patience in moments when her heart must have been

¹ Rev. Samuel Robert Calthrop, Syracuse, New York. From *The Harvard Graduates' Magazine*, 1923, XXXI, 317-334.

breaking with anxiety and fear, during that year when his father was in Europe and he was treading the primrose path. Of the two years that had followed of aimless laziness and prevarication as the debts accumulated. Of his father's tired, weary, anxious face. Of the final confession and explanation and decision that he might finish his college course and begin his professional studies only if he would give up his senior year at Cambridge and put himself under the tutelage of a private master, an Englishman, a clergyman, that he might break from habits and associations ill becoming the son of a college professor whose meagre salary was his all. This or leave college and "go into business." "Go into business!" What that meant he had never really considered. When he faced it, his heart sank. He had not been a student, but that was impossible. That he could work and study now, he doubted not. That he could no longer deceive his father and his mother, he knew—and the thought of that brought tears to his eyes, and a great sense of love and a realization of what they were and had been to him filled his heart. How was it that he had never really known this before?

As a boy he had had a dream, a dream that had followed him ever since—always the same. He is on Jarvis field. On the track, away over there on the other side, just beyond the North Avenue-Everett Street turn, is a little boy, a rather nice, clean little boy with a straw hat and a blue ribbon. He is walking around the track. By and by he nears Oxford Street and then, as he comes nearer—why yes, it is he, himself. He's no longer looking at the boy; he *is* the boy, and he's walking around the track. But somehow, he can't help it; he's drawn on his way. It is *his* track. Whither does it lead? What is it? What is coming?—He cannot escape. It is something fearful; and, fatally,

he is moving toward it. Nothing can save him. Fear; fear; what fear was he never knew before—Fear—Terror—Horror—Anguish! Hot, burning anguish—Heat, stifling, scorching—A great, indescribable, red fiery blaze—The end—the awful end of all things! And trembling, he wakes.

This was his life; 't was but too clear. And as the dream came again and again, and as he grew older and the old innocence and purity faded, the dramatic force of the picture half pleased, half disturbed him. For he found early that he could step out of himself to a considerable extent and smother not only conscience but sometimes even fear and anxieties. And more than once, he asked himself whether, after all, he were not destined for the life of a criminal—whether the evident prophecy of his dream were not fatally coming true. One period only, in the allegory of the dream, was vague, indefinite, unfulfilled. The beginning, innocence, and the end, calamity and disaster—hell—the beginning and the end were clear. And this ability to enjoy life and to stifle conscience and remorse—was not this fatal evidence of the tendency toward that which must inevitably lead to the end? But then, again, there were those hours in which, shut in his own room, he wept warm tears over beautiful and high words—words of patriotism or moral aspiration. Then he used to hope that perhaps, after all, 't was but a dream. But the future he could not see. And his own powers—how could he estimate them?

And now, as he looked out of the window, he dreamed of the past and the future. Could it be that, in the end, he might yet redeem his life? Could it be that this destiny which in his careless fatalism he had half accepted, might, after all, be but the passing figment of a nightmare?

But could he make up in any way that which he had neglected? And if he could, was it worth while? The foundation was so miserable! Surrounded from boyhood by scholars, what had he read? Nothing. Wilkie Collins, his one enthusiasm! All his studies for three years so shiftlessly neglected.

The work that vaguely he had intended to do—the work leading toward his professional career—he could not continue, for this unknown English minister was a classical scholar, not a naturalist. But he could read Greek with him and in that he had some basis, thanks to dear old “Brad.” Then, somehow, Greek appealed to him. When he read the lines of Homer he saw the blue waves and the hills of the Mediterranean, and the heroic figures as they spoke and moved; and the beautiful rhythm and music of the words echoed in his ears.

But who and what was this man? His father had met him when he first came to America in 1853, fresh from Trinity College. Tall and athletic, he had made an agreeable impression. He had taught school, and now he was the Unitarian minister in S. E. H. vouched for him.

But what manner of man was he? Words, even barren figures readily took form in the boy’s mind but this man he could not visualize.

* * * *

The lovely river ended. N. and luncheon, while the cars were shifted and the train divided. The first part of the train moved. The boy became uneasy. Yes, it was his train! He had misread his schedule. No train for eight hours! It was hot and very dull; and his wise father had given him very little pocket money—not enough, really, for dinner and night at a hotel.

She was very pretty, that girl whose close-fitting dress set forth an engaging and graceful figure. But there was little consolation in an hour or two of rather disappointing conversation. The charm, 't was clear, was absorbed by the eager eyes of the youth; no reflexion called forth an answering spark.

A weary wait. A tiresome journey. Night at a musty hotel. But the sleep of youth and a morning on which all nature smiled. A horse car to B. and then a funny little bob-tailed car to the valley. A long avenue winding around a charming, wooded hill. A gabled red brick house with high, diamond-paned windows opening in the middle; grapevines spreading down along the slope of the hill toward the railway below. To the left, a barn and, on the edge of the unwooded slope of the hill, looking eastward toward the valley, a small observatory with a telescope.

The door opened and there he stood, something over six feet tall, in clerical garb, a white silk handkerchief about his neck, head thrown back, light blue-gray eyes, kindly twinkling behind gold-rimmed glasses, face and head almost hidden by the large square beard and the mass of curly almost white hair through which but here and there one could detect traces of the warm reddish yellow of former years— a fine figure with broad shoulders, and spirit and vigour written in every line.

“ Well, so this is X! Let me have your checks. I'll have the luggage sent for.” Then, drawing himself up and with the air of one imparting an important confidence: “ I say, do you remember that passage in the Count of Monte Cristo where he says: ‘ Gold, gold, illimitable gold ’? Eh? Well, X, I have grapes, illimitable grapes. Come and see my grapes!” And so they

walked out among the vines, tasting the grapes and talking like old friends.

A half hour later they found themselves at the door again. "Now," said the master, "let me show you my books." With pride he exhibited a number of school and university prizes, for the most part attractively bound copies of classical texts. And then: "Well, you can use these books, and here's my dictionary. Let's begin."

The house stood on a hill, perhaps two hundred feet high, with a lovely view over "the valley." A hall passing through the main building separated a parlour and a bedroom on the left from a living room and a dining-room on the right. Behind the dining-room was an ell with kitchen, pantry and wood-shed. Above were bedrooms, two floors in the main building, one in the ell. The hall led to a lawn surrounded by a hedge which came around to the precipitous edge of the hill in front, and, to the left, separated the house and lawn from the wooded hillside descending to the road. On the lawn was an excellent tennis court and a beautiful great elm which was an unending joy. From its branches in the spring robins and blackbirds and orioles sang, and lovely red-headed woodpeckers squawked and tapped on its trunk. Through the hedge a winding path led down the hillside.

And the household? The quiet, devoted wife, three daughters and two boys. The oldest daughter, fair and delicate; the second, an energetic and unselfish friend; the youngest, a bright, spirited girl of seventeen; the older boy, about nineteen, the younger thirteen or fourteen, *l'enfant terrible*—and Uncle John. Uncle John! Was there ever a more engaging figure! An officer in Her Majesty's navy, as time went on, he had gathered together his all, invested it in a ship, and retired. On

his first voyage he was wrecked, somewhere in the South Seas—and he was uninsured. So he came to S. where he farmed his brother's land. From forty-five to fifty years of age, not tall but heavily built, with a fine chest and arms like iron, Uncle John laboured in his brother's fields with faithful industry, at an annual loss. He was a simple soul. Modest, and apparently satisfied with life, he was proud of two things, the muscles of his arms, which were formidable and exhibited from time to time to his great satisfaction and to the admiration and awe of the young, and the cleanliness of his skin. He never came from the fields without immediately taking a bath in the tin tub in his room above the kitchen. And then he confided to you that the manager of the Turkish baths in S. had assured him that he had never seen a man from whom so little dirt could be extracted.

Dear Uncle John! The master loved to tell of the skunk that he caught in his rabbit trap. Uncle John was ignorant of the characteristics and capacities, if not indeed, of the existence of the wood pussy. He returned hastily, very pale, like a little boy to his father: "I say, Sam, there's a little animal in that trap that has a most horrible smell! Do you know, it almost made me sick!"

And of the dying Indian. A few miles beyond the hill was an Indian reservation. Here a small group of the "wards of the nation" lived with contentment on the produce of their farms and the allowance of their guardian. Whenever, through the favour of Providence or the United States Government, a member of the tribe happened to have a little ready money he followed the trail to the city. The trail to the city was clear and easy and straight but the return was devious, uneven, and beset often by difficulties quite insurmountable for

the child of the forest. The monotony of the roadside was not uncommonly broken by a bronzed figure sitting on the ground, the feet extended, the back propped against a tree. If one stopped to investigate, an amiable grunt and a polite bow upset the happy balance of the peaceful slumberer who lay motionless, limp, and apparently lifeless on the grass. It was not always safe to walk by the roadside after dark. One day, soon after his arrival, Uncle John entered the house hastily, and with an air of concern exclaimed: "I say, Sam, there's an Indian lying near the gate. He's very ill. I think he's dying." With a smile of superior understanding the master descended the hill. He and Uncle John held the limp and grunting figure erect and slowly led him up the hill. Alone, Uncle John convoyed his charge down the steep incline toward the reservation, the Indian, for some time, lifting his feet high in the air with each step as for a continued ascent.

Uncle John smoked a pipe. Pipes were "taboo" in the house. He could only smoke in his own room. And so X's room became an asylum. Every night after dinner they sat before the glowing hard coal fire, one of the high windows on the other side of the room ajar. When the pipe was finished, Uncle John leaned back in his chair, his hands clasped over his head. Soon the clasped hands slipped forward, forward, until with a jump he righted himself, only to relapse. Then, sleepily: "I say, X, it's very close in this room!" Or awake and puffing at his pipe, he would chuckle, and to an enquiring glance: "Do you know, X, I was thinking of President Hayes offering a glass of lemonade to the German Ambassador at a State dinner!" Or again, "Do you know, X, I was thinking of the Pope." The apparent paradox between the celestial and terrestrial attributes, functions and relations of this dignitary

was a never-ending source of pleasing suggestion to him. Dear Uncle John, those two pictures have given your quondam companion many a happy moment!

The farming was unprofitable and Uncle John moved to town and wore a derby hat—O misery! And then, to D., where ten or fifteen years later, in the sordid current of a business life, he died. Ah, Uncle John, you should never have left the broad ocean or the moors and cliffs of Devon. You were too clean for this busy hemisphere;—and O, Uncle John, never, never should you have worn a derby hat!

Then there was Fred, the man of all work, a clean, simple country boy whose grief and alarm at Blaine's defeat were pathetic and amusing—and the dog, a short-haired, black nondescript with a deep distrust of all save proved friends, whose fixed hostility to tradesmen was sometimes an embarrassment. For he was a loyal defender of his home.

And the horses; there were three. The farm horses which alone or together were often used for driving to town, and the pony. The dean of the equine faculty was "old Jack." Jack had had many and varied experiences in a life which had already attained the comfortable figure of twenty-eight years. His last was an apprenticeship in a stone cart. Jack's standard gait was a walk, stately, and incredibly deliberate. No ordinary persuasion could induce him to move at another rate. Whips—amused him. But if he were touched up with the butt of the whip on his hind legs, he would sometimes slowly move his ears and break into a gentle trot. One thing only would start Jack—noise—and an Indian war whoop from one of the boys, which always embarrassed the family, was the most effective stimulus. Then there was a worthy beast two years Jack's junior. He was slightly lame in one hind

leg and blind in one eye, but relatively speaking, an active animal. Together in the farm wagon, they were an effective pair—but they had sometimes an annoying persistence in backing. Lent one day to a neighbouring farmer, they backed the wagon through his shed. The “pony,” æt. 22, was a small, amiable and efficient horse which was generally driven in the buggy or in the two-seated open wagon to town on a Sunday. Much of the lives of these faithful animals was spent in a coat of caked mud, for the road to the valley led also to quarries, and stone carts reduced the highways to quagmires in which one sank almost to the hubs of the wheels.

There he sits, the dear old master, his black felt hat pulled down over his eyes, the fringe of white hair beneath, the gold-rimmed glasses glistening in the sun, in the front seat of the open wagon, the stub of what was once a whip in his hand—for whips were short-lived with Jack—leaning forward from time to time to stir up the sauntering animal by a touch of the butt on his hind legs, while a scandalized passer-by exclaims: “The brute!”

There was another youth in the household, a year older than X. Donald B. was endeavouring to pass his entrance examinations to Cornell. Well-to-do, rather pampered at home, by no means lacking in wit and intelligence and ability, he knew not what work meant. Study? He had not the least intention of studying! Early in the year the master said that he never despaired of a pupil, however recalcitrant, if he could teach him to play chess. Don learned to play a good game of chess. He failed to enter Cornell.

The master was the uncle of Sir R. W., later, as Lord A., the Chief Justice. A graduate of Trinity, Cambridge, he was an outstanding scholar, but he

failed to take his degree, for in those days each graduate was obliged to sign the thirty-nine articles of the faith. No human creed could bind the master, and—was it the first time in the history of the University?—the degree was withheld because the student would not sign that which to him was a lie. Years afterward the University offered him his degree; he refused it.

On leaving Trinity he came to the new country, to the other Cambridge with letters to some of the more distinguished of the faculty. The letters remained undelivered. On the Delta and at the river, at the wicket and at the oar, he found his best introduction. He coached the crew that rowed the first race with Yale. Soon, in the natural course of events, he met those to whom he might have delivered his letters. But for him his duty lay in the ministry, and to B. he went, taking a struggling congregation. He was to give his services. His board and lodging only were to be paid. Later, when he had taken up other duties, he was dunned for his board.

Wherever he went his character, his vigour, his spirit, his learning, his charm of manner, his fine enthusiasm made a deep impression; and well-to-do acquaintances in New York induced him to start a boys' school. He gave up his charge and opened a school at B——t. From the outset it was a success; it could not have been otherwise. In every way he was one of the boys, in their studies, in their amusements, in their sports, in their fights; he stood by to see that their fights were fair. Success came rapidly. He married Miss P., his loving and loyal helpmate for so many years. The future was assured. And then, convinced that his real duty lay in the pulpit, he threw away assured success and took charge of a congregation in N. Later he was called to the more important post at

S. With a small salary, a growing family and Uncle John, he lived in the house on the hill, and, from time to time, took into his household refractory boys who needed coaching to pass their college examinations—lucky rascals!

Minister of the Unitarian church, the master was the friend of all his confrères of other faiths. On one occasion he was said to have been voted a prize at a Catholic fair as the most popular minister of the town. When the Jews celebrated the one hundredth birthday of Sir Moses Montefiore, he was asked to deliver the address. Every Tuesday Dr. Q., the leading Presbyterian minister of S., who, from his pulpit, thundered forth the law and the gospel according to the thirty-nine articles of the faith, came for a day of chess and relaxation with his liberal confrère. The master, who had met and played with Morphy and other experts, was himself a remarkable player, and blindfold, carrying on several games at a time, he could easily beat ordinary players. To Dr. Q. he always gave a substantial handicap.

These visits the boys enjoyed greatly, for Dr. Q. was a true sport and with little prompting embarked on stories of dogs and dog fights which delighted the irreverent youth who loved to draw the parson off his guard. One day, when there was a true "mix-up," it was their conviction that their reverend friend was as much interested in the mêlée as in the separation of the beasts.

And so for the young exile from college, work began. Out in the valley, three or four miles from the city, they were quite out of the world; and the domestic cares must have been very heavy for the kindly mistress of the house. The hour of breakfast varied, naturally, logically and delightfully, with the season—

early in summer, late in winter. After breakfast, study and recitations. And how stimulating were those recitations! To the youth who had reached the parting of the ways and was ready for work, it was a joy. The master's fund of general information was remarkable. He seemed to have met everybody. There was nothing about which he had not some interesting comment.

The beautiful lines of Æschylus and Sophocles took on a new meaning as they fell from his lips. And the vigour with which he defended the simple and natural interpretation of disputed passages against the Teutonic sophistry of a Hermann was an unending delight.

He had a true English sense of humour—that humour, precious possession of our race, which is so much too subtle for the majority. Of his pupil he made a companion, and he felt himself his comrade. He was as keenly interested in sports—as active a participant indeed—as he had been thirty years before, and discussion of the Greek texts was interlarded with stories of athletic contests or comments on the leading pugilists of the day. Discussion of the texts? No, that was the very point; there was relatively little discussion of the texts—much, of the beauty of the lines and the story and the symbolism and the relation of it all to the Greek life of the day. Greek texts! For that boy, the plays were a wonderful sequence of living figures whose actions, whose words, whose lives became a part of his own.

The master—such a man he had never seen. This gray-haired man was a boy like himself—a boy who understood and shared his enthusiasms and expressed them as he had never dared to do. And there were so many other thoughts and interests and visions, new and undiscovered, to which this companion introduced him. Above all was the contagious enthusiasm. This

gray-haired man who could become as stirred and excited over a tennis game or a race or a prize fight as he, and was n't ashamed to show it, was leading him as a comrade and half unconsciously, to feel that 't was just as natural to show the same enthusiasm for beauty in all its forms. This energy and vigour and enthusiasm were protected by a power of concentration and a capacity for abstraction which constituted an almost impenetrable armour.

On the mantelpiece in the general living room stood a clock around and about which were sundry bits of paper, memoranda. No reminder was necessary to prepare the master for the duties of Sunday but any extraordinary function—ah, that was a serious matter! The family was assembled, and with an air of humorous impressiveness, the little memorandum was waved in the air and fixed in its place: "A and B are to be married on Tuesday at ——. Now, for goodness' sake, don't let me forget it!" And they did not forget. It was their function to remember it. As for the master, his mind was full of other things. No vulgar detail could break into his dreams.

The *Æneid* he could repeat in great part from memory. He never used a book when listening to Donald. It was almost the same with the *Iliad* and the *Odyssey* and with parts of the Greek tragedies. In the morning when rousing lazy members of the household one could hear him, repeating to himself, beautiful and resounding lines with the occasional interruption of: "Donald, McDonald, arise!" Nothing could break through his serene abstraction. Among the complications and perplexities of daily life—and they were many for the dear lady who found it hard, indeed generally impossible, to keep servants so far from town—in the midst of discussion and argument and

dispute in the circle gathered on winter nights in the living room, his thoughts pursued their uninterrupted course, as he sat, book or pen in hand, nature's tonsure covered by a little, black silk skull cap surrounded by his curly white hair, the firelight gleaming from his gold-rimmed glasses. Tales of his absent-mindedness they loved to tell—of the wedding in the summer for which he had come to town from his camp at the lake. But he came alone, and at the appointed hour, emissaries found him peacefully absorbed in a book at the public library. For had he not left his memory at camp?

At noon daily they assembled at the tennis court, the master, his son, and the two pupils for the daily rubber, an important hour of the day which none forgot. On Monday, only, was this function interrupted for on that unlucky day the master lectured on astronomy at Miss J.'s boarding school. Miss J. knew her duty, and in good time weekly, she telephoned to remind him that this was the day of the lecture.

Alas, once she forgot. The game was well under way when the telephone rang. In his white flannels, racquet in hand, he took up the earpiece of the telephone. "Ah, Miss J., ah, Miss J., you and I forgot. You must never, never forget to telephone to me again for I'm so very, very busy, I can't possibly remember. . . . Yes—Yes—But you know I'm so very, very busy, I can't possibly remember. . . . Yes, yes, I know. I know. But then you must never, never forget to telephone to me in time, for I'm so busy I can't possibly remember. . . . Ah, yes—ah, yes, exactly. But then, you know I've often told you that unless you do, I can't possibly remember." . . . And the game continued.

The telephone was one of those contrivances known as a party line. Each member of the circuit had a

special call. Each call for some one in each house was very likely to seem to be his or her call. Eternal ringing—many futile answers—much confusion!

Friday evenings the boys and the family awaited with rising anticipation as the weeks went by. For on Friday evenings, after dinner, the master communicated to two newspapers the subject of his Sunday sermon. For weeks his subject was "God." "Yes, yes. Is this Central? Yes. Will you kindly give me the *Standard*? Is this the *Standard*? Yes; this is Mr. C. Will you be so good as to print the subject of my next Sunday's sermon? Yes. God. God. G-O-D, God! Yes. Thank you. Good-bye" "Is this Central? Will you kindly give me the *Courier*?" and so forth.

The rising emphasis with which the Almighty's name was uttered and the unction with which it was spelled, were a source of joy to the amused group gathered about the fire.

And so it continued until one evening when, after he had spelled the name of his maker in no uncertain tones, there was a long pause and then, "Aoh—A-oh—a-o-h, a-a-a-a-oh! It's the subject of my next Sunday's sermon!"

As he came back into the room, his wife quietly looked up from her knitting; "Sam, what did that man say to you?" Crossing his hands, and, throwing back his head, he raised his eyes heavenward, passed to his chair and took up his book. On the following Friday, alas, the subject was changed.

After meals and at odd moments, Donald and the master played chess, Don cleverly scheming to evade as many hours of study as he could.

At night after nine the master played piquet with the other boy. The black skull cap, the fringe of nearly

white hair, the big white beard, the gold-rimmed glasses made him a venerable and impressive object even at fifty-four. As he examined the cards he murmured continually to himself in a tone of heroic solemnity: "Now, sir I would have you understand, sir, that this is a most remarkable hand, sir. Extraordinary! *extraordinary!* MOST EXTRAORDINARY!" And then, in tones dying out almost to a whisper, "most extraordinary! most extraordinary!" "Sam," his wife would say, "if you're not careful, you'll come to talk to yourself as General Scott used to." To which there was no reply save perhaps a silent and a solemn bow.

Those games of piquet—they began at nine and on week days ended at ten, for the selfish boy who was really working hard, wanted his full night's rest. But on Saturday nights, when he had no responsibility for the morrow, but the master had, it took the united efforts of the family to break up the game!

What a year it was for the two boys! At the outset there was but one disquieting thought. The master seemed so much better than those about him—so much bigger. He lived on a plane so far above and beyond the life that went on around him that at first, one wondered just how real, after all, was his understanding of the frailties of common mortals. Could such a man look with comprehension and indulgence on our vulgar weaknesses? Was not this fellowship, this comradeship that was springing up, based on the assumption, that he, the boy, was a far nobler, far better character, than in his heart he knew himself to be?

The answer came soon. One cold fall evening not long after the beginning of the year, the master delivered an address in the city. The boys walked home—three and a half to four miles. It was cold. It was their first opportunity. They stopped at various bars

on the way. Suddenly to his dismay his companion found that Don was drunk—maudlin. The walk was long; Don's gait was very unsteady. The minutes passed. The master was waiting in the living room. As Don floundered into the hall: "Don, you've been drinking." "No, sir, Mr. C., no, sir, Mr. C., I have n't drunk a drop!" And he doubled up comically on the sofa. "Don, I don't care so much about the drinking, but don't lie about it," and he turned an inquiring glance from Don who, irresponsible, continued feebly to protest, to the other youngster who could only acknowledge that they had stopped by the way, and express his regret and his promise that it should never be repeated. Then, rising, and with the manner of one dismissing an unpleasant memory, almost cheerily: "Well, it's late. Let's go to bed!"

A wretched night the boy spent. On the very first occasion he had shown himself unworthy of trust. Somehow it seemed as if this were the end of all things. The master would never understand. And the wonderful comradeship that had begun? Was that all at an end? What would his father feel when he knew? How utterly discouraged he would be? Never again was the incident mentioned. The master knew his boys. Without a word he showed them that he understood and that he proposed to trust them. They knew and were his slaves. From that moment mutual confidence was unbreakably sealed.

There had been other boys. One, they often spoke of. He had been with them fifteen years before. Rich, careless, lazy, engaging, at that time, before the days of dry plates, he had been a photographer. They had heard that when financial troubles had come, he had turned to photography for a living. Later he had married an actress who had stuck to him in his misfortunes.

He had had misfortunes and he had "gone bad." There the story stopped. "E.," they called him.

One Sunday afternoon in winter or early spring, as they were sitting before the fire, X. noticed a rather odd figure passing by the front window and toward the door—a shabby looking man in a heavy overcoat, rather threadbare and worn, with a roll of manuscript projecting from one pocket, a dilapidated silk hat and a pale, unhealthy looking face. He knocked. Mrs. C. opened the door. "Mrs. C., you don't recognize me!" She did not—but the boy did. It was the face of E. of fifteen years before—the face of the little photograph on the mantelpiece. Poor E. They received him with open arms. The master led him from room to room and about the place, recalling incidents of bygone years, with something exquisitely tender and affectionate, almost caressing in his manner. Poor E.! His face showed the wreck that he was. The tears welled up into his eyes again and again—but the spirit was gone. The waxy pallor, the dull, lifeless manner showed only too clearly that it was worse than alcohol. He was acting at a dime museum—"Richard III" one night, "The Black Diamond" or something of the sort, the next.

The boy was delegated to drive him to town. E. was a forlorn and wretched object, but on the way, he turned to his companion and with pathetic fervour and almost dramatic emphasis, said: "You have little idea, young man, of your opportunity, of your privilege at this moment. Mr. C. is the biggest, noblest, best man that ever lived. The year that I spent with him was the happiest, the fullest, the best of my life. I'd give my life to have that chance again!" And the tears came once more. Half an hour later he sought to persuade his companion to drink with him in the town.

On clear evenings the master sometimes took the boys to his little observatory or set up his second telescope through which the bright points of the sky took on new and wonderful forms—the planets and their moons—Saturn and its ring—Jupiter—Sirius—the scarred and barren mountains of the moon.

It was the year of the Blaine-Cleveland election with all its feeling and excitement. The master was calm and singularly careful of his expressions. How did he vote? With all his vigour and his fervour he was slow to condemn others, but there were incidents in Blaine's career of which he spoke sadly. His disapproval he could show well enough—but he rarely showed it by words. Never an unkind word of another man. If one of us spoke harshly or uncharitably of a fellow, he would ignore it or change the subject, or speak in words of sadness or pity or sympathy. He had no enemies.

An Englishman, says Herringham, "is taught that a cad is one who, when he is not giving offense is taking it, and that a properly behaved person never feels insulted because he never need." So it was with the master.

The bank of a friend and parishioner closed its doors. The depositors lost all or almost all that they had trusted to its care. The moral responsibility of the banker seemed but too clear. In this bank was the master's current account—nearly a thousand dollars. His son urged him to join other depositors in taking steps to save what they could from the wreck and pressed him for a reply. "Do anything! Take any steps! How can you ask me such a question? How can you fancy that I can think of myself? It is n't that that hurts me. It is the thought of poor Mrs. W. and the family. What do I care for my money at such a time as this?"

There are those, says Maeterlinck, in whose presence discord and strife are impossible. They have but to enter the room and there is peace. So it seemed with the master. Not the peace of compromise or sloth or cowardice, for there was no peace with that which was wrong or unclean—no compromise with evil. But in his presence the sun shone. In its warm rays that which was best in all came to the surface; and humour and a kindly but none the less incisive irony drove away irritation and protest.

Once only did he show and express his indignation. John L. Sullivan, then at the height of his powers, was to give an exhibition of sparring with Jack Ashton, his traveling mate. At the last moment the city government of S. with that fatuous hypocrisy which another generation may regard as characteristic of our era in America, forbade the match. The master was a good boxer. In an earlier year while he was walking along a railway embankment with a pupil in search of geological specimens, a big fellow working on the track, seeing safety for himself in the clerical garb, became gratuitously abusive. Off came the clerical coat and up the sleeves, and after a few passes, a surprised and tamed man rolled down the embankment.

That a group of vulgar politicians should take away from him his one chance of seeing the greatest fighter of his day, and should have the impertinence to pretend that their action was taken on moral grounds—this was more than an honest, manly soul could bear; and there was an explosion which lacked nothing in vigour and expressiveness.

Among the duties of the year for one of the boys were a number of themes and forensics for which a choice of subject was suggested by the instructor. Many of the subjects demanded thought and reflexion.

These the master delighted in discussing. Often the subject would engross him for days, and, on the succeeding Sunday, his thoughts were generally woven into the thread of his sermon. Into the mind of the pupil they sank like rain in the thirsty earth, and like rain in the earth they fostered and nourished new fancies and visions and ideals.

On Sunday mornings the family drove to the city to church. The master generally spoke *ex tempore*, and usually his sermons were not only inspiring spiritually, but intellectually absorbing. He was a master of English and it was a joy to hear him speak. His clean-cut enunciation and the purity of his accent were balm to the ear, and an unfailing appreciation of the value of words gave force and vividness to thoughts expressed simply and without the superlatives and expletives that emasculate the common language of the day.

From time to time there were interesting visitors. Especially entertaining was Mr. A., a former minister of State of King Kalikaua. On the European trip of this amiable and naïve potentate, it was A.'s function to write the Royal speeches and to see that they were properly committed to his Majesty's memory, which appears to have been fallible. His account of this journey was excruciatingly funny. In all these conversations the master took an active part. With a seemingly inexhaustible fund of general information, a large and varied acquaintance, a lively imagination and an enthusiastic interest in all about him together with an engaging sense of humour, he talked well; and he loved to talk.

It might possibly be said of him as of the learned don, that knowledge was his forte—omniscience, his foible; but, with the sweetness of his character and the

liveliness of his wit, only the dull and self-centred could be seriously annoyed.

The intolerance of the fanatic always amused him. Some years later, Mrs. —, a Boston "anti-imperialist," with a characteristic and charmingly naïve lack of comprehension that, among the elect, there could be a difference of opinion, held forth to him with blazing indignation, on the iniquity of the action of the government in assuming the responsibilities arising from the Spanish War. "My dear Boston friend, the earnestness of your convictions I doubt not. For your opinions, your fears and your forebodings I have deep respect. But did it ever occur to you that there are others equally sincere who differ with you? And did it ever occur to you that infallibility is not of this world—no, not even of Boston? And that possibly, just possibly, those others may be right? Pray, pray, bear with us and hope, if you cannot believe, that Heaven may yet hold a refuge for those who see things in another light."

* * * *

The clouds of winter passed away—Sunshine and green leaves and birds and spring returned. Nine months had passed. The hour for the final examinations was near. The boy was ready to go home. He had found new and warm friends, almost a new home. From the master he had gained an inspiration which, already, he knew to be inestimably precious. But there was the real home and there were college associations to which he was attached. Then there was another thing. So deep was his gratitude that he disliked even to allow himself to think it, much less to say it or put it on paper; indeed it was one of those matters of personal pride that he could but keep to himself. He had been a little annoyed that, at S., there was hardly

a full realization that he was a senior at Harvard—a man of the world, accustomed to associate with men of the world. Somehow or other, he felt that he had been regarded as a boy, which slightly wounded his dignity. With all his regret at leaving S., he looked forward longingly to meeting the old friends and renewing the old associations.

* * * *

June—Night—The college yard—The bright stars in an unclouded sky, twinkling through the gently waving branches of the arching elms. The fresh, pure air of a summer night. Passing the old President's House, a youth of twenty-one. Examinations were over, and for a week he had been renewing old associations. He was disappointed. Nine months! How everything had changed! College life had lost its poise. He was on his way home from a convivial gathering; it had been very noisy, foolishly noisy it seemed to him. These men, many of them his own classmates, seniors, had behaved like freshmen. The occasion had bored him and he had left early. He thought over the events of the week. It had been the same story day after day. Certainly the tone of the college had changed, and for the worse. His companions had grown younger in their point of view and more boisterous—really childish. He felt himself an outsider. Oh, not with Y or Z; they were understanding. But the others; how young they were!

He had been away but nine months. He had looked forward so longingly to his return. He had come back to find that the old life had changed and that he was almost a stranger. How could such a change have come in so short a time?

Suddenly a thought flashed through his mind—a thought so startling that he stood still. Could it be—could it be that the change was in him?

A boy, more of a boy than most of his associates, he had left Cambridge, and for nine months he had lived by the side of the master—just a little resentful that those about him had seemed to regard him as a boy. Nine months! And now it was the others, the men of the world that he had left behind, who had become boys to him. Nine months! Ten years! A life time!

Thoughtfully, soberly, he walked on. Yes, it was he who had changed. In the nine months of association with the master he had become a man.

And the dream? The dream that had come to him so often? The dream had passed.

* * * *

Dear Master, time laid its hand on you softly and led you gently to the peace from which you fell asleep. To you age could never come. And in the heart of one of your old boys you live forever young. Nearly forty years have passed. He himself is older than you were when first your blessed influence came into his life. He has had his share of joy and sorrow, of success and disappointment. His share of success and happiness has been far beyond his desert. Whatever success and happiness have been his, whatever good he may have done in this world, are in great part due to you—to your example of courage and manliness and strength, of truthfulness and purity and simplicity, of tolerance and charity and love, of reverence for the past and confidence in the future, of consistent optimism—and to the great truth that you whispered in the ear of his conscience:

The secret of eternal youth is enthusiasm!

VII

COOPERATION. AN ADDRESS TO BOYS ¹

When, several days ago, Dr. Finney asked me to say a few words to you on your graduation day—and he promised me that they need be but a very few words,—I began to think of what it all meant, the long course, which you have been taking through this school, which you have still to pursue through college and then, perhaps, through a professional school, before you are finally ready to take your full part as a “free citizen” of the republic.

And then, as I thought it over, I wondered if you boys had ever reflected that the story of your career from the time of your boyhood, is much the same story, crowded into the few years of one human life, as that of the development of mankind as a whole through the thousands of years that men have existed.

In the beginning, so far as we know, men were ignorant savages, governed only by savage masters, the strongest among them who led the little bands which they controlled, in the constant warfare with their neighbours.

Little by little, as the centuries passed on, as men grew more intelligent, as they learned more, men came to realize that if they wanted to better themselves and to accomplish something, they must band together, and work together and make some sacrifices of self for the good of the cause or of the tribe as a whole. And the rulers realized that to accomplish their greatest ends

¹ Address to the boys of the Gilman Country School on Founders Day, 10, June, 1913.

they must make the people more than mere slaves; they must do something to make them proud of their army and of their country, and so, gradually, the rulers made laws which protected the people, who grew stronger and healthier and happier.

At first, probably, men thought that such laws were tyrannical and unnecessary and obeyed them only through fear of the powers which enforced them, but little by little, with time, the people who had more opportunities, began to think themselves, and to comprehend that for which these laws were made; that is, that they were not made merely to interfere with their comfort and freedom, but in order to bring it about that they might all work together for the good of the community; to enable them, by working in union together, to protect themselves from their enemies; to make it possible, by cooperation, to do all sorts of things that they could not do alone.

Now, for centuries, in most parts of the world, the people were ruled by kings who governed more or less, at their own free will, as today the general governs an army. Sometimes, with good rulers, great good was accomplished, but too often, selfish rulers used their position for their own personal advantage, and unjustly oppressed the people. But as the people became more intelligent and began to see that laws were necessary for their good, they began to demand the right to make those laws, and to take more part in the government of their country, in order that they might deliver themselves from unjust tyranny; and so parliamentary bodies came to be formed, bodies in which the people took a real part in governing themselves. Often, when parliaments were first formed, it came to pass that people did not understand, that they weren't yet sufficiently educated, and when they had the power, they

forgot that their aim should be to make laws which might be for the benefit of the people as a whole; they forgot the country, and instead, tried to help themselves. And wherever this happened, after a while, the old kings and tyrants were able to gain control again and govern as they saw fit. But, slowly and gradually, through thousands of years, human beings have been improving, and have been growing more and more fit to be free men and women, and to take a real part in the government of their state and country. And now, of the great governments of the world, France and Switzerland and Portugal and all America and China, are republics;—the country belongs to the people. And England and Norway and Denmark and Italy are monarchies but in name. The people own them just as we own our country.

It was not until the people came to own their countries and to feel that they were responsible for them, that the word “country” came to mean to them what it means to us today—the very dearest thing in the world—the one thing for which every one of us ought to be willing to sacrifice everything that he has,—yes, even life itself.

Think of how this idea arose in France at the time of the Revolution. The people who had grown to feel more and more that they must control their own affairs, finally overthrew their king,—who was ready and willing and anxious, poor fellow, but too late, to give them almost all that they asked. Think of the condition of things in France at that time. The people were drunk and wild with their new power; they were carried away by a fierce desire for vengeance against their old oppressors; they perpetrated the most dreadful and unmerited cruelties; they were terribly unfitted to govern themselves. Supplies gave out; money there was

none. With poverty and starvation at home,—they were beset with enemies from without. The armies of united Europe, helped by their own countrymen, the Royalists who had escaped, were at their doors. But with all their ignorance, with all their squabbles and intrigues and bloodshed at home—a new idea had come to this people. At last, they had a country, their country! And now, at the moment when this great blessing was theirs, all Europe had risen against them and was trying to take it away. Then it was that this great new idea of country carried all before it. It was no longer the privilege of a king that was in danger,—it was their country. With famine and bankruptcy at home, encircled by enemies abroad, ragged and dirty and starving, the people of France rose as one man, and marching to the strains of the most stirring song the world has ever known, they repelled the enemy and gathering about their great leader, they conquered Europe. There is nothing like it in the history of the world—that miracle wrought by the love of liberty and country. And now that the people have come to own their countries, love of country and patriotism mean more than they have ever meant before. People have learned that in order to preserve this sacred possession and to keep their country strong and respected, the land must be governed in the way most satisfactory to most people; that all must help; that all must work together; that to disobey or to evade the laws, even though we consider them ill-advised, even though we might like to change them, is to degrade and weaken that which we most love. We may try to prevent an act of Congress or of the State Legislature or of our City Council—we may think it unjust, but once it is a law, we must obey it until it is changed. And we must be tol-

erant; we must remember that we may be mistaken, and that if we are right, time will mend it all for it always does.

One hundred and thirty-eight years have shown that we Americans are able, on the whole, to put our country and the common good above all other considerations, and that we are capable of governing ourselves as a free people. We have accomplished this only because a true patriotism has taught us to sacrifice ourselves and our individual ideas for the good of the whole. We have learned that the only way to accomplish a great end is by working together.

In the beginning, men worked together only at the command of the tyrant. Now, after thousands of years, we do it of our own free will. How enormously we may increase our power by working together is shown by what we do when we have any special, great effort to make. The greatest effort ever demanded of a people is a war; the one condition under which we must be sure to work together as one man, is the state of war. And what do we do then? We establish an army and put it under the absolute control of one man. We know then that if we wish to save that which is dearest to us, our country and our liberties, we must take no chances. We must work together and we must so organize ourselves that we *have* to work together. So fully do we realize this that we keep a standing army, a body of men trained and ever ready to work at any time all together as a single man. And I don't mind telling you boys that I have long wished that every man in this country had to serve at least one year of his life in such an army; I believe it would do us all good.

In times of peace, in matters which do not directly affect the safety of our country, we feel that it is better to work out our problems less rapidly, and with greater

freedom and more deliberation, even if we are not so efficient. But in time of war, we take no chances; we know that we must obey "captain's orders." The fact that most of us realize that we must obey the law, while we strive constantly to improve the conditions which seem to us wrong, that we must sacrifice ourselves sometimes in order to make the rest of the world happier, is what makes us fit to govern ourselves, is what makes our country strong and respected.

And now you boys may ask me what all this has to do with you and your life at school. I think I can show you. What all mankind has passed through in these thousands of years, you pass through on a small scale in the comparatively short span of your boyhood and school days.

In the beginning, as a small boy,—what are you but a little savage?—an amiable and good-natured little savage, to be sure, but just as ignorant, just as careless as your savage ancestors used to be in days gone by. Just as the savage in the wilds, the little child thinks only of himself and his own desires. Like the savage in the wilds, he cannot understand why anyone should insist on his doing anything that he himself doesn't want to do. As the savage has to obey the chief of his tribe, so the little boy has to obey his chiefs, who happen to be his parents. Now these chiefs are generally good and kind governors, and although it is at first hard to understand, the little boy soon learns to trust them, and realizes that if he can't comprehend, there must be some reason for the rules that he is obliged to obey.

By and by he goes to school where he meets with a lot of other rules and is obliged to do a good many things that seem sometimes rather hard, but by that time he

has learned much, and he is able to see that if he wants to be like other boys who are bigger and freer and able to do many things that he is not allowed to do, that if he wants to accomplish the work that will enable him to become a member of the larger school to which he looks up—the school about which he has heard so much, the school that the bigger boys love; if he wants to accomplish this, he can only do it by giving up a good many things that he might like to do at the minute, by studying and by obeying the rules.

In a few years, (instead of thousands of years,) this little savage gets into the school to which he has looked up, which his older companions love, and he enjoys life in many ways. Along with his studies he has his games and his sports of all sorts. But still, he is not able to govern himself. Others, the masters, make the laws and rules for him. Nevertheless, to this boy, the school has begun to be a sort of a country which he loves and of which he is proud, so proud that it often happens that before he graduates, the rulers are ready to give him some responsibility in its government.

And by this time, although boys are inclined to object to a good many rules, to be tempted to neglect their work, to forget that they can accomplish their ends only by working in harmony with the spirit of the rules and laws of the school, by this time already, boys are both unconsciously and voluntarily practising just what they may have to practise in after life in great emergencies.

Sometimes a boy thinks he can graduate from a school without work and without obedience to the rules, and is surprised or disappointed when he fails. But what do such boys do when they want to uphold the honour of the school on the football field? They band themselves together under a captain and coaches whose

orders they would not dare to disobey; in other words they form a small army and by absolute obedience, by perfect team work, they carry the day and maintain the prestige of the institution on the athletic field. The boy who breaks training is disgraced just so surely as is the soldier who disobeys orders.

And now the boy graduates. How changed he is from the little savage of a few years before! He understands clearly the reasons for the laws and regulations which governed him. He no longer thinks so much of himself; he has learned to love his school and what it stands for, and to think of how its usefulness may be increased and its reputation extended. He knows that to do this he must work and make sacrifices. And by this time he is often anxious to impress on the younger boys, those who follow him, that which they ought to do, and in which perhaps he may have failed. He has become fitted to live in a freer country where he can take a larger share in the government, where he may bear a greater responsibility; he is ready to take up life in a university. He is now so nearly in a true republic, that he feels that the college belongs to him and he loves it and works for it and defends its honour. And then, by and by, he passes out of this form of government into the world, and finds himself the citizen of a great country which is now his in a sense more truly than it has ever been before because he is a free man, because he is free to choose it or renounce it, because he *will* choose it and value it as his most precious possession. He will be a free citizen with all the duties that a free citizen owes to the country he loves.

In about twenty-one years, the boy passes from the stage of the little, uncontrolled savage, through governments imposed upon him by rulers whose objects he

cannot understand, to a thoughtful and patriotic citizen of his country. He has done in a few years what, on a larger scale, mankind has been doing slowly through the ages.

And now, boys, I have said this because I wanted to point out one thing that a good many of us forget. A country becomes great only when its citizens, because they love it, give up thoughts of themselves and work with whole hearts for its greatness.

A school becomes great when the boys which it turns out become the leading students, the manliest and best men in the colleges to which they go, and in after life. And no school can turn out such graduates unless the boys themselves love the school and think of it and its honour and its reputation more than they do of themselves. The masters who direct this school today have only one desire, and that is, to make it a great school. As students, you boys may not understand all your masters. You may sometimes fail to sympathize with, or to comprehend, some of the rules they make and some of the methods they adopt. From time to time as the years go by, masters come and go. Old figures that we love pass on and other figures enter upon the scene. New buildings arise. The surroundings and setting and even the site of the school may change. But the buildings are not the school, and the masters are not the school; you boys are the school, you and the old boys who have been here before you; you and the spirit which moves you and has moved them. You boys can make or ruin the school.

Remember that if you love your school and wish to make it great, you can do this only by working, by obeying the rules, by good team play in class room as well as on the athletic field. If you all work for the success of the school with the same loyalty that the mem-

bers of the football team show in training for a game, there will be no doubt as to the position which this school will occupy in the country. If you don't do this, if you disobey the rules, if you neglect your work—it isn't merely your own affair; you are disgracing, degrading and lowering the reputation of the school you love. If some of the methods in the government of the school seem to you wrong, you can and should, as a graduate, help to change them. While you are in the school you can only put up with them as you would with the discipline of an army.

The reputation of the school depends on the boys as the reputation of a country depends on its citizens. Where the sense of loyalty and devotion and love of country is greatest,—there is the greatest country.

We English-speaking people are very proud of our history and our traditions and of the freedom and efficiency of our government. And we like to think that we have earned this freedom because we have come to realize, each one of us, that the success of our government depends on honest, clean work. That means that we all have to work, and whenever the occasion demands, undergo hardships and sacrifices, if necessary, for the good of the people as a whole.

A very beautiful and a very sad example of the spirit which makes us English-speaking people great and strong, was given to the world this winter. Some of you probably have read it all. When Scott was returning from his weary journey to the South Pole which he had reached only to find that it had been discovered before by another, he was met by terrible and unlooked for difficulties, fearful cold, repeated storms, unaccountable lack of supplies. And as the little party wearily struggled onward, one of them, Captain Oates, a splendid, big, strong, young fellow, began to give out.

His feet became terribly frost bitten, he was so weak that he could barely walk, and he constantly held back the progress of the party. Day by day the food became more scanty; day by day, his increasing weakness imposed heavier burdens on his friends. One morning, the sixteenth of March, 1912, as they sat huddled together in the snow hut where, alone, they were safe from the frightful cold without, Oates rose and said calmly to his companions: "I am going out. I may be gone for some time." And so he passed out into the storm, ". . . . gone for some time!" All understood. No one dared to speak. No one said "Good-bye."—And when the relief party found his companions all dead, but twelve miles from the camp which meant safety and life, they planted in the snow, near the spot where he must have breathed his last, a little monument to his memory, with the inscription: "Hereabout died a very gallant gentleman."

The spirit of simple self-sacrifice and of loyalty to duty which led this noble fellow to give his life that the great object of the enterprise might not fail, is the spirit which has made England and America great and strong.

This same spirit you can show, in lesser things, to be sure, by your loyalty and devotion to the school and college and country which you love. To what great ends this sort of loyalty may lead, who can tell?

VIII

THE PROBLEMS OF MEDICINE ¹

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 today 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-æreus*” had anticipated the discovery of oxygen. Leeuwenhoek and Malpighi and Hooke had opened to the human eye the realm of the

¹ Address delivered before the Section for Internal Medicine of the International Congress of Arts and Sciences, at St. Louis, 22, September, 1904. From *Science*, 1904, XX, 706-715.

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. 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 today. 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, Laennec, 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 Laennec, Andral, Chomel, Louis, Bouillaud and Trousseau, with Skoda and Schönlein in Germany and Addison and Bright and Stokes in Britain, 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 that is most vital in our anatomical and physiological and pathological knowledge of today, 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 gave 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 permitting 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. Today 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, so 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 farther 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 anti-septic 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 Lazear 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 today 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 tuberculous 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 Laennec 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 today.

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 Mechnikov 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.

Besides 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 favourable 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 readily be realized.

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 hypotheses often strangely lacking in foundation, the prevalence of which de-

pended rather upon the individual force and vigour of the expounder than upon their intrinsic merit. Today 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 Littré¹ 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 today 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 today is taught methods, where a hundred years ago he was taught theories. The enormous expansion of the field which must be covered has led not only to an ever-increasing specialism, but to the circumstance that the course of study which is regarded as properly fitting the physician for practice is reaching backward farther and farther into

¹ Dictionnaire de la langue Française.

the earlier years of his school training. 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 practice; 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”¹?

That the cultivation of a strict objectivity in research has materially impaired our powers of reason,

¹ Eymin, *Médecins et philosophes*, 8°, Lyon, 1903-4, No. IV.

that the exact methods 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 today. 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 on 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 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 tomorrow 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 licence 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 recent 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 relever le prestige du médecin c’est encore de l’élever le plus possible au dessus de ses contemporains.”¹

¹ 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

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 licence 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 practice, 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

prestige of the physician is still to raise him as far as possible above his contemporaries. *Congrès Français de médecine. VI. Session. Paris, 1902, 8°, T. II., p. xli.*

clinical investigation yield diagnostic results, while to familiarize oneself with methods and instruments of precision is a very different matter from 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 today, 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 properly to 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, so 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 not 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 practice, enthusiastic, devoted students who, in watching and studying the patient, are contributing alike to the interests of the sufferer, the hospital and themselves.

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 honourable 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 practice 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 neighbouring fields of scientific research.

IX

COTTON MATHER'S RULES OF HEALTH ¹

Most men take pleasure in the manifestation of a certain playful irreverence toward the worthies of the past. With a perennial naïveté we are fond of patronizing our great grandfathers in a kindly sort of way. We smile at their quaintness and seriousness and ponderousness, while tacitly recognizing our own superior powers of perception and our more delicate sense of humour; and we rejoice in what always seems a deliciously original and somewhat temerarious fancy—that they may have possessed many of our commoner frailties behind that cloak of austerity with which respectful tradition, orthodoxical painters, and fickle fashion have helped to clothe them. And, as a rule, whatever our intentions, we are wont to weigh their lives and actions with scales built of our own contemporary criteria and with little real appreciation of the truth of the observation of the Gallic philosopher that “nothing seems so immoral (today) as tomorrow’s code of morals,” ² and the converse.

But after all, it is probably well that it should be so. How much of the spice of life we should miss, what a real misfortune it would be if, one day, we should find ourselves able to enter wholly into the state of mind of those whose lives, as it is, afford us so much occasion

¹ Read before the Johns Hopkins Hospital Historical Club on 13, March, 1905. From The Johns Hopkins Hospital Bulletin, 1905, XVI, 293-300.

² “Rien ne semble plus immorale que la morale future.” Anatole France, *La vie littéraire*, 8°, Paris, Calmann Lévy, 1895, III, 74.

for beneficent reflexion and speculation. The aspiration of Mr. Dinkelspiel who recently gave utterance to the profound thought that "Der vorld vould be much nicer if ve could see udders as ve see ourselves," would, if realized, result in a very flat world. Moreover, we should not be half so amusing to our descendants. The possession of truth in all things is doubtless precious, but we may, perhaps, be profanely thankful that with our human limitations, there is little immediate prospect of being deprived of the greatest of life's privileges, the ever-present opportunity for its pursuit, while posterity is likely, for some time to come, to enjoy the pleasures of complacent contemplation of our inconsequent and entertaining wanderings. It is, probably, the part of the wise man in a study of the past, to rejoice in that which is fine, to smile at those contrasts which seem to him quaint and droll and unaccountable, but to hesitate to criticize or condemn.

The reverend Cotton Mather has suffered much from too serious historians who have judged him freely from a nineteenth century point of view. He was born in Boston in 1663. His father, Increase Mather, the leading citizen of New England, was for some years president of Harvard College, while his mother was the daughter of John Cotton, one of the prominent men of Boston. From early youth he was regarded as a remarkable character. He entered Harvard College at the age of eleven and a half, at which time he had already read Cicero, Terence, Ovid and Virgil and could write Latin with ease. He had also read through his Greek testament and had begun Homer, Isocrates, and the Hebrew grammar. In college he "mastered" Hebrew and composed treatises on logic and physics. He graduated at the age of fifteen, and was ushered into independent life with a rather fulsome eulogy uttered

by President Oakes as he presented him with his degree; these remarks concluded with the following words: "*nec despero futurum, ut in hoc juvene Cottonus atque Matherus tam re quam nomine coalescant et reviviscant.*"

It is not generally known that in Colonial days the names of the members of the graduating classes at Harvard were recorded neither alphabetically nor according to scholarship but in the order of their social standing.¹ In the Quinquennial Catalogue of Harvard University—that sacred volume to which the late Professor Lane used to refer facetiously, as "the peerage," Cotton Mather's name stands second in the list of the class of 1678, preceded only by that of his cousin, John Cotton. It should, however, be mentioned that the class consisted of but four members.

Suffering from an impediment of speech which it was feared at first might prevent his entering the ministry, he is said to have spent a part of his first two years in the study of medicine, but conquering this infirmity, he began his career as a minister at the age of eighteen. These were days when a young man of ambition started out in life with a firm resolve to excel in many and diverse branches of learning, and it may sometimes have happened, if he was endowed with a sufficient measure of self-assurance, that he thought he had mastered them all. Cotton Mather was a man of amazing general information. At the age of twenty-five he is said to have been able to write (*sic*) seven languages, including Iroquois; and of his superior learning and ability there was, apparently, a serene consciousness which the irreverent of today might style as knowing it all. His main goal in life appears

¹ Quinquennial Catalogue of Harvard University, 1900, p. 83.

to have been the presidency of Harvard College, and his failure to attain this was a bitter and nourished disappointment. Conscious of his remarkable attainments and exceptional erudition, Mather appears to have been rather impatient with the rest of the world for a lack of what he deemed due respect and appreciation for his qualities—and he made his fair share of enemies.

Born in an age of implicit and general belief in the powers of Heaven and, especially, of Hell in all its forms, Cotton Mather preserved throughout his life an unshaken faith in the immediate presence of a God who noticed and forthwith rewarded every good action, and of a Devil whose malign hand was ever to be detected ready to seize and hold with tightening grasp whosoever was guilty of the slightest lapse from grace. He so trained himself that every common incident of life was, so to speak, a mnemonic for a special prayer or pious ejaculation, and for days together, he subjected himself to fasts and self-mortification such as might compel the admiration of the cloister. To the omnipresent Devil he was a mighty and militant enemy, and no one was so quick as he to detect and frustrate the malicious and insinuating schemes of his subtle adversary. When twenty-five years of age his attention was first directed to the evident manifestations of Satan in the bewitching of the child of a certain Mr. Goodwin of Charlestown by an agent of the infernal regions in the shape of a sharp-tongued old washer-woman who was duly executed for her hellish practices. And his preaching and publications concerning this case doubtless had their effect in spurring on the public to the decisive battle which was waged four years later at Salem against the powers of the invisible world. In this warfare Cotton Mather took an active part. But

while tradition has, for nearly a century, pictured him as a relentless inciter of widespread executions, a study of the records appears to show that, active as he was in warfare against his infernal enemies, his voice was usually on the side of cautiousness and humanity, ever raised against the admission of "spectral evidence," and urging a recognition of the possibility that the Devil might manifest himself in the form of an innocent individual. And if, when, in later years, witnesses, jury, and even magistrates were tortured by doubt and self-distrust and remorse, the stern old warrior remained unmoved and defended to his dying day the good fight which he had waged and won against the legions of Hell, it was not so much, as his enemies would have it, an evidence of vanity and cruelty, as that his moderate and humane counsel left him little to regret.

Mather, although he failed to obtain the coveted presidency of Harvard College, was a great power in temporal as well as in spiritual affairs. He had, always, a lively interest in matters medical and was replete with advice and counsel, much of which was good. At the age of fifty-eight, he read, in the *Philosophical Transactions of the Royal Society*, a paper by Timonius on a "New Method of Introducing Small-pox by Transmission," in which was described the method of inoculation then in vogue in Turkey.¹

¹ The following passage from the "Angel of Bethesda" would seem to indicate that Mather had already learned of this practice from other sources. "There has been a *Wonderful practice* lately used in Several parts of the World, which indeed is not yet become common in our Nation.

"I was first instructed in it by a *Guaramantee* servant of my own, long before I knew, that any *Europeans* or *Asiaticks* had the least acquaintance with it; and some years before I was enriched with the communications of the Learned Foreigners, whose accounts I found agreeing with that I received of my servant, when he shewed

Impressed by the probable benefits which the introduction of this procedure might bring to a city in which small-pox was spreading, Mather urged William Douglas, the leading physician of the town of Boston to put the method into practice. Douglas refused, as did all other physicians excepting a modest young man, Zabdiel Boylston of Brookline, who, on 27, June, 1721, inoculated his son aged 13, a negro, and a little coloured boy. This was only about six weeks after the introduction of the practice in London at the instigation of Lady Mary Wortley Montagu.

These proceedings caused great public excitement. Almost all the medical profession and many of the clergy violently assailed these two courageous men. Insult and vituperation were poured upon them by pulpit and press, while angry mobs threatened their very lives in the streets. On one occasion, while Mather was harbouring, at his own dwelling, a convalescent from the operation, a mob attacked the house and threw a lighted bomb into the room occupied by the patient. Happily the fuse became detached and the bomb failed to explode. Attached to the bomb in such a manner that it might possibly have escaped destruction in the event of an explosion, was the following courteous mes-

me the scar of the wound made for the Operation; and said, That no person ever died of the *Small-pox* in their country that had the courage to use it.

"I have since met with a considerable number of *Africans*, who all agree in *One Story*, That in their country *grandy-many* dy of the *Small-pox*: But now they Learn This way—: people take juice of *small-pox*, and *cutty-skin*, and putt in a Drop; then by'nd by a little *sicky sicky*: then very few little things like *small-pox*; and no body dy of it, and no body have *Small-pox* any more. Thus in *Africa*, where the poor creatures dy of the *Small-pox* like Rotten Sheep, a merciful God has taught them an *Infallible preservative*. Tis a *common practice*, and is attended with a *constant success*."

sage: "Cotton Mather I was once of your meeting, but the cursed lye you told of ——— You know who, made me leave you, you Dog. And Damn you, I will enoculate you with this, with a pox to you."

Threats of personal violence continued and Mather sincerely believed that his life was in grave danger. Though his fears may have been exaggerated, yet the following entry made in his journal a few days after the throwing of the "granado" is rather touching evidence of the state of mental exaltation under which he then laboured: ¹

"19/9" (Nov. 1721) "Now, I am so far from my Melancholy Fear on this occasion, that I am filled with unutterable Joy at the prospect of my approaching Martyrdom. I know not what is the Meaning of it; I find my mouth strangely stopp'd, my Heart strangely cold, if I go to ask for a Deliverance from it. But, when I think on my Suffering Death for saving the Lives of Dying people, it even ravishes me with a joy inexpressible & full of Glory. I cannot help Longing for the Hour, when it will be accomplished. I am even afraid almost of doing anything for my preservation. I have a Crown before me; and I now know by Feeling, what I formerly knew by Reading, of the Divine Consolations with which ye minds of Martyrs have been sometimes irradiated. I had much rather Dy by such Hands, as now threaten my life, than by a Feaver, and much rather Dy for my conforming to the Blessed JESUS in Essays to save the Lives of Men from the Destroyer, than for some Truths, tho' precious ones, to which many Martyrs testified formerly in the Flames of *Smithfield*."

¹ The privilege of consulting the manuscript diary of Cotton Mather for the year 1721, which is in the possession of the Massachusetts Historical Society, I owe to the courtesy of Dr. Samuel A. Green, librarian.

But the old parson and the young physician pursued the even tenour of their way, and gradually gained adherents. In a year Boylston with two other colleagues had inoculated two hundred and eighty-six persons with but six deaths, three of which may have been due to previous contraction of the disease from other sources, while among 5579 uninoculated who took the disease during the same period, 840, or more than one in seven, died. These results ere long, won the day, bringing lasting fame to both at home and honourable recognition in the mother country to the brave physician, Zabdiel Boylston.

Cotton Mather was a most prolific author, publishing during his life 382 works. His most famous publications are: "*Magnalia Christi*"—an ecclesiastical history of New England, which contains a mass of entertaining and valuable information about the early days of the colony, and his "*Wonders of the Invisible World. Being an Account of the Tryals of Several Witches Lately Executed in New England,*" an amazing exposition of the strategy and machinations of the devil and of the tactics which the servants of the Lord should employ to resist them. Mather was a vigorous writer. He belonged rather to the class described by an author of his own time,¹ who, "with a Supercilious Gravity, have magisterially inveigh'd against the Vices of Mankind" than to the others who "by the nipping Strokes of a Side-wind Satyr, have endeavoured to tickle Men out of their Follies." Perhaps there may be some who would class his among what the same author calls the "Sowr Pupit-Orators."

His invectives against the Vices of Mankind were of no mean force, as the title of his well-known *Execution*

¹ *The English Theophrastus*. 8°. London, W. Turner et al., 1702, Preface.

Sermon may suggest. "TREMENDA—The dreadful sound with which the wicked are to be thunderstruck. In a sermon delivered unto a great assembly, in which was present, a miserable African (Joseph Hanno) just going to be executed, for a most inhumane and uncommon murder, at Boston May 25th, 1721."

One can fancy the terror of a superstitious negro on listening to this highly coloured discourse, wherein he is apostrophized as "O forlorn Ethiopian," while his crime is referred to as of Ethiopian hue.

Mather's style was most remarkable, consisting, often, of a jungle of strange capitals and italics and Latin quotations interlaced with an exuberant undergrowth of punctuation marks, while in the recesses lurked the furtive anagram and, all too frequently, the Bandar-logian pun. But in the tangled jungle there is a store of hidden treasure, and in many a passage of his writings there is fine dramatic force and vigour.

Cotton Mather was honoured abroad as well as at home. He was made a Doctor of Divinity by the University of Glasgow in 1710 and became a Fellow of the Royal Society in 1713. He died on the 13th of February, 1728, and was accorded a public funeral no less impressive than that of his father in which he had taken a great pride.

Among his unpublished manuscripts he left a work entitled:

THE ANGEL OF BETHESDA

- ' An ESSAY upon the *Common Maladies of Mankind*.
- ' Offering, first, The Sentiments of PIETY, where to the
- ' Invalids are to be awakened in & from their *Bodily*
Maladies
- ' And then, A Rich Collection of *plain* but *potent* and
- ' Approved REMEDIES for the *Maladies*.

- ‘ Accompanied with many very practicable Directions,
for
‘ The PRESERVATION OF HEALTH, to such as
enjoy a good
‘ Measure of so great a Blessing.
‘ And many other curious, & grateful & useful Enter-
tainments,
‘ occasionally intermixed.
‘ The whole being A *Family-physician*, which every
Family
‘ of any capacity may find their Account on being sup-
plied
‘ Withal.

The manuscript of this remarkable work I have recently had the privilege of inspecting, through the courtesy of the American Antiquarian Society.

In the first chapter the author quotes from a former treatise entitled, “MENS SANA IN CORPORE SANO”; “Lett us look upon Sin as the *Cause of Sick-ness*. There are, it may be, *Two thousand Sickesses*: And indeed, *any one of them able to crush us!* But what is the *cause* of all? Bear in mind, *that sin* was that which first brought *Sickness* upon a Sinful World, and which yett continues to *sicken* the world, with a world of Diseases: & *Sickness* is in short, *Flagellum Dei pro peccatis Mundi*.”

’Twill be impossible to enter into anything like a full description of this most interesting treatise. A few notes must suffice.

In chapter V, which is entitled “Nishmath Chajim”¹—the breath of life—there are some striking

¹ This chapter has been published in book form. “Nishmath Chajim. The Probable SEAT of all Diseases, and a General CURE for them, further Discovered. More particularly, for *Splenetic & Hysteric* Maladies, which make so great a part of our Distempers.” New London, 1722.

passages. "It is well known that if *one Third* of our *Diseases*, be those which we call, *Chronical*, more than *one Half* of this *Third*, will be those, which in *Men* go under the Name of *Splenetic*, and in *Women* go under the Name of *Hysteric*; tho' the *Spleen* and the *Womb* are often enough unjustly accused in these Denominations. It is marvellous to see, in how many *Forms* we undergo *Splenetic* and *Hysteric* maladies; The very *Toothache* it self often belongs unto them: And Marvellous will be the *Success*, Marvellous the *Esteem*, of the Physician that can Discover 'em & Encounter 'em" "These Maladies have many Symptoms, which may serve as *Diagnosticks* for them: Especially these TWO: That the *Urine* is Clear, Limpid, and Copious. And, That the Patient is *Chiefly* affected with his Indispositions, when he has just had his *Mind* under some Disturbance and Affliction."

He advises rest and encouragement, and recommends riding especially, but concludes: "UPON the Whole; OF all the Remedies under Heaven, for the Conquering of *Distempers*, & for the Preservation of *Health* & Prolongation of Life, There will now be found none, like serious PIETY." and "LET this be Remembered; Moderate *Abstinence*, & Convenient *Exercise*; and some Guard against Injurious *Changes of the Weather*, with an HOLY & EASY MIND, will go as far, in Carrying us with *Undecay'd Garments* thro' the Wilderness, to the Promis'd and Pleasant Land, which we are Bound unto, as all the *Prescriptions* with which all the Physicians under Heaven, have ever yet obliged us."

There is an excellent chapter on "The *Gymnastick* or an Exercitation upon EXERCISE," which contains much wisdom. Of riding, which he commends especially, he says: "If a man knew, and would keep to

himself, any Remedy equal to that of a Course of *Riding*, *Opes ille exinde amplissimas facile accumulare posset*, he might soon come to keep a *coach* and know ye English of *Doct Galenus' opes*.

"I hope the *Rider* in the meantime, won't be unmindful of Darby Dawn's caution,

*But lett the Rider take a care;
Lest from a stumbling Horse or Mare
He don't take Earth instead of Air.*

Chapter VII is in some respects, the most interesting of the work; it is entitled: "*Conjecturalia or, Some Touches upon, A New Theory of many Diseases.*" Quoting various authorities, he expresses the belief that a large number of diseases, among which are Small-pox, Plague, Consumption, Lues, bad colds and the itch, are due to infection with minute parasites which may be transmitted by the air or, under some circumstances, by contact with the patient. He refers to these parasites which, he says, may be too small to be visible by the best microscope, as "insects" or sometimes as "worms"; the chapter ends with the following paragraph: "But, O ye Sons of erudition, and ye *wise men of Enquiry*; Lett this *Enquiry* come into a due Consideration with you; How far a potent *worm-killer*, that may be safely administered, would go further than any Remedy, yett found out, for the cure of many Diseases."

In chapter XII he refers to the Gout as "*Dominus Morborum*; But especially, *Morbus Dominorum*," and offers the following consoling advice to the gouty: "Now, lett ye *gouty* People that are *chastened with Pain on their Bed, and the multitude of their Bones with strong pain*, fall into serious and awful *Medita-*

tions, on ye pain, which will be ye portion of them, on whom an All-powerful God will make known the *power of His Anger!* ”

Chapter XIII is on “ *The Gout's Younger Brother or, The Rheumatism, and Sciatica.* ”

In chapter XX, on Small-pox, the interesting story of the introduction of inoculation is told.

In the section on diseases of the eye he waxes eloquent: “ SPECTACLES! Mankind is prodigiously inexcusable, in that the Name of ye First Inventor is entirely lost. That statues of *Corinthian Brass* have not Immortalized it.”

Chapter XLII is entitled: “ *The Main Wheel Scoured & oiled or, Help for the Stomach depraved.* ”

The peritonitis which, in most cases doubtless represented appendicitis, is described unwittingly, in a manner which would have delighted the author had he realized what he was doing, in an appendix to the chapter on Cholic, in the following words: “ A grievous and fearful Disease, an Appendix to the *Cholic*, is now broke in upon a miserable world; called, The Dry-Belly-Ache.”

“ Under the Torments of this horrible Disease, we may recommend unto the patient such sentiments of PIETY as we found the *Cholic* leading to.”

“ In so Difficult a case, and where so wise a Conduct is required I dare not offer any prescription, but, A *Wise Physician*. Consult such an one and follow his Directions, relying wholly on ye Blessing of God.”

The small volume which I have this evening, is entitled “ *Manuductio ad Ministerium or DIRECTIONS for a Candidate of the MINISTRY. Wherein, FIRST Right FOUNDATION is laid for his Future Improve-*

ment; And THEN, RULES are Offered for such a Management of his *Academical* and *Preparatory* STUDIES; And thereupon, For such a CONDUCT after his APPEARANCE in the World; as may Render him a SKILFUL and USEFUL minister of the Gospel." This work was published in Boston, "Printed for *Thomas Hancock*, and sold at his shop in Ann-Street near the Draw-Bridge" in 1726. It is dedicated, in Latin, to the studious youth of the academies especially in Glasgow and in New England as well as to any young non-conformists in England compelled to work in private.

After a learned Latin introduction, he holds forth to his readers in twenty chapters upon various subjects, such as:

§1. DEATH Realized.

§2. The True End of Life Answered.

§3. Conversion to Piety accomplished &c.

The last chapters are RULES OF HEALTH and RULES OF PRUDENCE. There is so much that is wise and quaint and entertaining in these pages that I shall read the whole chapter, entitled: RULES OF HEALTH and a few extracts from his even more admirable RULES OF PRUDENCE:

"§19. I have yet more to do; I may not leave you, till I leave a few RULES OF HEALTH with you; which I shall do with the utmost Brevity.

"Having first encouraged you to cultivate an intimate Acquaintance with some Wise and Good *Physician*, who may have the continual *Inspection of your Health*, in your Friendly Conversation with him, I will defend you with the ensuing Admonitions.

"I. The most Acute Physicians, find themselves compelled, with our *Cheyne*, unto this General Direction. The *Grand Secret* and *Sole Method* for *Long Life*, and

so for the *Health* which will befriend and sweeten it, is, To keep the *Blood* and *Juices* in a State of due *Fluidity*. And nothing will do this, but keeping much to a *Spare*, *Lean*, *Fluid* sort of a *Diet*. All who *live long*, and without much *Pain*, and after such a *Life* at length *Die easily*, are such as *Live Abstemiously*.

“II. *Borellus* has a Remark on many Students falling into a *Consumption*, That it often proceeds, *A Fumo candelarum hausto in Musaeis undiq; Clausis*.

“You will undergo the less of this Hazard, if you mind the Report of *Manlius*; *Ego multos Periculosos Morbos et Miserias hujus Corpusculi mei Vito, hac unica Ratione, quod semper utor Diligentia, cito eundi cubitum*.

“III. The *Medicina Gymnastica* has done Miraculous Things. *Bodily Exercise profits*; But no *Exercise* comparable to that of *moderate Riding*; whereof, the Reason why we find no more in the Prescriptions of the Ancients, (tho' *Galen* has a Chapter about it) for the Recovery of the Feeble, is because they were so simple as to *Ride without Stirrups*. The *Saddle* is the *Seat of Health*. As for the *Games*, which Exercise the *Spirit* and not the *Body*, particularly, the Noble and Ancient Game of *Chess*; These are by no Means proper for a *Student*.

“IV. 'Tis an Observation of that Great Man, the Lord *Verulam*, *Nihil magis conducit ad Sanitatem et Longaevitatem, quam Crebrae et Domesticae Purgationes*. A *Family-Purge* now and then taken, may be of Service to you. *Pillulae Ruffi*, especially when Chalybeated with adding about a third part of *Sal Martis*: Or else; A Bottle of *Anniseed Water*, with a *Dram* or two of *Rhubarb* steeped in it; These you may conveniently have always at hand for this Purpose.

“V. *Vander Heidan*, has not related an hundredth part of the Vertues, in *Cold Water*. I tender you the

Advice which the Aged Servant of GOD gave to his Valued Son, *Drink not only Water; but use a little Wine for thy Stomach's sake.* And yet I would say, upon Drinking a Glass of Generous *Wine*, often take a Glass of *Water*. And if the *Beer* they bring you, be too *Strong*, dilute it with putting a sufficient Quantity of *Water* into it. But never take *Water*, or any thing else, *Cold*, when you are *Hot* with *Labour*. There is *Death in the Pot*.

“When you have run the hazard of disturbing your *Stomach*, with Ingurgitations from a Full Table, a Draught of *Cold Water*, will do *Good like a Medicine*.

“Going to Bed, and Sweating from a large Draught of *Cold Water*, not only stops and cures a *Cold*, but also often extinguishes a *Fever* at the Beginning.

“Daily to wash your Head and Mouth with *Cold Water*, is a Practice that cannot be too much commended; If it were only for saving you from the *Toothache*.

“For a Frequency in the Use of the *Liquors*, which they call *Spirits*, be as afraid of it, as you would be of a Familiarity with *Evil Spirits*.

“VI. When you go to Infectious Places, one of the best Things you can do, is to hold and chew a bit of *Myrrh* in your Mouth.

“VII. To feed much on *Salt-Meats*, won't be for your Safety. Indeed, if less *Flesh* were eaten, and more of the *Vegetable* and *Farinaceous* Food were used, it were better. The *Milk-Diet* is for the most part some of the wholesomest in the World! And not the less wholesome, for the *Cocoa-Nutt* giving a little Ticture to it.

“VIII. *Shall I smoke Tobacco?* Answer; Be sure Not, if I can help it. Or let *Alsted* answer for me. *Maximus Tabaci Abusus est, quotidiano ejus usu, semetipsos, et bonas Horas perdere, et ex cerebro, men-*

tis nobilissima sede, caminum et cloacam efficere. In the Dutchy of *Berguen*, People may not *Smoke*, without purchasing a *License* for it. If you were to purchase of me a *License* for it, I know not how high Terms I should hold you to. If you want an *Hydragogue*, there is one preferable in chewing some such Thing as a bit of *Mastich*; which would also whiten your *Teeth*, and sweeten your *Breath*, which *Tobacco* poisons. If once you get into the way of *Smoking*, there will be extreme hazard, of your becoming a *Slave* to the *Pipe*; and ever *Insatiably craving* for it. People may think what they will; But such a *Slavery*, is much below the Dignity of a *Rational Creature*; and much more of a *Gracious Christian*. I am sure, what the Great *Voetius* writes upon it, is very true; *Minime convenit viris honestis et gravibus; nominatim Ministris et Ministerii Candidatis.* There can be no *Apology* for your taking up the *slovenly Practice*, and the Pains that must be taken to conquer the *Poison*, if you are not well advised and assured, *That your Health requires it.* But I shall only recite what you will find in Two very considerable Writers, that you may form the better Judgment upon it. The One of these Writers is *Magnenus*, who tho' he be a mighty Friend to the Use of *Tobacco*, yet acknowledges, 'That it is not easy to relate, what are the *Damages*, which the Inordinate and Immoderate Use of this *Fume* does bring with it; for besides the insatiable and greedy Lust of taking it, by its daily Use, the *Memory* is impaired, the *Stomach* violated, the *Brain* exiccated, and the *Life* shortened; and the *Offspring* damnified.' Yea, he lays this down as an undoubted Assertion; *That the frequent and familiar Use of it, can be good for no Man.* The Other is our *Gale*, who from his own Experience taxes the Smoke of *Tobacco* with very *Noxious Qualities*: He says, 'He

‘found it *made* more Humours than it brought away; ‘and tho’ it *opened* his Body for the present, it proved ‘in that very thing a Prejudice afterwards; and Nature was but the more Sluggish and Feeble anon, for ‘the *Force* in this way put upon it.’ He says, At last I came under a fixed Resolution to deliver my self from this Vassalage; And this I account not the least Deliverance of my Life. And yet, after all, I am not so Inflexibly sett, as utterly to deny you the Use of Tobacco, if you are sure of any Benefit from it. Only I insist upon it, That you be, (If I may use a Phrase, that if it may seem to trespass upon Good sense, it shall yet have as much as the Thing I write against) Excessively Moderate in it. And if you are growing so Wise as to Retrench and Reform any Intemperance in it, which you may have been unawares drawn into, do it not at Once, but by Degrees, lest by too quick a stop to an usual Discharge, your Health may be endangered. But, upon the whole; if you have hitherto escaped this Epidemical Contagion, and are not yet a settled Inhabitant of the Terra del Fuogo, I cannot advise you in better Terms than those; It is Good for you to abide even as you are; And, If you may be kept free, chuse it rather. Yea, My Son, If Smokers entice thee, consent thou not. It is good Advice; and if you take it; you will one Day Thank him that gave it.

“But if I am against your taking Tobacco in Smoke, you may be sure, I shall not approve your taking it in Snuff. How shameful a thing it is, for People of Reason to confess, that they can’t live easily half an Hour together, without a Delight so Sensual, so Trivial, so very Contemptible, as that of Tickling their Olfactory Nerves a Little? And even bury themselves alive, in pungent Grains of titillating Dust? A Learned Physician of the French Nation, will tell you, how many

Diseases of the *Genus Nervosum*, do issue out of that *Pandora's Box*, from whence the Pinch of *Snuff* is taken. A *Quincy* will tell you, how wretchedly it *spoils the Appetite*. And a *Cheyne* will tell you, how much the *Eyes* as well as the *Stomach* fare the worse for it. You may dream, that the Passage thro' the *Os Cribri-forme* will not permit the *Gross Powder* of your *Snuff* to enter into your *Brain*; yet some very thin and fine Parts of it will find their way thither. And what Mischiefs must needs follow a *Brain* so poisoned? Nay, One would think, that the great *Snuff-takers* had their *Brain* already touch'd; or they could not be so obstinately and incurably attach'd unto an *Evil Habit*, which their Folly has brought upon them. A very just Motto for the *Snuff-box* might be, A LEADER TO THE COFFIN. If it be offer'd you, *Away with it!* I say again, *Away with it!*

“IX. A Knight of my Acquaintance visiting the famous Dr. *Lower*, in his last Sickness, ask'd him for the best Advice he could give him, *How to preserve his Health, and prolong his Life*; the Doctor only answered him, *Don't eat too much!* After some other Discourse, the Knight not imagining that the Doctor had thoroughly answered his Enquiry, repeated it. The Doctor thereupon only repeated his Answer, *Why, Didn't I tell you; Don't eat too much!*—And, further said not. Sr. *Theodore Mayern* on his Death-bed gave this Advice to a Noble Friend, that ask'd his Counsil for the preservation of his health. *Be moderate in your Diet; Use much Exercise, and little Physic*. I would have added, *Guard against injurious Changes of the Weather; and especially be exposed unto the Night-air as little as may be.*

“X. *Baglivi* is not the only Gentleman, who has observed, how much *Tranquillity* and *Serenity* of the *Mind*, contributes unto the *Health*. Hofman in his

Treatise, *Des Moyens de vivre Longtemps*, has observed, That in the way of keeping the *Mind Quiet*, the *Fear of the Lord tends unto Life*. An *Holy* and an *Easy* Mind, is the most *Healthful* Thing under Heaven: The most potent *Prophylactic* in all the World. I need say no more.

“ Only This. Forever *Obsta Principijs*.—If any Sickness come upon you, be sure to be *Sick soon enough*. *Maladies* taken at the Beginning may be easily and presently conquered; when—*delays are dangerous*. And if you are upon a Recovery from any Malady, *Ben't Well too soon!*

“ 20. I have now no more to do; but only single out a Few RULES OF PRUDENCE, the Observation whereof may be your Preservation from very many Wrong Steps, in the Way you have now before you. It cost the *Prussians*, the Trouble of a *War*, before they could oblige their Neighbours, to call them no longer *Brutos*, which they did before the Tenth Century, but, *Prussos*, which signifies, it seems, A *Prudent People*. I wish it may cost you no more Trouble, than only a little *Reading of*, and *Thinking on*, certain *Maxims of Prudence* to render you one of that People. I shall not say, how much it has cost me, and what a *Dear-bought Experience* it is, that has enabled me to recommend them.

“ I. The *Italian* Maxims are no *Imprudent* ones. One must not *Spend all he hath*; nor *Do all he can*; nor *Tell all he knows*; nor *Believe all he hears*.

“ And there is a Sentence of a *Greek* Poet, worthy to be remembred with you; which in plain *English* will tell you, *No wise Man will be taken a second Time, in an Error he hath suffered for*.

“ II. It is a Lesson worth more than an *Ingott of Gold*, which one who saw many Things, has left, for

what is to be uttered in Company; *Bis prius ad Limam quam semel ad Linguam*. Think before you Speak; Think before whom you Speak; Think why as well as what you Speak. And Remember, *In multiloquio Stultiloquium*; And *Least said soonest mended*.

"It is a very prudent Remark; If one observes these Three small Imperatives, *Audi, Cerne, Tace*, he will need no other Passport for Travelling over the World. You will have a good Note of Wisdom, with two *Satelites* to it, in my reciting to you the Observations of a very Discrete Man, who said; *He had often got hurt by eating too much; rarely, by eating too little; Often got hurt by wearing too Few Cloaths; rarely, by wearing too many; Often got hurt by Speaking; rarely, by holding his Tongue.*

"VII. Let it be as a *Law of the Medes and Persians* with you, *That you will never sacrifice any Hours of a short Life, in Contentions*: Especially in *Personal Contentions*, and Quarrels and Squabbles, and *Vitilifications*. *Abundance of Sin* will be unavoidably committed in them; And, *The Game will not pay for the Candle.*

"IX. Don't Use your *Pen*, and Lose your *Time*, in *Eristic Writings*, any more than unquestionable *Duty* and *Prudence* makes to be absolutely Necessary. Writing upon a Point, and in the Way and Strain of *Controversy*, will not only have a Tendency to discompose the *Peace* of your Mind, but miserably Divert the *Studies* of a short Pilgrimage, from such things as would be much more Profitable for your self and others. Anon, the *Grand Point* of the *Controversy* will be, only *Who has most Wit or Grace of the Two*, you, or your Antagonist. A *mighty Business*! If *Jerom* were pleased in an Hectoring way to forewarn his Opponents, that he was, *Cornuta Bestia*; I hope you won't be so.

“X. If Calumnious *Quills* have publicly scratched you,—*An Respondendum semper Calumniis?*—No. Look as far back as Two Thousand Years ago, and you will find even a *Plato* giving a Pattern to a Christian, in his declining to take any Notice of the Invectives which a *Xenophon* had used upon him.—It may be, the *Scribblers*, are sorry *Scoundrels*, and such vile *Children of Sheth*, as it is beneath you to let them know that you have so much as read their Follies.—Or be they what they will, *for the most part*, the best way will be to, *Shine on*, Regardless of what the *Batts* and *Owls* may mutter against you. Or, if that Metaphor be too *Sublime*, let me say, At least *As the Moon among the lesser Fires*, keep a steddly Pace, *Walking in your Brightness*, notwithstanding the unregardable Allatratations of your Adversaries. If they persecute you with *Libels*, 'tis a notable Hint, that *Le Clerc* has given you. Instead of answering them, write such learned and useful *Books*, as will be of *perpetual Service* to Mankind. These will procure such a casting and lasting *Testimony* for you, that there will need no more to make a Man ill tho't of, than this; That he was a *Thersites* to you, and one that wrote against you. These *Books* will be durable Monuments of your Valuable and Honourable Character, when the *Libels* of these poor *Animal-culicuncles* will perish among the *Wast-Paper*, which the *Haberdashers of small Wares* have occasion for.

“And if any *Preacher* should be so impertinent as to have any Girds at you in the Pulpit, remember the Advice of the sweet-spirited *Melancthon* to *Vitus Theodorus*, when the hot-spirited *Osiander* had preached against him; *I charge you, Don't Answer the Man; Hold your Peace; Go on in your Ministry as if you had heard nothing!*—The Gentleman soon found his Account in hearkening to his *Candid Adviser*.

“That what I am driving may stick, you shall have it in the Form of two old Rusty Nails; The One, *Magnum Contumeliae Remedium Negligentia*; The other, *Sile, et funestam dedisti Plagam*.

“As wicked a Fellow as ever polluted a Pen, yet has this Passage worth transcribing from him, while his Name is not worth mentioning. ‘The Malice of *Ill Tongues* cast upon a *Good Man*, is only like a *Mouthful of Smoke*, blown upon a *Diamond*, which ‘tho’ it clouds its Beauty for the present yet it is easily ‘rubb’d off, and the Gem restored with little Trouble ‘to its Genuine Lustre. But an *Honest Pagan* than he, has told you, *Perditi Hominis profligatique Maledictis, nullius Gloria dignitasq; Violatur*. Old Cicero tells you so. . . .

“XII. While you are yet in your *Younger Years*, be always furnished with a Stock of Weighty and Useful *Questions*. By wisely and humbly offering These, and with the Modesty of One desiring to be Instructed, you may commonly lead the Conversation, even with your Superiours, & almost necessitate a *Profitable Conversation*. You may be, as *R. Jeremy* was called, *The Master of the Questions*. A *Discretion* in this point, is a distinguishing Thing. But whenever you are *Arguing*, ordinarily propose every Thing rather *Socratically* than *Dogmatically*. Be not *Positive*; much less *Clamorous*; least of all *Furious*. But keep up an Air of *Modesty*, and carry on your Discourse, in the form of proper *Questions*; and as one willing to be *instructed* by him whom you are disputing with. ‘Tis an *Excellent Wisdom*, this; To *Argue Handsomely*. . . .

“XVII. If you have laid up an *Inexhaustible Store* of *Stories*, accommodated unto all the purposes of the *Profitable* and the *Agreeable*, and have the Skill of *Telling* them *Handsomely*, and with a *Deliberate, Ex-*

pressive, Unstumbling Brevity, and produce them on many occasions, you may not only *Ingratiate* yourself wherever you make your Appearance, but also obtain almost any *Request* that you shall make one of *them* a witty *Introduction* to. The *Precious Stones* that every one sets a Value on, are called *Pleasant Stones*. But let not your *Pleasancy*, degenerate into any unbecoming *Levity*. Forever so *Regulate* it, and so *Moderate* it, that it may *Gracefully Terminate* in the most *Serious Discourse*, and if it may be, in the *Inculcation* and *Insinuation* of some *serious Maxim*, which may be *Good for the Use of Edifying*. . . .

“XIX. It may not be amiss for you to have *Two Heaps*. An *Heap* of UNINTELLIGIBLES; and an *Heap* of INCURABLES. Ever now and then you will meet with something or other, that may pretty much distress your Thoughts; But the *shortest Way* with the Vexations will be, *To throw them into the Heap they belong to*, and be no more distress'd about them.

“You will meet with some *Unaccountable* and *Incomprehensible Things*; particularly, in the *Conduct* of many People. Throw them into your *Heap of Unintelligibles*; leave them there. Trouble your Mind no further; *Hope the Best*, or *Think no more* about them.

“You will meet with some *Unperswadeable* People; No Counsel, no Reason will do any Thing upon the *Obstinates*: Especially, as to the making of due *Submissions* upon Offences. Throw them into the *Heap of Incureables*. Leave them there. And so do you go on to *do as well as you can*, what you have to do. Let not the *Crooked Things that can't be made streight*, encumber you.

“XX. 'Tis a Trespass on the *Rules of Prudence*, never to know, *when to have done*. Wherefore, *I have done!*”

X

OPENING REMARKS AT THE DINNER IN HONOUR OF WILLIAM H. WELCH, 2, APRIL, 1910

Colleagues and Friends: At the outset, in the name of Maryland and Baltimore, let me greet you who have come from distant parts to join in doing honour to the friend to whom every one of us owes a personal debt of gratitude and affection. And then for us all, and for the many others who cannot be here, let me tell him what a happy moment this is for us.

Last June, as one of our friends who is not with us tonight has said, the American Medical Association elected its foremost member to the Presidency. But 'twas not without difficulty, for his modesty had led him to hide for some time behind the armour of protecting technicalities. And it may as well be confessed that his presence here tonight was obtained only by strategy.

When, last fall, through the generous initiative of Ellis and Jacobs, there was called together a small group of Welch's friends and students who felt that they must have some opportunity to express that which filled their hearts, it fell to me to tell Dr. Welch our plans. Our modest suggestion was met by a categorical refusal. The invitation was finally accepted only on condition that the demonstration should be essentially a "home affair," and that the gathering should be as small as possible.

Dr. Welch, we have kept our word. This is the smallest gathering which could begin to express what we would say to you.

And now that we have our friend prepared, as it were, upon the table, the orthodox procedure would be to enter upon a minute and critical and objective dissection—to lay bare coldly his accumulated treasure. But alas, one must confess the impossibility of objectivity in such a case. And so, to use the formula of the wise man who has insisted so amusingly on the necessary subjectivity of all utterances, I shall now proceed to say a few words about myself, apropos of Dr. Welch.

I well remember the first time that I ever heard Welch's name; it was nearly twenty-three years ago. An honoured instructor had advised me to buy a certain book on the practice of medicine, because, in addition to the many excellencies of previous editions, this last had been revised and in many parts largely rewritten by a certain Dr. Welch, whom he regarded as the ablest physician in America. Three years later, as I was on my way to take up my work in Baltimore, another instructor told me that he felt that the greatest privilege of life at the Johns Hopkins Hospital would be the opportunity to profit by the example and teaching of Welch. He well remembered an involved discussion at a medical meeting at the end of which a young man of modest appearance arose, and in a few wise, simple, direct words cleared up the whole matter. He had been immensely impressed and had since regarded him as one of the most remarkable and able men in this country. How well today do we realize the justice of this observation!

At this time, twenty years ago, his influence which had been felt so deeply in New York, had already been quietly exercised in the selection of the original staff of the Johns Hopkins Hospital. Already, for five years, he had been at work in the laboratory surrounded by

a group of students whose names are all well known today. From that little laboratory, cramped and crowded, even when I first knew it twenty years ago, what an inspiration has gone forth! Although the contributions which have appeared under Welch's name have been relatively few, his influence has been felt in almost every great work which has been done by American students in the last twenty years.

In the laboratory by his side in the early years worked Sternberg and Councilman and Booker and Halsted and Sewall and Bolton and Nuttall and Mall and Abbott and Williams and Howard and Flexner and Hewetson and Barker and Reed and Cullen and Wright and many others. And what suggestion and encouragement did we all receive from the delightful talks when the "Father," as we lovingly called him—when we didn't call him "Popsy"—passed from desk to desk, and from his words at the meetings of the little medical society in the hospital library. But that inspiration was for no small group of men. One by one these students have carried abroad his spirit and his teachings until there is scarcely a laboratory in this country that does not contain men who owe their success to that which Welch has given them.

How rich already are the fruits of his work!

It is to you, Dr. Welch, that Councilman owes the inspiration that has guided his useful and eminent career.

It was your teachings that led to the able work of Mall and indirectly to the establishment of his department of which we are so justly proud.

It was your student, MacCallum, whose contributions to our knowledge of malaria have been referred to by one of the most eminent students in this field, as the most brilliant since the discovery of the parasite.

Reed, Lazear and Carroll were all your pupils, and 'twas with you and your old co-worker Sternberg, that Reed discussed and planned the work which led to the greatest achievement of American medicine—the discovery of the method of transmission of yellow fever.

It is your student, assistant and colleague, Flexner, whose absence tonight we so deeply regret, who presides over that great institution in New York, which the world owes to the generosity of Mr. Rockefeller. What a contrast, Dr. Welch, between that magnificent institution and your little laboratory—its legitimate mother! But then, although this little lady is sadly in need of a new dress today, who knows what ova of promise may still lie hidden in her flanks.

It is your student, Flexner, whose noble discovery of a curative serum for cerebro-spinal meningitis is saving so many precious lives today.

It is to your wisdom and initiative more than to any other one influence that are due any successes of the medical school started under your guidance. These may be some of the notable results of your teachings and your influence, but they represent a small part of that which we owe you. The wide extent of your learning, and the kindly interest which you have taken in everyone, have brought it about that you have become the fountain to which all repair for counsel and advice. But such wisdom, such charity and kindness, such powers of judgement could not, of course, long remain the property of your students and associates alone. In matters medical you have become the general adviser of all. From one end of the country to the other, no new departure is taken, no new laboratory is opened, no new chair is filled without your wise advice. How much the American Medical Association owes to your sage counsel as a member of the Board of Trustees no one will ever know.

As chairman of the Board of Health, you have directly and indirectly brought more credit to the State of Maryland than almost any other living citizen.

In the oft-renewed contest with the forces of ignorance and fanaticism allied, alas, too often—unwittingly, let us hope—with influences purely sordid and vicious, you have been the fearless and masterly leader of the army of truth and of light.

Not only in matters medical, but also in affairs of city and state, do we seek your assistance, and one of your associates on the Charter Commission has recently testified to your growing “insight into the morbid activity of *bacillus municipalis*!”

Among the various other ways in which your helpful influence has been felt, there is one upon which special comment should be made. You have set us all a brilliant and beneficent example as a master of the art of exposition. Your talent in this respect depends not only upon your clearness of thought, but upon a rare power of expression—a power which amounts almost to genius. No one can express a thought so simply and clearly as you. The chief art of the true master of language lies in his simplicity. Maeterlinck says somewhere: “The poet adds to everyday existence a something—I know not what—which is the secret of poets, and straightway it stands forth in its prodigious grandeur, in its submission to powers unknown, in its infinite relations and in its solemn misery. A chemist lets fall several mysterious drops into a vase which seems to contain naught but clear water, and in the twinkling of an eye 'tis filled with a world of crystals which reveal to us that which was held in suspense in the vase where our imperfect eyes had perceived nothing. So in *Philoctetes* the meagre psychology of the three main characters forms but the

walls of the vase which holds the clear water of everyday existence into which the poet is to let fall the revealing drops of his genius."

The beautiful symbol of the chemist and the poet has been brought to my mind more than once in listening to your words, or in reading your sentences. How often have the revealing drops of your genius brought out the crystalline kernel from involved discussion or ill-comprehended observation.

But after all, your greatest work lies in the personal example which you have set to the hundreds of students who have passed under your care. You have taught us a religion of earnestness and simplicity and directness—a religion of charity and of self-restraint, a religion of work, not of words. You have helped us to love truth for truth's sake, and above all you have spread far and wide that enthusiasm without which all effort is vain.

We honour you for your achievements! We respect you for your learning! We love you for yourself! And one and all we greet you here tonight, lovingly, gratefully and happily, as master, teacher and friend!

XI

LE GESTE DU JONGLEUR ¹

He leads a fairly active life; his days are rather full;
'Tis surprising how his interests have grown.
But there's one cross he has to bear, one ball he has to pull;
He can rarely find a chance to be alone.

He seeks the cushioned refuge of what the papers call,
In chastened parlance, an exclusive club,
A place where one might fancy that he could escape from all
Annoyances and cares—but there's the rub—

For just as he is coming to the most exciting part
Of the dictionary, with soft, lisping tone,
A gentle waiter whispers with insinuating art,
"Dr. Borah wan' de doctor at de 'phone."

At breakfast time he scans the "Globe" and seeks to find the key
To the meaning of the items for, in sooth,
All subjects about which he knows appear, unfailingly,
In form that bears small semblance to the truth.

Alone at last and fancy free, and hid from scheming eye,
He reads the hodgepodge of the so-called "news"
So carefully deformed that it may surely satisfy
Subscribers of the most divergent views.

He glances at the headlines which in lurid words display
The amorous delinquencies of man;
Those sordid human tragedies which babies know today
Have been occurring since the world began.

He reads an editorial so puerile 'twould make
A very schoolboy hide his head in shame;
He's just begun his breakfast when—alas, there's no mistake!
He hears a honey'd voice pronounce his name:

¹ Read at a small dinner on Welch's seventy-fifth birthday.

"Dey's a ge'm'man wan' 'er speak to yo'; he come yere yesterday;
Jes' one word wid yo', one word an' he's done.
Naw sir, I sho' don' know his name; he didn' say.
Seem lak he's a reporter fo' de Sun."

The School of Hygiene, at least, affords a sure retreat
And an amiable secretary who,
By taking down dictation, in some measure helps deplete
The pile the post always lays up for you.

Here, freed from interruptions, he can work at any rate;
Here, here, at last his precious time's his own;
But of what use is a secretary, if, when he'd dictate,
She's always busy at the telephone?

In vain, in vain, there's but one spot where he can hide and be
In truth removed from too insistent friends;
The railway, blest asylum! There at last he is set free!
With noise and jolt, peace comes; confusion ends.

The porter brings a table, and he spreads his papers out,
And writes and sleeps and sleeps and writes at will.
In resting mind new thoughts are born, new fancies rise and sprout;
New vistas open to his gaze—until—

What is this shadow at his side that darkens his fair dreams,
And kills his 'rising fancies at their birth?—
This incubus, this threatening cloud that settling o'er him, seems
To drag him down so fatally to earth?

With fevered pen he writes in frantic effort to ignore
The insistant figure at his side—in vain!
Mr. Babbitt cannot long maintain his silence; as of yore:
"You seem busy. Are you working on the train?"

In the chaste confines of his rooms there is one refuge sure,
His bed and bath at least are still his own.
There, circled by cigars and books, he smokes and reads secure;
No longer can be reached by telephone.

But when, after a night of peace, at morn' he starts to light
His first cigar, and step into his tub,
The housemaid raps upon the door—the inconsiderate wight!
A "gentleman" is waiting at the club.

Dear me, the eighth's his birthday which he had forgotten, quite;
His birthday, yes he'll then be thirty-two.
He'll take one day of blessed peace—alone he'll read and write,
And do for once just what he wants to do.

Into a reminiscent, dreamy revery he falls
While fragrant fumes are mounting from his stub,
But all his hopes are dashed when of a sudden, he recalls
That he's dining with those duffers at the club.

And when, at last, St. Peter meets him at the golden gate
He'll stop and give the key a moment's turn:
"Hold on! Stand back! Don't press so hard! Be patient there
and wait!
I must find that note for Dr. Welch—O dern!"

"Ah, here it is! These seraphs have been after me all day.
They've nagged and called me up until, I think,
Unless some decent Christian keep that wingèd crowd away,
My sole escape will be to take to drink!"

"Dear Dr. Welch, we know you'll have a rather busy day;
Please pardon if we seem to interfere.
But the Angel's Pure Food Federation, we are glad to say,
By a very happy chance is meeting here.

"We're discussing purer nectar for the cherubs; and you know
We're sure, that it would give us great delight
If you'd lend us your wise counsel and attend the nectar show
That we're holding at the Seraph's club tonight."

The end? Is there no end to this eternal humming top
Of futile interruptions? There's no end,
But like these verses it may be that some day it will stop.
In the meantime God be with you, dear old friend!

XII

W · H · W · ¹

PRAECEPTORI · PRAECLARISSIMO · ERUDITISSIMO ·
SAPIENTISSIMO · CARISSIMO ·
W · S · T · S · P · D ·
MCMXXXI ·

The span of life is short. The teeming sap
Leaps upward swiftly in its eager flow
To greedy buds whose fragrant offspring strew
Their petals all too soon upon earth's lap.
And when the ripening fruit turns toward the sun
Its glowing cheek, the winds of autumn rise,
And down it falls. E'en so we touch the prize
Long sought, of man's endeavour, all but won—
Learning is ours and power, learning's mate—
Lo, youth has vanished and it is too late!

But here behold a miracle in sooth:
The perfect fruit, immune from wind and time,
Holds all the vigour of its vernal prime
With autumn's harvest.—Learning, Wisdom, Youth.

¹ Read at the dinner to Welch on 29, January, 1931.

XIII

IN MEMORIAM

REGINALD HEBER FITZ ¹

It is a sad but grateful opportunity, that of coming home today to pay an affectionate tribute to the memory of my dear and valued master.

It is not far from thirty years ago, though it seems but yesterday, that we sat in the precipitous amphitheatre of the then new school building in Boylston Street, and listened to his brilliant talks. No one who heard those remarkable lectures could have failed to carry away a deep impression of the strength, the ability, the learning of the man. They were remarkable lectures, remarkable in form and in substance; models of clear and precise exposition, admirably delivered in language, every faceted word of which seemed to have been so chosen that it, and it alone, could fill its place. Stimulating hours which gave to many of us a lasting realization of the importance of precision and accuracy in observation and thought and expression.

Fitz was not an investigator in the sense that he carried out or led original, experimental research, but his contributions to the science and art of medicine were none the less important and valuable. His habits of discriminating precision in thought, in observation, in interpretation, in exposition gave him that penetrating clearness of vision which enabled him to extract, as could no one else, from a mass of apparently unre-

¹ Read at a Memorial Meeting at the Harvard Medical School, Boston, Mass., 17, November, 1913. From The Johns Hopkins Hospital Bulletin, 1914, XXV, 87-89.

lated observations, the concise, clear, clinical picture, correlated with definite physiological and pathological processes and anatomical changes. It is no small achievement that this one man should have given to the world the first clearly defined description of two such important maladies as appendicitis and acute pancreatitis.

His communication entitled "Perforating Inflammation of the Vermiform Appendix, with Special Reference to its Early Diagnosis and Treatment," was delivered in Washington before the first meeting of the Association of American Physicians on the 18th of June, 1886, now more than twenty-seven years ago. In this study, the orderly system and simplicity of which are so characteristic of the man, he focussed clearly, for the first time, the vision of the medical world on the true nature of the inflammatory processes occurring so commonly in the right lower abdominal quadrant, and showed, convincingly, that the seat of primary disturbance, in the great majority of instances of this nature, lies in the appendix vermiformis. And along with this demonstration, he set forth in a masterly manner the clinical manifestations of the disease.

This publication came at a time when the world was well prepared. Everyone recognized that Fitz had, as it were, put his finger on the spot. Once set forth, the pathological and clinical sequence of events seemed almost obvious—obvious as are so many great truths when once they have been clearly enunciated. The sharp light thrown by Fitz on this common and perilous pathological event brought it about that our countrymen were fully ten years in advance of the rest of the world in their comprehension of this process, and in their skill and efficiency in the care of the patient.

How many human beings owe their lives today, more or less directly to Fitz, no one can tell. Surely, it is no small number.

There has been one curiously paradoxical sequence of this great contribution. The word "appendicitis" employed by Fitz in the course of this article was immediately seized upon by the public and has entered into universal use, but not without bitter protest from some who still shudder at its etymological hybridism.

It is an amusing thought that of all men, Fitz, the most careful and accurate, should have been the target of irritated critics, because of the introduction into medicine of what they regard as an ill-constructed word.

The practical importance of the facts set forth in this first contribution has, it has often seemed to me, somewhat overshadowed the brilliancy of the later work. In his studies on the appendix, the truth seemed so nearly ready to emerge of itself that the medical public grasped, immediately, the significance of the exposition. The lectures on acute pancreatitis, on the other hand treated of a subject of which little was generally known, even anatomically. The analysis of the carefully collected pathological material, the discriminating consideration of the clinical features and the final synthesis of the definite, convincing clinical picture of the disease, acute pancreatitis, was truly a great achievement.

How well I remember the demonstration by Virchow, nearly a year after the delivery of the Middleton Goldsmith lectures, after I had seen acute pancreatitis recognized clinically and confirmed at necropsy—how well I remember the demonstration by Virchow of the organs from a case of disseminated fat necrosis with sequestration of the pancreas, accompanied by the

observation that these instances were pathological curiosities. With what pride I sought him out and made him familiar with the little pamphlet which set forth so clearly and so simply the clinical aspects of the disease!

How vivid is the memory of Fitz's recitations and demonstrations! What student who attended them can forget the charm of that subtle and incisive, but yet humorous and not unkindly irony—or rather, perhaps, that ironical facetiousness which so disconcerted some of his pupils and colleagues, and so delighted others; which was, I am sure, highly beneficial to many who did not fancy it at the moment.

One did not go to sleep at Fitz's demonstrations!

By nature of a careful and judicious temperament, he was a strong man, and had the strong man's love for discussion, argument, opposition. Just and tenacious of his opinions as a strong man should be, his firm mind was not easily shaken. But firm though his mind was, it was ever open to recognize and welcome and embrace the new truth. This very attitude of apparent opposition was one of Fitz's most stimulating qualities, inciting his associate, whether student or colleague, to keener and more efficient effort.

At the necropsy table he sought to induce the clinician to express a definite opinion as to the nature of the case, and where there proved to have been any failure wholly to apprehend the character or extent of the pathological process, he often pointed out the omission in diagnostic procedure or the error in reasoning which had been responsible for the incompleteness of the diagnosis. This most instructive and valuable habit was trying to some over-sensitive colleagues. But Fitz was consistent; he did not spare himself. While yet pathologist at the Massachusetts General Hospital,

he used to visit, in the surgical wards, patients on whom an abdominal section was to be performed, in order that he might compare his bedside observations with the results of surgical investigation. His opinions he was always willing to express, far more willing, sometimes, than those in attendance upon the patient. This habit must have been of great assistance to him as a consultant in later years; as an example to the house officers it was invaluable.

Fitz's peculiar keenness of intellect inspired, at first, in certain of his students, an admiration and respect not untinctured with fear—something akin to the *Ehrfurcht* of our Teutonic brethren. But the element of fear dissolved into love with the first personal contact. How simple and gracious was his reception of the student who, perhaps, with some misgiving, sought his counsel in private! His unfailing kindness and thoughtfulness, his friendly interest and wise advice so freely and generously given, meant more to some of us than words can express.

To not a few of his students, his teaching and example were the great inspiration of their school days, and to most of these men this inspiration has been a lasting and a growing influence. There must be many who owe to him their best ideals in medicine, and surely, there are others of his pupils who have been, as have I, so jealous of his regard that any consciousness of lapse or shortcoming has been inevitably associated with the sting of the thought that they were unworthy the confidence of Fitz.

It is very strange and sad, the thought that all this wealth of wisdom and learning and experience so slowly and painfully acquired through a long and active life, has vanished in a moment. It leaves one with a sense of immense emptiness and vacancy and waste.

But he has left to mankind a large legacy in his epoch-making contributions, and with his students and disciples he remains ever present, embodied in their highest ideals. If these disciples shall succeed in shaping their lives as he might have wished, his beneficent influence will long endure.

XIV

TEACHING AND PRACTICE ¹

It would be impossible to address this congress without a word of affectionate tribute to the memory of three great men who have presided over these meetings in years that have passed, figures, alas, that we shall not see again.

Fitz, the patient, discriminating student, the wise, inspiring teacher, whose keen eye and orderly mind shed light upon obscure corners of the art of medicine; Mitchell, the poet, the brilliant physiologist, the acute and sympathetic reader of men's minds, the great practitioner; Trudeau, the optimist who, in his long journey through the "valley of the shadow of death," led so great an army of sufferers to the land of light. 'Tis a heavy loss. But what a varied and lasting inspiration the lives of these men have left for us and for the world!

In the last several years, especially through the activities of the American Medical Association, the Carnegie Institution and the General Education Board, questions relating to medical education have been discussed very actively in America, and the changes and improvements in our methods of teaching and in the character and training of those who teach have been greater probably than in any other like period in the history of American medicine.

The relations between teaching and practice in hospital and in university have of late been the subject of

¹ Address of the president of the Congress of American Physicians and Surgeons delivered at Washington on 9, May. From *Science*, N. S. 1916, XLIII, 691-705.

especially vigorous controversy in this as in other countries. To one who for five and twenty years has been engaged with more or less activity in the practice as well as in the teaching of medicine, who has been associated with two universities in which interesting experiments in medical education are now in progress, these discussions have been of absorbing interest.

With all the divergencies of opinion and amid all the heat of discussion the goal aimed at is almost universally the same. It is our desire that the hospital, the school of medicine and the teaching staff shall be so organized that the ultimate service to humanity may be the largest; that we may gain greater knowledge of disease; that we may acquire more efficient means, public and private, of recognition, prevention and alleviation of the innumerable ills to which the human race and its inarticulate companions and servants are heir; that we may become more efficient in the care of our patients; that we may train better physicians. These are the main ends of the study of medicine. It has seemed to me well to devote this hour to a discussion of some of the phases of the relations between practice and teaching.

In the early days, the study of medicine in this country was begun in the office of the practising physician. By and by there developed schools of medicine in which the teachers were successful practitioners. The first of these schools were associated with hospitals, and although the body of teachers was not large, yet John Morgan in his famous address on medical schools, early pointed out the necessity that special branches of medicine should be taught by men who had given their greater attention to these branches in practice. The professors of medicine and of surgery who bore the brunt of the teaching and directed their departments

were usually busy men much sought for by the public in their community; and the teaching in the old days consisted largely of didactic lectures, with but limited demonstrations. Only thirty years ago, at the time when I was a student of medicine, the duties of the professor of theory and practice consisted solely in the delivery of several didactic lectures a week; those of the professor of clinical medicine consisted in the giving of two demonstrative clinics and one clinical conference. An assistant professor held one recitation a week. An occasional ward visit was given in one or another of the large hospitals, but these opportunities were improved by but a small proportion of the students. Physical diagnosis was taught during the second year to a class of about ninety by three instructors in several hourly exercises a week in sections of twenty to thirty. This constituted the work of the department of medicine.

The direction of such a department was properly confided to a distinguished practitioner, a man of wide experience; and its management involved demands upon his time no greater than were compatible with the suitable performance of his hospital and private duties.

In such a school of medicine the clinical instruction of a single medical department or unit could be, and often was, carried out in a variety of hospitals—those hospitals with which the professors of medicine had the good fortune to be connected. The only association between the university and the hospitals was, in many instances, an amicable agreement on the part of the latter to allow instruction in the out-patient departments, through public clinics in amphitheatre and operating room, and to a certain limited extent in the wards. There were no university laboratories connected with

the hospital. University laboratories existed at another centre which might or might not be near or at a considerable distance from the hospital. These laboratories depended in large part upon the hospital for their material, but did not often, excepting through the good will of the clinician and pathologist, control the supply; and, excepting to a very limited extent, the laboratories at the school rendered no especial service to the hospital.

In such a school of medicine a hospital was an accessory, a very close and valuable accessory to be sure, but yet an accessory to the department of medicine. And in discussing matters of medical education the hospital and the medical department of the university might be considered separately.

Today the hospital must be considered not as an accessory to the department of medicine, but as its vital centre. One can scarcely conceive of a school of medicine wholly independent of its hospital. The laboratories for the study of the chemical and anatomical and physiological phenomena of disease can not well exist at a centre removed from the hospital, or under the control of individuals other than those directly associated with the hospital management. On the other hand, the hospital in many instances has come to depend largely on the cooperation of the university in the performing of some of its most essential functions. Professors, assistants, undergraduate students all go to form a corps of hospital servants invaluable to the institution. In a word, the relations between hospital and school of medicine are so close and intimate today that a discussion of the organization of a medical or surgical clinic, or of a department of pathological anatomy, presupposes the assumption that hospital and university be under one management or in such close affiliation as to form a single working body. For the ends

aimed at by both hospital and school of medicine are closely related. The main, specific purpose of the hospital is the care of the sick; that of the school is the training of physicians. The care of the sick can be carried out best through the employment of physicians of the highest order, and for these the hospital turns to the school. But to offer the student the best possible training the school must have opportunities for the study of disease and of pathological material, and for these opportunities it turns to the hospital. The delicacy and complication of modern methods of chemical and physical diagnosis demand laboratories and laboratory equipment which involve considerable and steadily increasing financial outlay; they call, moreover, for students of the best chemical and physical training to preside over these laboratories. This has brought it about that general hospitals which are not integral parts of a university must turn to universities for assistance, or spend, for the installation of independent laboratories and apparatus and for the employment of salaried heads of these departments, a sum of money which to many institutions is almost overwhelming. The university laboratories of bacteriology, serology, physiological chemistry and so forth where studies which are in many instances most practical, are to be made, should be in or adjoining a hospital. Thus the economy and mutual advantages of cooperation are clearly apparent. And more than this, in the true university hospital which is centrally situated, a community of interest is constantly drawing together the clinical and so-called scientific departments. This is particularly true of the departments of physiology, physiological chemistry and pharmacology—and to the great mutual advantage of hospital and of university.

Today in the better equipped and organized institutions there is in ward and laboratory, in hospital and school, a common effort to contribute to the advance of the science and art of medicine in its broadest sense. Both hospital and school are centres of original research. However cordial and however free a cooperation there may be between the university and hospitals situated at a distance from the central plant, one must acknowledge the necessity to a modern medical school of one central hospital. And so it has come about that any discussion of the organization of a modern medical clinic presupposes that which, for purposes of illustration, may be called a "university hospital" as its centre, and calls for a consideration of certain hospital arrangements as an integral part of the problem. Such a hospital should be organized upon a basis entirely different from that which used to prevail and still exists in many institutions. The medical clinic or the surgical clinic, if it is to do its full duty to the public, to the hospital and to the school should be a well-organized unit under the control of a single director and a corps of associates and assistants. And of this corps of associates and assistants, some at least, preferably a considerable number, should be salaried men, who are required to give a large part of their time to their hospital and university work. All of these men should be members of the teaching staff of the university. Only in a clinic organized on some such permanent plan can constructive research be carried out or systematic instruction given. The old-fashioned rotating service is incompatible with the ideals of a modern hospital or university.

According to the size of the institution one or more such clinics may exist, and there is no reason why, in a large hospital, there might not be two or more sepa-

rate clinics, or why in a given university there might not be several more or less independent professorships of medicine with clinics at different hospitals, if the means were forthcoming to supply the necessary material for the full organization of such clinics.

But to return again to the organization and constitution of a single department of medicine as compared with that of thirty years ago. The changes in the method of teaching clinical medicine have been great. Demonstrative clinical lectures remain an important element of medical teaching. But the place of the didactic lecture has largely been taken by practical instruction before small groups at the bedside. This involves a considerable increase in the teaching staff and increases greatly the amount of time which the teacher must give to his work. Thirty years ago the professor of medicine may have been expected to give two or three hours a week to his classes. Today he could hardly be expected to devote less than six or eight hours to personal teaching. The problems of the teaching of physical diagnosis in its restricted sense are not so different from those of thirty years ago; but today it is generally recognized that the university should offer the student far more individual practical training than he used to receive. In the old days, three men, let us say, were entrusted with the teaching of a class of ninety; today the work would be distributed among six or eight at least.

Thirty years ago there was no such thing as a clinical laboratory, and clinical microscopy and chemistry were not taught in the medical department. Indeed, there were no special medical laboratories. Today a modern medical clinic must, in the first place, control a clinical laboratory presided over by men who are called upon to give a considerable portion of their time

to the training of the student in a large variety of methods of examination of secreta, excreta and body fluids; and this laboratory should also be a centre for scientific research. Thirty years ago it was easy for one man to preside over the entire department of medicine and to conduct his practice as well. It is extremely difficult, if not impossible, for a practitioner to preside over the clinical laboratory today, and at the same time to do justice to his responsibilities as a physician.

Chemistry as related to the practice of medicine thirty years ago played a relatively small part in the medical curriculum. It was mainly restricted to its application to the study of urine, and those studies were for the most part of a simple character. Today the chemical problems involved in the studies of human metabolism and used in the art of diagnosis are numerous and complicated, and are steadily increasing. No well-equipped medical clinic can exist without a department of chemistry, which should be presided over by a man of training and experience, capable of conducting and directing research and of supervising the necessary studies of a variety of problems which arise in the wards of the hospital, for, as has been pointed out, no school of medicine can fulfil its mission today without intimate association with an adequate hospital. It is not easily conceivable that the director of the chemical laboratory could find time for medical activities outside the clinic.

The older methods of physical examination, so called, although mastered only by practice and experience, were yet mechanically simple. Today, however, for the exploration of the human body and its activities, there are employed physical procedures which involve the use of instruments of great delicacy and demand a highly specialized technique. And sub-departments of

radiology and electrocardiography each with its laboratory and its director, are necessary constituents of the modern department of medicine.

The medical clinic should also have a special department of bacteriology and serology, another sub-department the direction of which demands much of the time of an experienced student. Of these laboratories also the director should be one who is able to organize, conduct and stimulate research.

Again, there should be in association with every medical clinic a department of physical therapy for the study and application of mechanical, hydro- and electro-therapeutical methods; and especially for the teaching of massage and of general physical training. Such a department might, it is true, be under the combined control of affiliated medical and surgical clinics, but some of the responsibility for its organization and direction should lie with the chief of the medical service.

It has been said that the directors of these sub-departments could hardly be expected to give any essential part of their time to the practice of medicine. Are they therefore wholly to be removed from the care of the sick? Is the department of medicine to have under its control a number of sub-departments presided over by so-called "pure" bacteriologists, physiologists, physicists, chemists—men who are entirely removed from direct responsibility for the care of the sick? Far from it.

In the ideally arranged department of medicine, all of these men should have clinical duties and responsibilities—duties and responsibilities which, in a hospital, may be systematized. And in the properly organized department of medicine, although many of its

members may in a sense be specialists, yet none will fail to acquire a wide general medical experience.

Let us now for a minute reconsider the problems which confront the director of a department of medicine today. The teacher of thirty years ago followed a relatively simple routine. The chief of a modern medical clinic finds himself the head of a complicated machine, involving the appointment of a large number of salaried assistants, the manipulation of a considerable budget, which alas! under present circumstances, rarely meets the demands of the situation, the coordination of a large staff of trained workers in clinical, chemical, physical, bacteriological, serological and physiological departments, and the organization of a system of group teaching to which he must himself devote a very considerable amount of his time. It is evident that the director of such a department should be a man who has had a rather broad training, who shall have had a basis of chemical instruction such as was impossible thirty years ago, and shall have spent a sufficient amount of time in work in each of the branches represented by the sub-departments of his clinic to enable him at least to comprehend the significance of the work which is there being done, and to carry out real supervision.

Time was when the teaching of medicine was, in great extent, a matter of authority. The student was led to accept precepts enounced *ex cathedra*. Today the teaching of medicine is largely a matter of demonstration, of example, of practice. The student is inclined rather to distrust precept for which proof is not adduced; he is offered opportunities to study the symptoms of disease and its treatment by the bedside, and is instructed in methods by which he may control and confirm so far as may be, the assertions which he

may read in the book or hear from the lips of the instructor. The method of authority has given way to the method of observation and inquiry.

Who should preside over such a clinic as this? Who is the ideal director of the modern medical department? Thirty years ago the professor of medicine was properly he who had attained the greatest reputation as practitioner or consultant. This reputation was often not attained before the age of fifty, and was gained through the active practice of the art. Such a man, who with years, might or might not have attained financial ease, might suitably, in these days, have been called upon, at a nominal salary, to direct a department and to give the two or three hours a week which were the sum total of the time exacted by the teaching duties of the professor.

But today it would be extremely difficult, nay, it would be almost impossible, for a man with a considerable consulting practice to organize and direct a medical clinic, such as that which I have outlined, and, in addition, to do the amount of personal teaching which would be necessary. The practitioner, even if he be purely a consultant, is not master of his own time. He may limit his consultations to special hours, but he can not cut off the increasing calls which appeal to his sympathy and come at any moment. And even if he see ever so few patients, he can not control the complicating side-questions to which relations with any one ill human being are too apt to give rise.

With the consultant as with the practitioner *sensu stricto* the human influence is the most important element in his work. The preliminary conferences indispensable for the establishment of the necessary relations of sympathy between physician and patient, the interminable confidences of the nervous invalid,

the unravelling of the tangled mental complexes of the psychoneurotic sufferer, the heart to heart talks, the breaking of sad news, the straightening out of the many complications which so commonly arise in connexion with grave illness, the letters to physician and family, the interviews with friends and relatives—these, as the consultant well knows, are the duties that consume his time; but they are necessary and essential parts of his work. It is not the actual time that the physician spends in the study of his patient—that is often the smaller part of it; it is the accessory duties that render it impossible for such a man properly to combine active consulting practice with the responsibilities of the directorship of a large modern clinic.

To accept such a position would necessitate the abandonment of a large part of that physician's practice; this would mean the loss of the main source of his income, unless he were a man of independent means. If then the professor of medicine in a modern university is to be chosen from the ranks of those men who have acquired great experience through professional success, it will be necessary either that the university shall pay a very considerable salary, or that the professor shall be a man of independent means. Such a salary, unfortunately, if men of this class are to be obtained, would have to be quite beyond anything that is at present possible in most universities. The successful consultant is usually put to considerable expense for the maintenance of the machinery necessary for his work, and in many instances comes to maintain a sort of existence which involves large financial responsibilities. However much such a man might desire to avail himself of the fascinating opportunities offered by the directorship of a large medical clinic, it is too commonly the case that, by the time he has well

entered upon his fifth decade he has already assumed responsibilities toward others which make it impossible for him rightly to abandon the sources of his income. But this, it seems to me, is not the essential feature of the situation. Is the physician who through years of practice has become the successful consultant, the man who is best fitted to direct a large department of medicine or surgery? By no means always. Indeed, in the majority of instances, it is another course of life which should best fit a man for a university professorship.

There has arisen gradually in this country a new class of consulting physician, the man who has deliberately planned his career from the outset, who has sought through long years of study in hospital and in laboratory, in association with large clinics, to gain in a concentrated fashion, as it were, that experience which may make his clinical opinion, both from a diagnostic and therapeutic standpoint, most valuable. Long-continued service in institutions in which proper opportunities for study and research are offered, is giving to the public today a number of men who, while thoroughly trained and practised in modern methods of diagnosis and treatment, have accumulated, at a relatively early age, a store of actual clinical experience such as is acquired in independent practice only after a much greater time and, in the majority of cases, with a loss of touch with some of the more recent advances in medical science. These men, the products of intelligent methods of hospital management and organization, are as a rule soon called on by their colleagues in more active practice for advice and assistance as general consultants. Men who have pursued such a career, which has inevitably involved at the outset a considerable financial sacrifice, are usually men of scholarly tastes who keep in touch with laboratories

in which they may continue research and cooperate with their colleagues in practice in the study of the nature and treatment of diseases. It is from this class of men that the professorships of medicine are more and more likely to be filled. Such a man may well enter upon a professorship by the time, or even before, he is forty years of age.

This leads us directly to one of the questions which has been most actively discussed of recent years: Is a man who has obtained his clinical experience largely or purely in hospitals properly fitted to teach students the essentials of the practice of medicine?

A distinguished student of the problems of medical education has been quoted as saying essentially: "Diseases are the same in the rich and in the poor, in human beings and in animals. To the clinician the ward is his laboratory, and the study of disease in the patient in the ward is, in all essentials, the same as the study of disease in the animal in a laboratory. The only difference between the study of disease in hospital and outside is that in the hospital the patient may better be observed. It is a mistake to say that it is necessary for a professor of medicine to have had experience in private practice when the same experience may be obtained more intelligently and in a much more concentrated form in the hospital."

This conception which has, by some, been regarded as characteristic of the point of view of those who have favoured the establishment of professorships of medicine on the so-called "full time" basis, has been looked upon as fallacious and dangerous by many of the opponents of certain modern tendencies in medical education.

"No man," they say, "is fit to teach students the art of the practice of medicine who has not himself passed

through the experiences of the practitioner. Practice in a hospital ward is one thing; practice in the home of the patient, another. He who has been accustomed to rely on the trained nurse and on the many appliances and instruments of precision which a well-appointed hospital affords, can have little conception of the difficulties which he will encounter in private practice. He whose only experience has been with the trusting, unresisting patient in the general wards, will find himself at sea when treating the whimsical, critical, prejudiced, opinionated invalid in private life. He who has been accustomed largely to study serious diseases in the wards of the hospital will have small sympathy with, and little understanding of the trivial complaints of the supersensitive and nervous members of the more well-to-do classes. The conditions that he is called upon to treat are to be remedied in great part by minor regulations of habits and manner of life, of eating and drinking and smoking and exercise. His main duties consist in ministering to the minds of his patients—in kindly counsel and encouragement—in advice tending toward the alleviation of a thousand petty ills which he who knows that they will pass with time, does not even consider himself—which the less sensitive patient in the ward barely notices. How can one who has never had this experience teach students the art of practice? Is it not folly to take away the teaching of medicine from the experienced practitioner and to give it to one who has had a training which might almost be called academic? Must we not regard this idea as the dream of the layman and of the laboratory student who, with all his scientific attainments, is yet woefully ignorant of the conditions of the doctor's life and of his duties?"

There is much truth in these objections. I should have no hesitation in agreeing that the medical ex-

perience suitable to qualify a physician as a consultant or a teacher of medicine can not well be obtained wholly in the free wards of a hospital. There is a great difference between the mental workings of the patient in the free ward and those of the average individual with whom one is thrown in private practice. The stolid indifference to outside influences shown by many patients in the general wards renders the study of disease in hospital not so very different, it is true, from the study of disease in the laboratory, but so soon as one becomes associated with patients of a higher mental order, problems in diagnosis and in treatment arise which are much more difficult and complicated. It is, it seems to me, not easily possible for one who wishes to fit himself for practice as a consultant or for the teaching of medicine to gain that experience which he should have without considerable association with individuals of more complicated mental constitution. Moreover, there are certain diseases which, strangely enough, are rarely seen in the free wards, yet are common in outside practice, diseases the recognition and management of which are of the utmost importance. I need refer only to angina pectoris. A man who is not familiar with the mental attitude of the people among whom he or his students are going to be thrown, who was not learned by experience successfully to navigate his bark through the mist of accessory problems which befog the ante-chambers of the sick room, is unable to give to the student much that will be of real value in the practice of medicine. But fortunately in many hospitals today, the great development of private wards offers abundant opportunity for the acquisition of just this experience. The man who desires to fit himself for a position as teacher of medicine or consultant should spend a con-

siderable period of time in practice among the class of patients which is to be found in the large private departments of many of our hospitals. Such an experience gained in the hospital will afford him in concentrated manner just what he might obtain otherwise through a much longer period of time in private practice.

This is the general course of training which the aspirant to the professorship of medicine is likely in the future to follow. His elevation to the directorship of a large department of medicine or surgery may be directly from the clinic in which he has occupied a salaried position and to which he has given his entire energies, or it may come after some years of consulting practice during which he has preserved close relations with an active clinical department.

Recognizing the magnitude of the problems associated with the organization of a large medical clinic, it has been felt that such a department could best be presided over by men who were able to give their whole energies to the university in organization, in teaching, in the conduct and direction of research. And, notably at that institution with which I have been connected for more than twenty-five years, several of the clinical departments have been reorganized upon a university plan. Through the generosity of the General Education Board, the institution has been enabled to establish a staff of university professors and salaried assistants who take charge of these clinics for hospital and university. These men, freed from the calls of outside practice, are able to give their entire time to the service of the department in the care of patients, the promotion and conduct of research and in the teaching of medicine. And as is well known, the members of this staff have agreed to abstain from the practice of their profession for their own emolument.

The discussion associated with this experiment has been very active, centring largely upon the last mentioned circumstance—the withdrawal or abstention of the university professors and their assistants from private practice. Those who have objected to this procedure have regarded the plan as unwise and even unfair to the physician himself, to the hospital, to the students and to the public.

In the first place, with regard to the professor himself, it has been pointed out, and with justice, that there can be little relation between the salary which the university could or should pay to the professor of surgery or medicine and the gross income of the successful surgeon or consultant in a large city. It has been asserted that the opportunities brought by a considerable income for wide association with the world at large are broadening to the character of the man and are indirectly of value to the institution with which he is connected; that furthermore it must be a very serious question to the physician himself whether he is justified in planning deliberately a manner of life which can never lead to wealth or real financial freedom, when there might be open to him an opportunity to give to his family and those dependent on him the advantages which come with a large income. Is he not, it is asked, giving up the "larger life" for the smaller, and will not the university in the end suffer by the loss of the wide domestic and international relations so often established by the professor who has the material resources to visit his distant colleagues in their clinics and to entertain them at his home? Will not the hospital, more directly, lose in the absence of those cordial relations which arise today from the association, as a consultant, between the chief of the medical clinic and the practising physician?

Will not the students suffer, it is asked, through their association only with men who have had a more or less academic training in a hospital, who are out of touch with the exigencies of actual medical practice? Will not practitioner and consultant suffer seriously in losing their control of the hospital material which is now to pass wholly into the hands of salaried men? And will not the public suffer? May it not indeed be regarded as an injustice to the public and to the practitioner that they should be denied the services of these men especially eminent in medicine or surgery, whose opinions presumably are of special value—these men who have been chosen to direct large clinics?

It can not be denied that these objections have a certain force.

The physician who, starting from modest beginnings, has acquired, by hard work, a large income can not underestimate the blessings and the opportunities that such a revenue brings to him and to those who depend upon him. But such incomes are rarely honestly gained without very hard, very confining work, and without real intellectual hardship to the practitioner if he be a man of scientific tastes or aspirations. To one who has the temperament and ideals of the student, the advantages of a university professorship can not fail to appeal very strongly. No man who covets a fortune should select a career of a university professor. He who enters upon such a life knows from the outset what his income is to be, and what the outlook for his family. He can not expect to be a rich man, and he must plan his life accordingly. But the compensations are great to one of scholarly tastes. The opportunities for study and research offered by the university clinics and laboratories, limited though they may be at certain times by the demands of teaching, the freedom from

the uncertainties, the complications, the endless activities of the life of a busy practitioner or consultant, the hours for reflexion, for rest, for recreation offered by the stated vacations—these, wholly apart from the privileges and responsibilities of the organization of a large department, are advantages so great that they will always attract men of the highest order.

“And the larger life?” Who can say what “the larger life” is in itself? The “larger life,” alas, does not always go with wealth and that which surrounds it; and who shall say that the opportunities which come to the university professor of distinction and to those about him are more restricted than those which are open to the practitioner and consultant? Certain of the luxuries of life the professor may be obliged to eschew, but there are other privileges which will be his that no money can buy.

It is true that the salary of the university professor has not, in general, advanced with the incomes of those about him, or with the general scale of living; and it is, I believe, folly to attempt to put the directorship of clinical departments on a university basis at salaries such as have been in the past offered to the professors in the strictly scientific departments. Nevertheless, no one can expect such salaries to be large as compared with the income of successful men in private practice. It should, moreover, be remembered that with the successful consultant, for instance, nearly one half of his gross income is often absorbed by the legitimate expenses of his practice. The burden of these expenses is lifted from the shoulders of the university professor whose fixed income represents a revenue of nearly twice that size with the consultant.

But the salaries of university professors, whether in clinical or scientific branches, should be materially—

very materially—larger than they have been in the past, if these men are not expected by outside activities to add to their incomes. I can, however, see no reason why the salary of a professor of medicine or surgery should be larger than that of a professor in a so-called scientific branch. In business circles it is true that the salary depends purely upon the immediate market value, so to speak, of the individual; that he who can in the world of affairs earn but a modest sum is able to demand a far smaller salary than a man with larger practical earning capacity. The physiologist who devotes himself single-heartedly to his teaching and his researches might, if thrown on the world to gain his living, have but a relatively small earning capacity; the clinician, if he have attained a popular reputation, may, on the other hand, be in a position to make a considerable revenue.

Universities often obtain the undivided services, let us say of the professor of physiology, for an amount which was once but is not today a proper living salary for a man whose abilities and contributions to science entitle him to a comfortable and prominent position in the community; that position which it is to the advantage of the university that he should occupy. And such professors in many institutions sacrifice much to the cause of science.

This seems to me fundamentally wrong. These distinctions must eventually be removed, unless our universities are to remain as short-sighted as our national government and bring it about that our professorships, like our diplomatic posts, shall come to be situations which only men of independent means can fill.

But to return to the question of the professorships in the clinical branches. If the salary be adequate, there should always be efficient men whose ambition will be

to occupy chairs of medicine and surgery even though they realize fully the chances of the acquisition of a large income are small.

The objection that is so commonly raised as to the injustice and unwisdom of any understanding or agreement by which the directors of the departments of medicine and surgery should abstain from private consulting practice is one which, as a teacher and practitioner, has interested me greatly. As has been indicated before, it is not easy to see how the director of a modern university clinic, or the chief of a service in a large hospital organized on a similar basis, can give any essential part of his time to outside consultations. According to the tastes and character of the man, he will probably give more or less of his time to private consultations at his clinic. To the consultant the puzzling and interesting pathological problems brought for his consideration by patients sent to his consulting room by colleagues at home and abroad, form the most valuable part of his experience. Such patients the professor of medicine and his associates will doubtless continue to see. They should form a great addition to the hospital clinic. Some of these patients they will desire to admit to the hospital for study. But these consultations the director of a large clinic could hold only at stated periods, and to this work he could give only a limited amount of time. It is difficult to see how it would be possible for the director of such a clinic to give the proper service to his department, and yet conduct anything like an active consulting practice outside the institution. Under exceptional circumstances, however, the professor will probably accept calls to outside consultations, but only under exceptional circumstances. The director of a large medical department must control his own time and his engage-

ments. He who is openly occupied in general or in consulting practice can never truly be master of his time.

A curiously active discussion has risen upon a rather small point in connexion with the practice of the salaried director of a medical clinic. In some clinics, as has been said, the understanding exists that the professor shall contribute whatever fees he may collect from private patients to the departmental funds. This procedure has excited vigorous criticism and opposition; it has, indeed, been considered fundamentally improper, subversive of the higher interests and principles of the medical profession.

This is a problem on which I have meditated seriously, and, look at it as I may, I can not but regard it as a rather small and relatively unimportant detail of a larger general question. The professor should naturally demand suitable compensation for his services to private patients. But whether such compensation should go directly to him, or should be turned over by him to the budget of his department, seems to me a matter of detail to be settled between him and university or hospital. I am at a loss to understand the attitude of those who see in this a question of principle.

Some time before the first experiment of a university medical clinic was put into practice, a distinguished clinician whose services were sought by a well-known institution, offered independently, for the organization of his department, a plan which is very similar to that which now exists at the Johns Hopkins University. This offer outlined the establishment of his professorship upon a purely university basis, with the explicit understanding that the income from any private consultations into which he might see fit to enter, should be added to the budget of his department. Such an

arrangement might be regarded as a distinct protection to the professor. For the financial questions which relate to practice are to some annoying and disturbing. And if the salary paid to the university professor be in any way sufficient, I can easily fancy that the professor might prefer to have it understood that the income from any practice which he might care to undertake should go into the budget of his department. I can also fancy that others might feel differently; that they might prefer a complete independence, expressed or implied, in this respect. I can further fancy that the university or hospital might fear that if the professor once began to accept fees from private patients, he would be in danger of being drawn into practice to such an extent that it would interfere with his university or hospital work. But, as I have said, the question of what becomes of the professor's fees seems to me of limited importance—a detail in connexion with the larger problem. I can not see in it a great question of principle.

So far as the student goes, the danger that under the direction of a salaried professor, he may be given a training more purely academic and insufficiently practical seems to me small. In the first place, it has already been pointed out that the professor of medicine will doubtless be a man who has had a considerable clinical experience with patients in all classes of life, whose training has been by no means purely academic, and although some of his associates will perhaps be men who have not yet acquired the ripened experience which should be that of the head of the department, yet no one for a moment fancies that *all* the instruction in medicine and surgery will be given by the nucleus of teachers wholly dependent on their salaries. In every large clinic, and in every large hospital affiliated with

a university, a considerable part of the instruction in general medicine and surgery, as well as in specialties, must be entrusted to men with or without salaries, who are more or less actively engaged in practice. The fancy that because the director of such a clinic and many of his assistants are no longer at the beck and call of the public, the student is to be regarded as deprived of the opportunities offered by association with men who have been or are engaged in active practice, is a misconception.

That which the reorganization of a clinic upon a university basis should do, however, is to bring it about that the practitioners who share in the work and advantages of the hospital and take part in the instruction may be rather more carefully and wisely chosen than they have been in the past. Well-digested experience, merit and teaching ability should more clearly and surely be recognized by a director untrammelled by hospital traditions and bent solely on the improvement of his clinic.

The experienced clinician who is still engaged in private or consulting practice, if he be a man of high order, is not likely to lose his touch with the hospital or with the clinic so long as he is able and desirous of giving it his services. Indeed, it is probable that in the future, institutions will retain a closer connexion with some of the members of the staff who are engaged in private consulting practice by offering them the privileges of consulting rooms at the hospital. This plan, which has already been adopted in some instances, ought to be of great mutual advantage to hospital, to physician and to patient. To the hospital because it brings into close connexion with the clinic those examples of rare and unusual disease which are sent to the consultant; to the physician because he is able to

give much more time to his work at the hospital; to the patient because if the consulting room of the physician be at the hospital centre, the many accessory examinations which so often have to be made, can be carried out much more expeditiously. But if such a physician be engaged in active consulting practice, he will no longer be the director of the clinic, and this, as has been pointed out, would seem to be desirable from every standpoint. For only under exceptional circumstances can such a man command the time necessary properly to direct a full department.

How much or how little time the head of a department of medicine or surgery may give to consulting practice is, however, a question which, in the end, must depend entirely on the character of the man. He may give very little of his time; he may give a good deal. But if he be a man whose living interest is in his clinic, it matters little. For in either instance, through the character of the men that he associates with him, he will see that his department does its best work.

The objection so often raised that there is danger that a professor of medicine or surgery who abstains from outside consulting practice may be removed from touch with the profession, is comprehensible but not, I think, serious. If the director of the department be one who does a considerable amount of clinical work, he will still keep in active touch with the medical profession even though his consultations be held only at the hospital. In any event, the work of the department itself, set forth by him and his associates and assistants in public clinics, in medical societies, and in journals, should keep him well before the eyes of the medical world.

The tendencies of the hour would seem to indicate that a very large nucleus of the staff of the medical or

surgical clinic will in the future consist of salaried men who are giving the greater part of their time to the activities of the department; and it is very interesting that not only in hospitals affiliated with university schools of medicine, but in other independent institutions, this idea has already taken root. The experiment of a generously salaried staff of physicians and surgeons who are expected to give the greater part of their time, if not their entire time to the institution, is already being made in various hospitals.

One of the most important functions of a modern medical or surgical clinic is that it should afford opportunities for the ambitious student with scientific aspirations to pursue that course of study and acquire that experience which will fit him for a university career. Every year there graduate from our schools of medicine men with the ideals, aspirations and abilities of the true student, who, because of financial disability, are obliged to enter directly into active practice. A certain number of these men preserve their enthusiasm, make the most of their opportunities, and return later to the pursuit of those studies which have always been the object of their ambitions. Some find unexpected intellectual satisfaction in the varied opportunities offered by the life of a practitioner. Others, dazzled by the financial rewards of success, lose their early ideals. Many, however, are obliged to sacrifice their ambitions. With the organization of the modern medical clinic, there should be a considerable number of assistantships commanding salaries which should make it possible for many of the really good men to pursue their chosen career. And it is highly desirable that such salaries should be sufficient and so graded that these men may continue their work through long years should they prove themselves of suitable character and ability.

But—and this is a question very often raised—what about the opportunities for the development of practitioners or consultants if every medical or surgical clinic become a training school for professors of medicine? The answer is simple. The training which best fits a man for a professorship differs in no way from that which best qualifies him for the career of a practitioner or consultant. Some of the men who start upon their career in a modern department of medicine will remain connected with the service in one capacity or another for ten or fifteen years or even more, until the offer of a position as assistant or professor or director in another large clinic comes to them. Many, after eight or ten years' experience, will find themselves well fitted to enter into the practice of medicine or surgery as consultants. Others after spending a shorter period of time will doubtless take up general or special practice. That to which we may look forward with reasonable certainty, however, is that the reorganization of hospital and university clinics according to this general plan, the essential feature of which is the establishment of a large nucleus of salaried men who give the greater part of their time to the activities of their service, will provide for university, hospital and public a body of men better trained, and with richer experience than has been offered in times past.

There is one point in connexion with the reorganization of the clinic upon what I have called a university basis which seems to me of real importance. This has been touched upon especially by Dr. Meltzer.¹ I refer to the desirability of ample provision for voluntary assistantships. This is a matter which touches especially hospital organization. The work of a modern

¹ *Science*, 1914, XL., 620-628.

hospital clinic has changed greatly. A well organized medical or surgical clinic is as truly a scientific department as are the university departments of anatomy, physiology and chemistry, and in every hospital there is a constant demand for more and more students to assist in the researches which are being conducted by the various sub-departments, and incidentally in the care of the patients. The great advantage to a hospital of the presence of students in its wards has often been pointed out. Such students form a corps of extra assistants who enable us to study and care for our patients much more intelligently.

But where can one find the director of a medical clinic who is not longing for the services of more young men, recent graduates with scientific aspirations, to assist him in the study of a variety of different problems? As it is today, only those men who can obtain salaried positions upon the staff or are of independent means can afford to give the time required for such studies. But many a student, upon his graduation, and during the several years that follow, would be more than willing to accept a position as voluntary assistant if he might be given a room and his board in the hospital. Every modern medical or surgical clinic should have a number of these positions open to such men as the professor may see fit to select. There could be no better investment for the hospital. Research assistants should be considered as essential to the welfare of the hospital as are the regular internes.

These are the considerations that I have wished to bring before you today. They have to do with matters which are not without public significance.

The relations of the medical sciences to the commonwealth are of great intimacy and of vital importance.

Time was when the physician was called upon only to minister to his ill or wounded fellow. Today he is something more than the healer and the binder of wounds. The advice of the medical scientist is sought in every sphere of human activity. It is he who is called upon to outline and direct those measures which protect our homes from epidemic, our cities from pestilence. It is he who has opened the wealth of the tropics to the safe exploitation of man; to him we must look for that counsel which shall preserve the efficiency of our armies in the field and of our cohorts of industry at home; which shall lessen the horrors of war and the dangers of peace.

No effort can be too great; no sacrifice too costly that may afford to the student of the medical sciences the most active stimuli, the best opportunities for training and for research. For in the training of the student of medicine is involved more closely than is generally realized, the prosperity and safety of our country.

XV

SCHOLARSHIP IN MEDICINE.¹

When Dr. Lewis asked me to speak to you today, he suggested as a title for my remarks, "Scholarship in Medicine," an alluring and fascinating subject for reflexion for one to whom that most blessed privilege is afforded—the opportunity to reflect. From an experience of nearly thirty years, however, I should say with confidence that to none do the gods so consistently deny this privilege as to the physician. Indeed, all the progress of mankind seems to centre in one great conspiracy to search out the secret and silent chambers of the doctor's castle and therein to install a telephone. And the timid doctor has not, as a rule, the courage of one of your eminent instructors who, in the early days, when first this scourge of mankind invaded his laboratory, having endured its incessant tinkle as long as might have been expected of a just and tolerant man, arose with an air of determination and demolished the instrument of Satan.

And so, as I write these words, the hour approaches at which I have promised to speak to you, and the moments for reflexion recede slowly and surely.

At a time when honours and awards for excellence in their school work are being given to men who have shown promise, some of them, of becoming what we like to call scholars—at such a time, it is not unfitting

¹ Address delivered before the students of the Harvard Medical School on the occasion of the award of the John Harvard Scholarships on 26, Feb., 1917. From *The Boston Medical and Surgical Journal*, 1917, clxxvi, 519-524.

to reflect on what we mean by a scholar, and what one means particularly by scholarship in medicine. The word "scholar" is, after all, one not altogether easy of accurate definition, one which has not wholly the same meaning to every man. For instance, the words "scholar" and "student" are essentially different in their significance. The great mechanician, for example, who by his imagination, insight and learning in his special branch, has changed the course of human life, is not necessarily a scholar. He may be an eminent student, but if his attention has been limited to one field, if his all-absorbing work has shut him out—as with such men it so often does—from association with fellow students in other branches of science and art and history and literature—that man is not what one would call a scholar. The words "scholar" and "scholarship" bring to us, I think, the idea of a certain catholicity of knowledge, of a certain breadth of interest and association that the brilliant student whose life is given entirely to a single branch of learning, often fails to attain.

One of the most important attributes of the man that we are fond of calling a scholar, is that active, alert interest in all that surrounds him, which leads him, despite himself, into sympathy and association with men in every sphere of human activity. I remember hearing it said of a certain distinguished diplomatist that he was a dull dinner companion until some word was dropped by a neighbour which told of something that was new to him. In a minute the whole attitude of the man would change; he would become alert, animated, full of suggestive questions, interested in every word that fell from the lips of his companion. The sympathies and interests of such a man soon give him a store of general information, an acquaintance and asso-

ciation with fellow students, a power to drop for a minute the studies to which his special energies may be directed and to follow another lead with real intelligence and profit—an attitude which is indicative of that special mental superiority which we associate with the scholar. Such rare men—for the real scholar is a rare man—are not led from the pursuit of their main object of study by these surrounding interests. Rather does the breadth of their sympathies mature and sharpen their judgement, while the increasing refinement of the man's character, the resources which his associations and learning have brought him, give him a great advantage over his fellows in his relations with the rest of mankind.

The foundation for such scholarship is generally laid in what we have been pleased to call a "liberal education," the common basis for which in this country has been the degree of Bachelor of Arts. The attempt on the part of the university used to be to give the student who attained that degree an elementary education in the classics, history, philosophy, mathematics and later some of the sciences—a basis on which, according to the paths which he might follow in his later life, he might build the necessary superstructure.

A hundred years ago the foundations which led to a degree of Bachelor of Arts were relatively simple, for our knowledge of the natural sciences was still in its infancy. There was time in the four years' academic course, which was then often finished before the boy was twenty, to give him a sufficient knowledge of the ancient languages, of philosophy and history and mathematics—of the "humanities" as they were called—to make it possible for him in later years to take up the trail and follow in whatever direction it might lead; and at the same time, through his knowledge of Latin,

still the universal language of the scholar and the student, to follow the progress of science, of the arts and of literature in foreign lands.

But conditions have changed considerably. Our knowledge of the natural sciences has developed with enormous strides. Latin is no more the exclusive language of the scholar. Thousands of students in special branches of literature and art and science are contributing important researches in their own tongue. To this mass of literature no one language is a key. No man who aims to attain to anything deserving the name of scholarship, indeed, no man who wishes to excel in any one particular branch of science, can safely neglect the study of at least three modern languages—English, French and German.

At the same time, by the individual who wishes properly to fit himself for the study and practice of medicine, more and more time must be given to the fundamental study of the natural sciences, chemistry, physics, and biology in its broadest sense; and the course of studies that he must pursue both before and after his entrance into that which is, strictly speaking, a school of medicine, is ever lengthening.

And thus a very old and frequently recurring suggestion is again being discussed,—the suggestion that the man who intends to prepare himself for the study of medicine should devote himself almost purely to the study of the natural sciences, and should save the time which is believed by some to be wasted in the study, in particular, of the ancient languages. Again, various plans have been adopted in this and in other universities which tend to shorten the course of studies which lead to the degree of Bachelor of Arts, and to include in the work which is counted upon as leading to this

degree, some of the studies pursued in the school of medicine. Much has been written of the wasted years of college life, and much has been said of the time which is lost in the preparation of a student for practice.

It is, I think, certainly true that there are some very paradoxical conditions associated with our college education. There is no reason why it should not be possible for an intelligent student, with a proper preliminary education, to accomplish the studies which bring to him the degree of Bachelor of Arts by the time he is nineteen or twenty years of age. Most boys, if sent to good English, French or German preliminary schools, could do this easily and without the least drain on their physical condition. There are serious defects in the management especially of our secondary schools.

If the day ever arrives when the teaching in our secondary schools is conducted by men who are, for a considerable part, scholars, as is the case in the better European schools, this truth will, I think, become clearly evident. A large part of this instruction, up to the present day, has been given by young men teaching up to the limits of their knowledge, in the hope of attaining a competence sufficient to allow them to abandon the field of pedagogy for something that to them is more profitable. Such men teach the classics as if they were dead languages. Indeed to them Latin and Greek are dead languages. It is useless to try to teach a dead language. Such men are not likely to inspire the youth with a great love of knowledge. One trouble with our secondary education is that the opportunities in our country are still so great that the career of a teacher, with its small salary and its restricted opportunities, does not appeal to the ablest men. Our boys

are not so well taught as are English and French boys, and they waste several useful years in the secondary schools.

Another rather unfortunate condition exists in many of our universities. The old four years' academic course, leading to a degree of Bachelor of Arts, has become one of the dearest of American traditions. The traditions that are associated with this course were founded upon conditions existing over a hundred years ago, at a time when the students were, on an average, several years younger than they are today, and when the general supervision of the college was much more strict and much more that of our larger secondary schools. But the conditions of life in the academic department of the university have changed greatly. With the development of the elective system, the students were thrown much more on their own responsibility with regard to their studies, while gradually the freedom of life has approached almost that of the European university, so much so that parents dread to send their sons practically out into the world at the age at which they might perfectly well be fitted to enter college. Most boys, if they had proper educational advantages, could finish a half of what they now do in college before the time when, in the natural course of events, they enter today; and so, in many instances, now, they are held back. With the happy arrangements that have been introduced at Harvard in connexion with the work of the freshman year, it should become possible to send a boy to the academic department considerably earlier than one might otherwise have felt it prudent.

But still there remains the grave question as to how to bring it about that the boy with whom time seriously counts, may attain the academic degree to which his work entitles him, at the age at which he might per-

fectly well accomplish it, without sending him to college at fifteen or sixteen. It is a serious question, but one which we cannot discuss further at this time.

How do these conditions affect the man who seeks to be a scholarly physician? The attributes which we recognize as those of the scholar are the same whatever be the main interests of their possessor, whether he be lawyer or physician or historian or philologist. It must, of course, be acknowledged that the seeds of scholarship lie mainly, not in what a man is taught, but in what a man is. I think of one physician who may rightly be called a scholar, whose early education in the classics, for instance, was limited. His sympathies, however, have led him into such constant communion with the great minds of the past that to read his words one would hardly fancy that he had not conversed with the old masters in their own tongue. But such men are unusual, and I feel very earnestly that the surest basis for true scholarship lies in a good elementary education,—an education which demands a study of the classics and of mathematics at least as extensive as that which used to be required in most of our universities fifty years ago. A large part of this, as I have said before, could be acquired perfectly well before the boy enters the college proper; and under the conditions which exist today this should be made possible.

I know that there are many who disagree with me, but I have been greatly interested as the years have gone by, to see how strongly some of my colleagues, who have devoted themselves to the natural sciences, have come to realize the importance of an old-fashioned basis in the humanities for the man who wishes to take a really scholarly view of his subject. As I said a moment ago, I cannot imagine a man expecting to attain eminence, certainly not scholarly eminence in medicine,

without an easy reading knowledge of French and German. He ought to have more; he ought to have a speaking knowledge. There is nothing that will make the acquisition of such knowledge easier than a fundamental basis of Greek and Latin. To him who has been well trained in Latin and French, a reading knowledge of the other Latin languages—Italian, Spanish, Portuguese and Roumanian—comes of itself, if the need be.

A good fundamental training in mathematics is absolutely necessary to him who must be familiar with modern physical and chemical methods. So far as the question of time alone is concerned, there is no reason why a student who leaves the academic department of a university at the age of twenty-one should not have, besides a sufficient biological, chemical and physical training, a good basis in the humanities.

“But still,” some will say, “although the study of Latin may be of advantage in acquiring French or Italian, those languages can perfectly well be learned without it. Is the study of Latin and Greek not waste of time for a boy who might, by giving them up, save two years of his life?” It all depends on what one calls a waste of time. One might, perhaps call it a waste of time if his chauffeur should seek to study Greek and Latin as a preparation for his career. A chauffeur may acquire considerable mechanical skill in a very short period of time by the study of machinery and by working his engines. If he be a clever fellow, he may go further. But if his aim be to become a chauffeur, and if he must make his living so soon as possible, he cannot afford the time for much schooling. Yes, if one aims to be a chauffeur alone that argument is, I think, good. If the individual who starts to study medicine aims simply and solely to attain proficiency in one particular branch of the art of medicine, it may certainly be pos-

sible for him to do good work without the knowledge of Latin and Greek. But I do feel very strongly that the man who, from the beginning, seeks to follow only those paths which may lead most quickly to the practice of the branch which he has selected, or which he fancies he is going to follow, is deliberately building about himself a wall which may well hem him into a narrow path for life, and shut out from him opportunities for which in after years he may long.

There are relatively few students who, in the medical school, are able to tell just what their future career is to be. How many men who are convinced that their future lies in surgery, find themselves, ten years later, in an entirely different branch of work? I fancied that my career was to be that of a surgeon. For nearly three years I never once doubted it; and then events happened which entirely changed my course. If I had devoted myself purely and simply to a preparation for the life of a surgeon, those opportunities would not have come to me. How much less common is it for the student who enters the academic course, to know with certainty the path which he is to follow; and when it is a matter of a boy of thirteen or fourteen in a secondary school it would be a rash father, it seems to me, who would deliberately plan to limit the boy's training to one special course of work.

The man who has to cover so much ground as he who desires to pursue the study of medicine from the point of view of a scholar can hardly expect to find himself prepared to enter a school of medicine, as they are now constituted, before his twenty-first year. By this time, with proper schooling, he ought to be able to cover the necessary ground in ancient and modern languages, mathematics and natural sciences. But he cannot do it if he prepare in the ordinary secondary school along

with the other boys of his age. That is the grave difficulty. We should have secondary schools in which boys who have passed their college examinations at fifteen and sixteen, may still pursue a year or two of work in the humanities or natural sciences, work which will all be valuable to them in their after-career. The difficulty for the boy who is to study medicine lies in his pre-academic years, in the years of his secondary schooling, years in which he is too often held back.

I am, then, one of those who believe earnestly that a broad, general training, not only in the natural sciences, but in ancient, as well as in modern languages, and in mathematics, is important for him who is to study medicine, if he desire to be a broad-minded and scholarly man.

And now a word or two as to the course of the student in the school of medicine. In a letter written to me apropos of this very talk, the writer referred to the discouragement felt by some students owing to the extremely crowded and dull character of the curriculum. I think I understand that to which he referred, although I cannot understand how anybody could refer to a medical curriculum as dull. When I was a student, although I was discouraged enough, heaven knows, time and again, there were few dull moments in the course.

But, it may well be asked, how can a man with scholarly tastes be happy in a course so crowded as is our four years' curriculum, and what can one do to make life more endurable for him? It is undoubtedly true that our American medical course is extremely crowded. The main reason for this is our graded class system, which has always seemed to me fundamentally and radically wrong. As I have said elsewhere, I feel very strongly that by the time a man is ready to enter

a school of medicine he should be of an age and a degree of development at which it should be possible for him to select and follow his courses as he will, and to present himself on his record for examination and for acceptance for his degree when he is ready, and not before. A graded class system is a makeshift rendered necessary in schools because of the number of the students and the variation in their habits and natural abilities. With children a class system is necessary unless the individual is led by a private tutor. In our academic departments the class system also still remains and is probably desirable. But when a man enters a school of medicine he should be as free as he is in a European university, under certain general guidance and limits, to pursue his studies as deliberately and thoroughly as he may choose. I feel strongly that while a limit should be set as to the rapidity with which a student should go through his course in medicine, we ought not to apply methods designed for school boys to serious-minded men. There are many men in a school of medicine who, by spending one or two years more at their work than do their fellows, may emerge far maturer and better physicians than their more brilliant colleagues who go through our present course as easily and without effort or strain. I hope I may live to see the day when American universities may not only afford such opportunities to students of medicine, but may also encourage their migration from one institution to another; when it may be possible for the keen and discriminating man to accomplish his studies in those laboratories and clinics which most appeal to him, no matter if his course lead him from Boston to San Francisco and back again. It is well to remember that in America we are trying to make a class do together in a given period of time, work

which, in other countries, many of the best students accomplish more deliberately, according to their own abilities.

But at the present moment we have, unfortunately, I think, a graded class system, and each man has to follow it alongside of his fellows; and, furthermore, the work that this entails takes almost all of his time. No one can go through this or any other good American school in four years and do all his work as he would like to do it. Under these conditions it is, I think, important that the student do not attempt to specialize too early. You need most of what you are obliged to pass through in the high school system that is now ours, and, as I said a moment ago, you cannot tell, no matter how sure you may feel today, where you are going to bring up.

And then, another bit of advice which may seem rather paradoxical.

I am never tired of emphasizing the difference between the modern and the older methods of instruction in medicine. In the older days much of that which we were taught was a matter of authority. Propositions which we were assured were truths were fed to us. To-day our effort is more to teach you methods by which you may control and prove the assertions which are made by others. Our desire is rather to make you doubt the propounded statement unless satisfactory proof is adduced, or unless you can confirm it by your own methods of control. And this should stimulate a love for inquiry and investigation which should tend to make of you the student that the true physician must remain throughout his life. If you are the right sort of a man, you are going to find yourself during the course of your studies interested in many questions which may lead you into independent investigation.

But how hard it is to find the time for such work in the midst of a prescribed four years' course! And when I say that one of the most valuable forms of training for the student of medicine is a certain amount of original work done under proper direction during his course, you may find the advice in direct contradiction to what I have said before. One of the discouragements that you will meet, it is true, is that you will have so little time for such work. But some investigation tucked in during the year or during the summer vacation can only do you good. There are occasions when the student who can afford it, pursuing his medical studies under the system which I hope will be ours some day, might well interrupt his work for six months or a year, or even more, to pursue some specially promising research. I can easily fancy that by the advice of an instructor, some students might wisely do this under our present system. This much I would say: do not let anyone discourage you from the desire to investigate; grasp every opportunity for research, though they may be few, during your school course. Do not, however, fancy that because you are interested in some promising field of investigation you can properly neglect your other work, and expect to receive due credit for it. I have had some amusing experiences of this sort in which brilliant men, who might well and profitably have given up a year of their medical course to a problem of research, have felt injured because the faculty would not grant them credit for routine work which they had entirely neglected.

I have referred several times to the necessity of a knowledge of modern languages. If you have not now an easy reading knowledge of French and German, acquire it. You will need it every day of your life, and you will never regret its acquisition. Go to a Berlitz

school; learn to speak and not simply to read the language. Buy books on the technical subjects in which you are interested and read them. If you are not able to go to foreign countries, seek opportunities to hear plays in foreign languages or go to churches where you can hear sermons preached in a different tongue. A little sustained effort will give you a reading knowledge before very long, and that is really most necessary.

And then when you have finished the course in the medical school seek, so far as you can, to make the acquaintance of men and methods in other parts of your own country and in other countries. It is as profitable for a man to "go to Europe" today as it used to be fifty years ago. A period of time spent in a foreign city, sufficient to give one an insight into the language and habits and ways of the people, and especially to give one an acquaintance and association with one's colleagues in a foreign country, is of great value.

Go to large medical meetings in this or in other countries whenever you have the opportunity. Men will often speak to you slightly of the value of such gatherings. They will tell you that nothing important is done there, that the social functions quite overwhelm any serious work, that they are a pure waste of time. Do not believe them. There is no more valuable experience than that of making the acquaintance of the student whose communications you may have to read. Such experiences often modify greatly our estimate of the importance and worth of the man and his publications.

It is always interesting and surprising to the good student to find in his own country, first, how much there is that he can learn from the methods and practice of colleagues who live but a few hundred miles

away, and secondly, how much he himself can bring to them. Osler's advice to all his students used to be to become peripatetic doctors, and it is not bad advice.

Every student who can—after he has finished the year's service in a hospital, which all ought to seek—should endeavour to spend a year of study at some school other than that with which he has been familiar as a student or house physician. He should seek an opportunity, either in Europe or in this country, to put himself under the direction of some good man associated with active university work or with an institute for medical research, and if possible undertake a piece of original work. Such a year cannot fail to be of great value to him. It may lead him directly into the special branch of study to which in after life he is to give his main attention. It will certainly expand his horizon considerably. And what is sometimes hard for the modest student to realize—if he has done good work in the school, in a hospital and then in a new clinic or laboratory, his name and his attainments will soon become reasonably well known in American medical circles. Someone said several years ago,—I think it was one of your own professors—: “How surprised the students would be if they realized how important a part they occupy in the conversation of their teachers!”

It is a trite observation, that it is well for the professional man to cultivate outside recreative interests. Such interests come naturally to one with a scholarly mind. It may be the love of music or literature or art that leads the student of medicine into side paths of study or rest or dreams. I know a professor in a large university who, in his summer vacation some years ago, uninstructed and unadvised, took up the brush, and today is painting landscapes of real beauty and merit; this man has found not only a recreation but an occu-

pation which, throughout his life, will push backward the limits of age. It may be the collection of monuments of antiquity, of old books or letters, than which nothing is more fascinating. Many of us have a deeply implanted love for that which is old. Indeed, he who can pick up an old book or enter an old house or listen to the music of an old opera without seeing charming visions with his mind's eye, is deeply to be pitied. Who can listen to an opera of the Second Empire, let us say, without seeing the crowded galleries, the dresses and figures and faces of those days, the flowers in the hair, the waxed moustache, the crinolines, the brilliant uniforms, the twinkling lights on the boulevards without? Who can turn the leaves of his incunabula without dreaming of the old eyes that have gazed on these pages, of the old fingers that have turned them and inscribed their fading annotations on the margins? Who can read the old letters without fancying himself in the midst of the quaint or stirring scenes evoked by the yellow lines; and in free hours, when the mind and body demand rest and relaxation, what can take us farther away from care and anxiety than dreams such as these?

A distinguished German professor, in the period of his sanity, has advised that every scientific man might do well at the height of his career to change his calling and enter upon new paths of activity,—a radical suggestion and one possible only to the scholar of catholic interests. But there are events in the lives of many men which make such a change necessary, and he who, in the days of activity and success, has cultivated broad outside interests as a recreation, may find in these very interests in the hour of illness or misfortune or necessity, the means of his re-creation.

With these few thoughts which have come to my mind between telephonic tinklings, I must close, for as one of the wisest of Boston doctors ¹ has said, "It is a Trespass on the *Rules of Prudence* never to know *when to have done*. Wherefore, *I have done!*"

¹ Rev. Cotton Mather: *Directions for a Candidate of the Ministry*, etc., 12°, Boston, 1726.

XVI

SELF-EDUCATION UNDER GUIDANCE ¹

In nearly thirty years of teaching in this Hospital, the pleasantest and most interesting, and, I am sure, the most important work that I have had to do, has been the meeting of the third and second year classes at the beginning of their study of physical diagnosis. The way in which one approaches one's clinical studies is a matter of considerable importance. *C'est le premier pas qui coute*. If the first step be a false one, if you begin as so many good fellows have begun in the past, with the feeling that all you have to do is to sit at the feet of a group of professors, whose wise enunciations you are to take as gospel, and to learn from books descriptions of symptoms, signs and diseases, and then to go forth and hunt for something that matches your mental picture, you will be fatally side-tracked. You will leave the institution with the feeling that your medical studies are over, and your greatest contribution will be to discover that the "type" of pneumonia or typhoid fever in the region in which you live has changed—changed forsooth from the mental picture you had carried from the class room. Ah, how full medical literature is of such communications!

¹ The title which I have chosen for these remarks which were delivered to the second year class of the Johns Hopkins University School of Medicine as an introduction to the course in Physical Diagnosis I have borrowed from President Lowell of Harvard.—W. S. T.

From The Southern Medical Journal, Birmingham, Ala., 1919, XII, 374-381.

If, on the other hand, you carry away with you a sense of obligation to put to proof so far as you can every statement with which you meet; if you carry away with you a reasonably good knowledge of the manifestations of disease based upon clinical experience and a familiarity through practice with the more important methods of physical examination, you will find stimulation in the very difficulties with which you meet. You will be an intelligent practitioner and maybe a contributor to the science and art of medicine. Most that you are going to learn, from now on, you will teach yourself. 'Tis our task to try to see that you start in the right way, that you make your own discoveries, work out your own problems and become in the proper sense a student of medicine and not a disciple blindly following the precepts of a book or a teacher.

During the past two years you have been giving your attention largely to studies in the laboratory of anatomy, physiology, chemistry, pharmacology and pathological anatomy. You are presumably more or less familiar with the structure of the human body, and with the nature of its normal functions, as well as with the gross and microscopical changes that occur in the commoner diseases. So far, however, you have not been called upon to determine in the living human being whether the anatomical structure and physiological functions correspond with the normal, nor have you been confronted with the problem of attempting to recognize in the living, deviations from the ordinary nor abnormalities and processes of disease such as you have studied in the pathological laboratory.

In the next three months you are going to familiarize yourself with some of the simpler methods by which you may recognize these deviations and abnormalities. Next year you will pass on to the application of what

you have learned here to the diagnosis of disease in the living subject. After all, this is but a continuation of what you have been doing with Dr. Mall, Dr. Howell, Dr. Abel, Dr. Jones, and Dr. MacCallum. Methods of examination would be useless to you had you not had a good basis in anatomy, physiology and especially pathological anatomy. A familiarity with the anatomical changes associated with disease is of vital importance. Indeed, one may safely say that the most important part of physical diagnosis you learn in the pathological laboratory. With the familiarity with pathological changes which you should have gained there, you would very possibly, if left to yourself, work out a good many of the procedures necessary for the detection of these changes in the living. History, indeed, shows that methods of physical examination were evolved step by step along with the advances of our knowledge of pathological anatomy. In 1760, Morgagni published his famous work on the "Seats and Causes of Diseases Investigated by Anatomy." Here for the first time was a systematic comparison between the history and symptoms of the patient during life and the changes observed in the organs at necropsy. Morgagni's work marks the beginning of pathological anatomy. Previously to that time the medical world in general had but the rudest conception of the changes which disease produced in the body, and the methods of examination of the patient during life were equally crude, but immediately following the work of Morgagni, appeared the publication of Auenbrugger, in Wien, describing "A New Method for the Recognition of the Diseases of the Interior of the Chest by the Percussion of This Cavity," the first description of this simple and vital method of physical examination, which depends upon tapping a structure to determine the

sound elicited and thereby to gain information as to the physical condition of the underlying organs. A simple procedure, it seems to us today, yet it was literally discovered only about a hundred and fifty years ago. When pathological anatomy showed that certain symptoms of disease were associated with solidification of the lungs or accumulation of fluid in the pleural cavity, it was not long before acute physicians discovered accurate methods for detecting the existence of these conditions before death. It was not many years before a brilliant Frenchman, Laennec, had added an immense fund of information as to the character and significance of the sounds produced in the normal and diseased chest by the discovery of auscultation and his contributions to normal and pathological anatomy.

No physician who has not had a good experience in the pathological laboratory can be a good diagnostician. The best diagnosticians are those who most frequent the necropsy room.

What you are going to learn now are certain principles and methods and procedures of observation and examination of the living human being. The information which you will acquire from these procedures will be of little value, unless you have a clear idea of the nature of the pathological conditions with which you may be concerned. From the employment of purely physical procedures you will gain purely physical information. In a space which should be occupied by an air-containing body you will discover a solid or a collection of fluid. That is as far as you can go. What that body or what that fluid may be, no book can tell you. You can arrive at reasonable conclusions only by using your own common sense, acting upon the basis of the knowledge you have gained by your experience in the ward and in the pathological laboratory. You

can not make an intelligent diagnosis of a pneumonic solidification of the lung if you do not know what a pneumonic solidification looks like, or the conditions under which it occurs, or the symptoms to which it gives rise. And after all, here the application of your common sense to medicine only begins. If any of you share the common fancy that medicine can be practised by rule, you should rid yourself of it forthwith or abandon the idea of becoming a physician. It may be that in Heaven all things are regulated by rule, including the practice of medicine. Very fortunately for us mortals it is different on earth. If medicine could be practised by rules, if life could be ordered wholly by fixed regulations, the function of the physician would be small, and life would be insufferably dull.

You are going to satisfy a competent board of examiners that you possess sufficient knowledge of anatomy, physiology, chemistry, pharmacology, as well as the methods of physical exploration, and the use of surgical instruments to be let loose upon the public. From that time on you are bound only by the rules of common honesty and decency. All that medical ethics and etiquette mean is common honesty and decency and consideration for your patient and your fellow practitioner. You must practise medicine as you make diagnoses by your common sense playing upon the basis of your knowledge. He who practises medicine according to the directions of X's practice or Y's therapeutics should have been a homœopath: he is a puppet.

Why does a human being consult a doctor? For various reasons. Firstly, and most commonly, because for one reason or another he becomes conscious of himself. The normal human being does not think about himself; he does not know how he "feels." He does

not attempt to analyze the difference between his "feelings" on one morning and on another; and even if someone were to direct his attention to himself and ask him how he "feels" today as compared with the ordinary, he would probably be unable to answer; he does not "feel" at all; of himself and his normal functions he is unconscious. When, however, for one reason or another, he does become conscious of himself and his functions, sooner or later he becomes interested and often concerned, and thence it is but a step to the consultation of someone who may better be able to interpret the conditions that puzzle him. The complaints which bring the patient to the doctor may be simple and easily analyzable, or they may be difficult and almost impossible to unravel. 'Tis these difficulties and puzzles that make the practice of medicine fascinating to the man who is fit to be a doctor.

Secondly, a man consults a doctor because he has come to fear that something may be the matter with him, or because he wants assurance that he is sound and well. It may be that he is a nervously constituted individual who has heard somebody talk of a malady of some sort, the picture of which so obsesses him that he wants assurance that he is not a victim. It is not uncommon for healthy, vigorous, athletic young men between twenty and thirty to ask a physician for a complete physical examination. This is a symptom that is almost pathognomonic of a condition which is common though not, to be sure, morbid. Nine times out of ten that man is contemplating matrimony.

You have then reached the point where you are confronted with the problem of the detection and definition of deviations from the ordinary or normal in the living human being. What are deviations from the normal? And how may they show themselves? What is the

normal? These are questions which are often among the prettiest problems that a physician may meet. To solve them demands careful observation, practice and experience. 'Tis the only way. In a gross sense deviations from the ordinary may be physical (that is anomalies or abnormalities in the position or the size or shape of an organ) or functional, in the sense that the action of that organ produces different physical or chemical manifestations. The detection and the interpretation of these physical and functional deviations from the ordinary constitute the fascinating art of diagnosis.

And do not deceive yourself: diagnosis is an art which can be acquired only by training, long practice and experience. Diagnosis, then, is an art, empirical, if you will. The word empirical is used often as a reproach in connexion with things medical. Medicine is "empirical," say the critics of the doctor, wishing thereby to indicate that the physician deduces his conclusions from his own fancies and prejudices, or from an experience interpreted by a mind which is not open, without regard to the teaching of science. But science derives its theories and its laws only from observation and experiment and the master whose ingeniously designed experiment, whose keen powers of reason lead him to formulate the theory or detect the law has become a master only through long training and study and experience. It is no insult to the art of medicine to say that it is largely empirical, that it is largely based upon the teachings of observation and experience. This is but to say the truth. The art of medicine as it comes more and more to be based upon scientifically established conclusions, theories and laws, becomes, 'tis true, less and less empirical. We are able to recognize many diseases today with a scientific accuracy which

was impossible yesterday but still, in the interpretations of many of the signs of disease, as well as the effects of treatment where an exact scientific basis for a conclusion is wanting, we must still be empirics in the good sense of the word; we must still be guided by experiment and experience.

To the physician with a good scientific training and an open mind, experience is the main teacher and guide which makes of him a master in his art.

To another with an unsound foundation, experience may be useless.

To him who is ill-trained and possessed of a prejudiced mind (the man to whom all experience but tends to bolster a preconceived idea), to him experience may be dangerous.

What do we mean by physical diagnosis? Sometimes the terms "physical" and "functional" diagnosis are used as if they represented two separate and distinct procedures. In recent years, with the great increase in instruments of precision and the expansion of our knowledge of physical and chemical methods of exploration, the term "functional" diagnosis, especially, has come into common use. This division into physical and functional diagnosis is comprehensible, but not wholly sound. One might truly say that the determination of the size or position of the heart was a matter of purely physical diagnosis—that the determination of the quantity and rate of urea output in the urine, under fixed conditions of diet and general surroundings, was a matter of functional investigation. In a general way a division between physical and functional diagnosis may often be maintained; but in reality, physical and functional diagnosis are so closely bound together that they can not absolutely be separated. For instance, by the simple physical methods of exploration which are

included ordinarily under the head of physical diagnosis, you can determine much concerning the normal or abnormal functions of the heart and lungs. The more complicated questions of functional diagnosis, as the term is commonly used, demand, however, laboratory studies and often experiment. In its proper sense the term physical diagnosis should be used purely with reference to the methods of exploration which are employed. This is the sense in which it applies to your work of this year and next. The methods with which you are to work in this course are purely physical procedures, which you yourself can practise in the consulting room and at the bedside of the patient with your five senses assisted by the simpler instruments of precision.

On your ability to use your five senses and properly to interpret the information they give you, depends your usefulness or your uselessness as a physician. No book can teach you physical diagnosis. The kernel of all diagnosis is observation; that you must make yourself. You can not reason safely on the description of another. The development of well equipped laboratories which relieve the physician in the city from the necessity of making his own examinations of the blood, urine and sputa, and the aid that the development of radiography, electrocardiography and other methods of physical investigation have brought to the physician have enabled us to study our patients much more accurately than we could thirty years ago.

Radiograms, electrocardiograms, tests of renal function, are of great assistance in establishing a correct diagnosis and prognosis—to the physician who can interpret them. But 'tis well to remember that they are but single stones in the edifice of a diagnosis. They are of little help and may be misleading to one who can

not interpret them. The man who fails to make, or is incapable of making, an intelligent physical examination is incapable of benefiting materially by such assistance.

The experience of the war has revealed a deplorable lack of knowledge of the basic principles of physical exploration in the medical profession of America. A surprisingly large number of officers were content, without reasoning, to accept a laboratory report as the basis for a diagnosis. To take one example, at one time a considerable number of soldiers were being returned to America with the diagnosis of pulmonary tuberculosis. Investigation of one hundred of these patients by an expert revealed recognizable evidences of tuberculosis in only about 30 per cent; the other 70 per cent represented, for the most part, convalescents from acute pulmonary infections. The reason for this was simple. Many of the officers dealing with these patients had blindly accepted an x-ray diagnosis of pulmonary tuberculosis. But upon what was such a diagnosis of tuberculosis based? Upon the presence of certain shadows which indicated changes in the lungs, very possibly in some instances, the result of tuberculosis. This is not unusual. Think of necropsies that you have seen. How many individuals dying of typhoid fever, or cardiac disease, or anything that you may choose, show in their lungs old scars, the evidence of a previous tuberculosis—scars often too small to recognize by the ordinary methods of clinical investigation. Many of us in this room have such changes in our lungs—scars that tell of an old battle fought and won by our organism. It is interesting and sometimes important to know that a man has had such an experience in the past. It is interesting to know that he has such shadows in his lungs, but from the x-ray plate the radiol-

ogist can only guess at what those shadows represent. 'Tis for you with your knowledge of the symptoms and the physical signs that you can make out on examination to determine whether such shadows represent the evidence of active disease or the inactive scar that tells of the dead process. The x-ray plate simply gives you another bit of purely physical information which can properly be interpreted only by careful correlation with all the other elements in the case. Many of these x-ray records revealing, though they may, our past experience, are but post-mortem evidence of a process that was, but is no more.

In other instances, a reasonably intelligent consideration of the history of the patient and the nature of the physical signs, should have led the careful examiner to the conclusion that these shadows indicated an unresolved pneumonia or a persistent bronchitis with small areas of broncho-pneumonia of non-tuberculous origin. But these officers had come to rely so blindly upon the x-ray plate with its accompanying and too often unqualified statement "pulmonary tuberculosis," that they had become incapable of observing and properly weighing the physical manifestations which would have justified, in most instances, a correct diagnosis. This blind reliance upon laboratory tests and the associated neglect of the use of one's senses and the ordinary methods of physical examination is sadly common among the profession at large. Not long ago I saw, in consultation, a gentleman who was said by his physician to be suffering from cardiac disease; he feared, angina pectoris. I asked him what the symptoms of the patient had been. His reply was that at first he had thought he had indigestion, but that Dr. X had found his heart enlarged; that Dr. Y had made a Wassermann reaction which was negative; that Dr. Somebody Else

had looked into the conditions of the stomach; that a differential blood count had been made; that the urine showed no abnormalities. I asked him if the patient had had pain. He had, over the heart. Did it radiate into any other part of the body? No. Was it associated with exercise? He thought not. After a little questioning I realized that the doctor had practically no information to give me himself as to the symptoms or physical signs of the patient. I then saw the patient and in a few minutes learned that his pains did follow exercise and eating; that they did radiate into his arms in a characteristic manner; that the history alone was such as to justify the diagnosis of angina pectoris. The doctor had neglected all ordinary methods of investigation and had contented himself wholly with the reports of laboratories and experts on this, that or the other detail. This is not to practise medicine, nor is such an individual qualified safely to treat a patient.

The information which the laboratory brings is invaluable to the competent physician, but it can be utilized properly only when weighed in connexion with the history and physical examination. The fundamental physical examination that one makes with his eyes, ears and fingers is far more important than any other method of study to which you may appeal. It is inexcusable that a physician today should graduate from a medical school untrained in the basic principles and practice of physical examination; but it would surprise you to know how few officers in the Army—and by that I mean the profession at large—are capable of recognizing the presence of fluid in the chest in any but the simplest cases.

The art of physical diagnosis depends upon observation, experience and judgement, upon what Corvisart has called "*l'éducation médicale des sens*," "the medical

education of the senses." It cannot be learned from books. The only way in which you can learn to make a proper diagnosis is by making yourself familiar with the normal, by learning to detect deviations from the normal, by working out yourself the significance of those deviations from the normal upon the basis of what you have learned concerning the abnormal changes associated with disease; and this is to be learned only by following your patients from ward to necropsy room.

Deviations from the ordinary or normal make themselves apparent in various ways: by differences in the size and shape of organs, changes which are readily correlated with what you have seen in the anatomical and pathological laboratories; by differences in the rhythm of action or the sounds produced by organs in the performance of their function; by differences in the constitution of body fluids or in the various products of secretion or excretion of organs; by a multitude of modifications of the colour, habit, bearing, gait, mentality of the sufferer. You must at first become familiar with the normal and with the manifestations produced by normal organs in function.

In your course on physiology you have learned much about the normal function of most of the vital organs, but there are certain methods of testing and appreciating these functions which are rarely taught in the course of physiology. The student is introduced to these methods ordinarily in the presence of patients showing pathological manifestations. This is, it seems to me, undesirable. It is very common for the student to pass directly from the study in class room or in laboratory on lower animals, of the normal anatomy and physiology of the lungs and heart, to the study in the living human being of the symptoms and signs of disease. He is introduced to the various instruments of precision

commonly in use, only or almost only, in connexion with their application to the detection of disease. A far more rational procedure would be to allow a student, while he is engaged in his physiological studies, to become familiar with the use of methods and instruments of precision as applied to the normal individual, to become familiar, for example, with the movements of the normal chest, with the sensations conveyed by palpation under normal conditions, with the sounds to be elicited by percussion of the lungs and the abdominal viscera, with the methods of outlining the position and size of the organs, as well as with the sounds which are to be heard on listening to the normal respiration or to the heart's beat. He should become familiar with the phenomena associated with the normal function of heart and lungs as revealed by physical examination, but especially should he be familiar with the physical explanations of these phenomena. If, for instance, you are familiar with the sound of respiration over a normal lung and appreciate the reasons for the existence of such a sound, you will then quickly note any changes from this normal with which you may meet, and you should be able to make rational deductions as to the disturbances of function which may have caused them.

Next year you must be led through a series of the commoner deviations from the ordinary or normal. If you become familiar with the manifestations of the normal heart in function, if you become familiar with the character of the sounds produced by the normal heart, and with the accepted physical explanations of their cause; and if, later, you come across an individual in whom, let us say, the second sound of the heart shows peculiar modifications, you will be face to face with an interesting problem concerning which you should be in a position to reason intelligently. The nor-

mal second sound is due to certain physical conditions. Here it is modified, perhaps replaced by a new and unusual sound. You will naturally assume that there has been some interference with the normal processes to which the second sound is due, with the closure of certain valves. You will notice on careful examination that this modification of the second sound is heard in certain areas only and, on further consideration, you determine its distribution in relation to the direction of the blood current and the anatomical disposition of the cavities of the heart. And then you will consider the associated modifications of the outline and size of the heart, and of other sounds, which may indicate that the pressure is raised in cavities behind the valve at which this unusual sound is produced. Further you may find evidences of the engorgement of the venous circulation as shown by the veins of the neck, or enlargement of the liver. There may be modifications in the character of the radial pulse. In the end, by a process of deliberate reasoning, you will arrive at the conclusion that you are perhaps dealing with an insufficiency of a valve, the closure of which is normally associated with the production of a certain sound, the insufficiency of which might account for the whole train of manifestations that you have observed. Now, when you have once worked out correctly a problem of this sort, as most of you will, if you go into the subject as you should, you will have taken a long step forward, and you will have gained confidence in your own powers of reasoning which will have been used exactly as you will have to use them throughout your life as a practitioner of medicine.

I greatly hope that before many years much of the work you are now beginning may be undertaken in connexion with the courses of anatomy and physiology,

so that at the same time the student may familiarize himself with the form and functions of the organs in the laboratory and in the living human being.

In the third year, as I have said, you will study selected patients exemplifying changes occurring in the heart and lungs and abdominal viscera. We shall try to give you an opportunity to do this in small groups and in such manner that you may learn to work out your own diagnoses.

To most of the sounds elicited by percussion of normal or diseased organs, to some of the normal sounds or modifications of these sounds arising in heart or lung in health or in disease, there are applied specific terms, terms introduced for brevity and convenience. Often, unfortunately, the terms employed to describe a given sound vary somewhat according to the author. He who starts the study of physical diagnosis by reading books on auscultation and percussion finds himself sadly confused when he is confronted by the patient. A safe way, indeed, to confound yourself and to delay your proper development as an individual capable of detecting disease, is to begin the study of physical diagnosis by reading books, to form pictures in your mind of what these various sounds and manifestations may be and of what they indicate. Such a course places a student at the outset at a disadvantage. It is inconceivable that he should form a correct idea of what he is to hear in the chest from the description that he reads in a book. Fancy that you have never seen or heard a violin, how near do you think you could come to a conception of the sound of a violin from a description read in a book? The parallel is exact. If you begin by reading a book on physical diagnosis you start with a preconceived idea as to the character of the sounds and manifestations with which you are going to meet. This

idea cannot be wholly right, and it may be very difficult to rid yourself of it. You will start with a prejudiced conception as to the significance of the sound which you have come to associate with the term, which may interfere gravely with the proper use of your reason. You may, before you know it, find yourself reduced to a condition alas, far too common in medicine, that of seeking to make a diagnosis by the matching of a mental picture gained from a description with that which you find before you. The individual to whom diagnosis means matching pictures is lost!

The bane of physical diagnosis, indeed, of medicine in general, is the terminology. Words! Beware of the careless use of words! A word or a term means to many who hear it an instant mental picture. And too often to that mental conception we are forever enslaved. Many of the troubles of mankind are due to the tyranny of words. It is a dangerous thing, thoughtlessly to coin a new word or a new term. Think, only, of the tragic confusion in the minds of men today arising from the term a "League of Nations!"

Of one thing you may be sure: the picture that a given term suggests to another will never be the same as that which it suggests to you. For heaven's sake remember that terms are made for convenience. To paraphrase Seneca, "The term, if thou knowest how to use it, is thy handmaiden, if thou knowest not, 'tis thy master." Let the term be your handmaiden and not your master. Remember that it is used merely as a convenience; that it is not the essence. Don't allow yourself to think of the manifestations of disease in the sense of a word or a term. Don't let the term itself usurp in your mind the picture that for simplicity's sake it is used to evoke. The reverent attitude of some physicians toward terms comes dangerously near put-

ting them in the category of the good woman who, filled with wonder at the discoveries of the astronomer, begged him to tell her how he had accomplished that which seemed to her the most remarkable of all, the discovery of the names of the stars!

During the next year you should endeavour especially to learn to describe the manifestations of disease in the simplest possible manner, and to use as few unnecessary terms as possible. Be simple and clear in your language and descriptions. If you use a term to describe a sound, for instance, about which there can be doubt in anyone's mind, you are not simplifying, you are confusing; rather describe the sound. And I beg of you, never invent a new term unless it is absolutely necessary.

The safest way to avoid pitfalls is at the beginning to read nothing about physical diagnosis beyond that to which we refer you here. You need no book on physical diagnosis this year. You must work out your own salvation. Nobody can do it for you. Books won't do it for you. Prayer won't bring it to you. On your technical skill and your ability to reason without preconceived ideas, from the information that your senses bring you, on the basis of your physiological, anatomical and pathological learning, depends your success as a physician. If you proceed without books and work out your diagnoses gradually and step-wise through the use of your own gray cortex, you will be following the course that you must pursue during life in dealing with any new or unusual feature of disease. You will not be unduly disturbed by preconceived ideas, and you will not readily forget the explanation or significance of changes which have been detected by your own powers of reasoning.

This year the work will be restricted to the study of the normal individual. But as we study the procedures for the detection of the position of normal organs, the methods of controlling their normal functions; as you study in the healthy individual the movements and sounds to which the normal organs of the chest give rise in the performance of their functions, you will readily appreciate most of the modifications which gross physical changes in those organs should produce, and you will be able to detect and interpret the manifestations of the diseases with which you will meet next year far more quickly than you imagine.

After all, the summary and description of the methods of examining a patient which are to be found in the works of a recent author by the name of Hippocrates, are perhaps as clear and sound as any that have been set forth: "At the outset determine the similarities to, and deviations from, the normal, the most severe, the easiest to recognize, those recognizable in any manner whatever. Look for that which may be seen, felt, heard, which may be appreciated by sight, by touch, by hearing, by the nose, by the tongue and by the powers of reason; in a word all that can be discovered by such powers of appreciation as we possess."

XVII

LAENNEC—ONE HUNDRED YEARS AFTER ¹

At the outset, let me tell you how deeply I appreciate the honour that you have done me in inviting me to address you—with what happiness and satisfaction I appear before an audience of Canadians. That broader sense of patriotism which links us all to the Mother Country which is as much mine as yours, has suffered much in the five years that have passed. But despite the noisy discord of ephemeral politics, that which has happened has, I think, drawn closer about us the bonds of a common ideal and a common inheritance which we cannot and would not escape; and the aureole that today surrounds Canada in the eyes of every American who deserves the name, can never fade.

“μέγα δὲ μέρος ἡγεῦμαι τῆς τέχνης εἶναι τὸ δύνασθαι σκοπεῖν”

“The power to explore is to my mind a great part of the art.”

—Hippocr. epid. III.

These words appear on the title page of Laennec's "*Traité d'auscultation médiate*," which appeared just a hundred years ago. It is fitting for more reasons than one that we pause on this notable anniversary and consider, for a moment, the man and his work, for there are lessons therein which we may well take to heart. René-Théophile-Hyacinthe Laennec was born on the 17th of February, 1781, in a stone house which fronted on the charming quai that borders the little port of Quimper in the Department of Finisterre in Bretagne.

¹ Delivered before the Canadian Medical Association, Quebec, June 26th, 1919. From The Canadian Medical Association Journal, 1919.

His father, Théophile-Marie Laennec, was a light and airy personage—a lawyer by profession, a courtier by nature, a furious framer of mediocre verse, through which he curried favour with the great and the fair, an indefatigable office-seeker, a prolific professor of lofty and exemplary sentiments and advice of which he himself was a sufficiently poor exemplar; a futile but withal an entertaining person—a singularly anomalous and ill-chosen father, however, for a serious and distinguished son.

Laennec had two uncles, one, Michel, a prelate, who died an *émigré*; the other, Guillaume-François Laennec de la Renardais, a physician of Nantes, to whom Laennec owed much. His mother, Michelle Gabrielle Félicité Guesdon, of Quimper, of whom little is known, was an Angevine by descent, and came from a family of some literary distinction; she died five years after his birth.

After his mother's death, Théophile was sent with his brother by his happy-go-lucky father first to his uncle Michel at Elliant, and a year later, on the latter's removal to Tréguier, to his uncle Guillaume at Nantes. Guillaume Laennec was a fine and sturdy character, a graduate in medicine at Montpellier, who had studied previously in Paris and with John Hunter in London. He was at this time rector of the University of Nantes. The two boys were taken into his house and cared for as members of his own family. For Théophile especially his uncle grew to have a deep and lasting affection which was manifested throughout his life. Laennec's early instruction was gained at *L'Institut Tardivel* and the *Collège de l'Oratoire*, which, for the year '91-'92, was under the vigorous direction of no less a personage than le P. Fouché de Rougerolles, then on the threshold of his eventful career. In August, '92, he

gained the "accessits" of two prizes of honour, and a first prize in composition—French translation.

At this time, to the dismay of his uncle, Théophile was already writing verse. In these days when the air is rent with protests at the burden and the waste of time involved in the acquisition of a smattering of Latin by our boys who are to pursue a career requiring knowledge of the natural sciences, it is not uninteresting to read (Rouxau) a charming metrical translation of the first eclogue of Virgil, written by a boy under twelve years of age.

But rhyming was not his only distraction; he appears to have been a boy in every sense.

The Revolution followed its course. The guillotine was set up in the square under the Laennecs' very windows. Uncle Guillaume became a surgeon in the army. But Théophile tranquilly pursued his studies, and graduated in 1795. At about this time, his father married for a second time, Geneviève-Alice-Julie Urvoy de St. Bédan, the widow of an *émigré*. Renouncing the temptation to which he almost surrendered, to join the engineers, Théophile began the study of medicine at *L'Hôtel Dieu* of Nantes.

Here, actively engaged in the lesser duties of military surgery, he became deeply interested in natural history in all forms, roaming about the country and devoting himself to his collections. He had also developed an enthusiasm for Greek, to which he gave special attention. Alert, active, ambitious, he was filled with the desire to perfect himself in various arts and graces, such as riding, dancing, music—studies the pursuit of which was difficult with the scant means afforded by his scatter-brained parent.

In 1798, he passed through a severe illness, which may well have been a typhoid fever.

In the insurrection of 1800, Théophile took part in the military expedition of General Grigny in le Morbihan. While stationed at Vannes and at Redon, he composed a long poem, humorously describing the expedition. This purported to be the product of an ancient Celtic bard, Cardoe, translated after years of effort, by its discoverer, Cenneal (Laennec), and was entitled "*La Guerre des Venêtes*." On his return, Laennec entered the military hospital as an army surgeon of the third class.

At this time his uncle had long been struggling to induce the recalcitrant father to supply the funds necessary to enable the boy to pursue his studies in Paris, but it was not until April, 1801, that Théophile joined his brother "Michaud" at 947 rue St. Dominique d'Enfer, and entered the *Ecole Spéciale de Santé*, as the *Ecole de Médecine* was then known. The two main schools of clinical medicine in those days were that of Corvisart at the *Unité (Charité)* and that of Pinel at the *Salpêtrière*. Under Corvisart, Laennec began his studies. It was a fortunate choice. Corvisart had a well-organized clinic where (Roux) "each morning in groups the students were trained in the examination of patients, while the observation was completed wherever it was possible, by those careful and methodical necroscopical examinations, the taste for which Corvisart contributed so much toward spreading in France." Here Théophile found himself thrown with Bayle, for whom he developed early a warm attachment.

From the outset, Laennec was a marked man, and was soon made a member of the *Société d'Instruction médicale*. At twenty he was an accomplished student of English, German, Latin and Greek, and besides following the clinic at the Charité, and the last inspiring

course of Bichat on pathological anatomy, he found time to attempt to perfect his Greek at the *Ecole Centrale des Quatre Nations*. In 1801, he was also admitted to the *Ecole pratique*, where he studied under Duméril, Chaussier, Fourcroy, Deyeux, Hallé, Pinel, Bourdier, Peyrilhe, Richard, LeClerc, and Cabanis. He also worked with Dupuytren, in his studies in pathological anatomy.

From the beginning Laennec kept careful and detailed notes of all his observations and lessons, and among his papers is an interesting shorthand record of the celebrated debate in connexion with Bayle's inaugural thesis.

His first medical communication was published in the *Journal de médecine de chirurgie et de pharmacologie* for June, 1802, entitled, "*Observation sur une maladie du cœur, ossification de la valvule mitrale, dilatation du ventricule droit, avec affection de la poumon et du plèvre gauche.*" A month or two later, Laennec published an analysis of Bell's work on gonorrhœa and venereal disease, and in the same year, an account of a group of cases of peritonitis. This last publication marks an epoch in medical history, setting forth clearly and sharply the clinical and anatomical features of the disease touched upon by Bichat, but as yet unrecognized clinically. This remarkable work was the beginning of a series of contributions, anatomical and clinical, such as have been produced by few men in the annals of medicine.

At this time his labours were especially devoted to the study of anatomy, normal and pathological. In association with Bayle, he began to work with Dupuytren on his treatise on pathological anatomy—work which was soon to be broken off, owing to misunderstandings with the former. From this time on his publications

were frequent and important. In February, 1803, there appeared a "*Note sur une capsule synoviale située entre l'apophyse acromion et l'humérus*," the discovery and accurate description of the subdeltoid bursa, the surgical importance of which has been recognized in such recent days.

A little after this he described the fibrous capsule of various abdominal organs, especially that of the liver, which was as yet unknown as distinct from the peritoneum. In the distribution of prizes to the *Ecoles spéciales de Paris*, in September, 1803, Laennec obtained the first prize in surgery, and shared the first prize in medicine with Billerey. Later, at the *Concours* of the *Ecole pratique*, the announcement of his candidacy had so disturbing an effect in preventing others from coming forward, that at the special request of his instructors, he withdrew his name, and took a position *hors de concours*. Already his success was so great that he started a small course in pathological anatomy on his own account, and determined to write a treatise upon the subject.

A member, at its inception, of the *Société anatomique*, he was a constant contributor, his most important communication being his "*Mémoire sur les vers vésiculaires*," etc.

As ever, the careless father was negligent in providing for the industrious son, and Laennec's work was associated with constant worry as to matters of finance. But finally, in 1804, he was able to pass his examinations and present his thesis, which was entitled, "*Propositions sur la doctrine d'Hippocrate relativement à la médecine pratique*." In this interesting document, Laennec showed his familiarity with the Hippocratic writings, which, happy man, he read more or less flu-

ently in the original. The thesis is replete with wise observations. He begins with the quotation: "Medicine is not a new science. For a long time its principles have been established and its path traced. By following these through long years, many valuable and useful discoveries have been made, and everyone who, endowed with the necessary qualities, knowing that which has been done before him, starts from this point and follows the same route, will make new contributions. But he who rejects the work of his predecessors and disdaining all, pursues his studies by another route, and with another point of view, and thinks he has found something, he deceives himself and deceives others."

He points out the necessity of the proper classification of disease on a basis of pathological anatomy, of the vital importance of the study of diagnosis by careful observation and correlation, not only of the general symptoms on which prognosis depends, but of the special symptoms associated with each disease process. "The only method by which one can acquire solid knowledge in medicine depends on avoiding the adoption of any principle which is not proven by many individual facts, by studying with care the characters and the course of diseases, and by treating them according to the indications drawn from the observation of that which has succeeded in like cases. This is the method which Hippocrates asserts to have been known long before him, which he regards as the only way by which one may make real discoveries."

He ends with the words of Klein (*Interpres Clinicus*): "I assert that medicine is free. I place myself neither with the ancients nor the moderns, and I follow the one (party) as well as the other when they culti-

vate the truth; yet more often, I repeat, myself, their observations." Wise advice for the day in which it was written, wise, if not taken too literally, for all time.

Théophile Laennec had already won the recognition of his masters and associates. He was made a member of the *Société de l'école de médecine* and became an editor of the *Journal de médecine*. He took up the torch from the hands of the dying Bichat, and his studies of pathological anatomy were worthy of his great predecessor. The work on peritonitis was a classic both anatomically and clinically. In 1805 he published a note on pathological anatomy in which he sought to set forth a system of classification of organic changes—an interesting and valuable communication which led to a long dispute with Dupuytren. At about this time he became deeply interested in the study of the Celtic dialect of lower Brittany, of which eventually he acquired a considerable knowledge. He published frequent critical reviews and an annual summary of the diseases prevailing in Paris—a duty which brought him into close touch with the Hôtel-Dieu and the St. Louis, as well as the Charité. But already his hard work had told upon him seriously. That which he called his "asthma" disturbed him greatly, and the rest he needed he could not take. A happy vacation of several weeks in 1805 with his cousin, Madame de Pompery, at Courcelles, near Soissons, did much to freshen and strengthen him. Rouxneau publishes a number of amusing verses and extracts from plays which Théophile seems to have written during this short vacation with surprising facility and spontaneity.

In 1808, Laennec retired from the *Journal de médecine*. He was beginning to acquire a practice of his own.

In 1809, the *Ecole de santé de Paris* became the *Faculté de médecine*; Laennec was a doctor of the new school.

In 1812, he was named Alternate Physician (“médecin suppléant”) at the Beaujon.

In 1814, he was at the Salpêtrière, where his knowledge of Gaelic was of the greatest help to him in caring for and consoling the young Breton conscripts who, unable to make themselves understood, were distressingly homesick.

He had become the great authority on pathological anatomy, and in the *Dictionnaire des sciences médicales*, he wrote on “*Anatomie pathologique, Ascarides, Cartilages accidentels, Crinon, Cucurbitains, Dégénération, Dégénérescence, Désorganisation, Ditrachycéros ou bichorne rudy, Encéphaloïde, Fibreux, Fibrocartilages accidentels, Filaire, Furie infernale.*”

In 1816, Laennec was appointed Chief of Service at the Necker, where he gathered about the bedside a group of devoted students. It was here at the Necker that his great discovery was made. Everyone knows the story; how one day in 1816 he noticed boys at play in a court of the Louvre who, with ear applied at the extremities of long pieces of wood, listened to the transmission of the sound of a pin-scratch at the opposite end, how, on the following day, he rolled a notebook tightly, and placing one end against the chest of a patient, was delighted to find that he could hear the heart beats more clearly and distinctly than he had been able to hear them with the naked ear. Soon he devised his simple wooden cylinder and began his researches. It was, after all, a natural step. Up to the time of Bichat and Laennec, despite the work of Morgagni, little had been known of the pathological changes in organs. Laennec, a great observer, imbued with his new knowl-

edge of pathological anatomy, had his eyes wide open for something more than that which percussion and inspection and mensuration could give; and the acute mind found the way.

What Laennec did with his discovery is a model for all time. In the three years that followed, he had brought before the world the characters of normal respiration and voice sounds, and their variations with different physical changes in the constitution of the lungs as clearly as they may be taught today. But more than this, he had described anatomically and clinically the various forms of bronchiectasis, emphysema, pulmonary œdema and pulmonary apoplexy.

The description of pneumonia from an anatomical standpoint is almost as admirable as the demonstration of the method by which its presence could be determined clinically. Again, his description of the different forms of pulmonary tuberculosis in ward and laboratory, the recognition of the possibility and manner of arrest of the disease, are models of acute observation and understanding. His contributions to the diagnosis of diseases of the heart are not upon the same plane owing, doubtless, as Saintignon points out, to the circumstance that the physiological explanation of the heart sounds and their significance was at that time unknown. Starting with the false hypothesis that the second sound was auricular in origin, he never found his way out of the jungle.

This was a wonderful work for one man. How was it done? Laennec tells in his own words in the preface to his book: "When a patient enters the hospital, a student is given the task of collecting from him what anamnestic information he can give as to his disease and of following its course. As I examine the patient myself, I dictate the principal symptoms that I observe,

those, especially, which may go to establish the diagnosis or the indications as to treatment, and I give my conclusions, subject to amendment, if it be necessary, by later observations. This dictation, which is made in Latin for obvious reasons, is taken down by the pupil in charge of the patient, and, at the same time, on a separate notebook, which I call the 'diagnostic sheet,' which it is the special duty of another pupil to keep in order that he may hold and read it to me, if necessary, at each visit. When any new sign appears, such as may modify the first diagnosis, I add it also. If the patient dies, the protocol of the necropsy is taken by the pupil in charge of the observation. I re-read these observations before all those present at the necropsy, and if there be occasion to make any correction, I do it on the spot, and after having taken their counsel."

Laennec's visits, according to one of his pupils, Toulmouche, lasted from an hour to an hour and a half. He invited his colleagues and friends to interesting necropsies, and he always committed himself before the necropsy in the presence of all as to the changes which he expected to find. There could be no better model for study and instruction.

In May, 1818, Laennec spoke before the *Société de l'école* on auscultation, and finally, in August, 1819, just a hundred years ago, the famous "*Traité d'auscultation médiate*" appeared. It made a great impression, and although seriously criticized by some, it was soon taken up by the world.

Laennec was small and delicate of frame. "Little Laennec," "the little Professor," his fiery adversary, Broussais, called him. But he was spirited and devoted to outdoor sports, especially to hunting, for which some of his rich patients gave him opportunities on their estates. During the winter he practised in his apart-

ment with an air-gun. Frail as he was, he was especially proud of his prowess in athletics of all sorts. "He was but a breath of air," says Pariset, "and he thought himself a Hercules." He was musical, and played the flute. He drew fairly well, and amused himself at other times at the turner's table. But the scant recreation that he snatched from his work was of little benefit. He burned the candle at both ends, and it is probable that he was already suffering from the malady that had carried away his master, Bichat, and his companion, Bayle. He had wounded himself during a necropsy and developed an anatomical tubercle on his finger, which persisted. Finally, in 1820, worn out, he retired definitely, he fancied, to his beloved Kerlouarnec, in Brittany. There with his faithful companion and housekeeper, afterwards to become his wife, he lived for two years by the sea. The blessed solace of solitude, the joys of hunting and roaming about his lovely native fields, the opportunities of leisure to renew his studies of the classics and of the dialect of his people, rest and peace, gradually brought new strength, and after two years, duty called him again to Paris.

On his return, he found new and wearying tasks thrust upon him in the shape of an appointment as physician to Her Royal Highness, the Duchesse de Berry, and shortly afterwards a professorship at the *Faculté*.

At this time, Broussais, with his so-called physiological doctrine, held considerable sway—that strange doctrine which ascribed all the vital processes to that which he called "irritation," and all diseases to its excess or deficiency—the excess meaning inflammation, the default, debility. For him there was no essential difference between diseases, which are distinguished only by the degree of irritation and the particular

sympathy of one organ for another. The physician must occupy himself only with the organ primarily affected, which was, in most instances, the gastrointestinal tract. The terms "*gastro-entérite*" and *gastrite*" played a large part in the "physiological doctrine" with which Broussais believed he had revolutionized medicine. All that had gone before could be thrown aside, and treatment was reduced to the simplest terms. It was another system like that of Hahnemann or Brown or Gall—words—championed by a convinced, fiery, spirited, vain, intolerant advocate.

In his opening lecture at the *Collège de France*, Laennec warned against the fallacies of the new "doctrine" in a clever parable of the life and work of Paracelsus. And from this time on there was war between the clinic of Val de Grace and that of the Charité, to which Laennec had moved with his new chair—war in which, in the judgement of the elect, the acute and well-considered criticism of Laennec easily triumphed over the fiery diatribes of the modern Paracelsus. His clinic was soon sought by physicians from all countries, eager to learn his methods. In 1823 he was made a member of the Academy of Medicine.

In 1824, he married his companion, Madame Guichard-Guégen, *veuve* Argou. In the same year he was made a Knight of the Legion of Honour.

From 1824, when the first edition of his treatise was exhausted, he had been working assiduously, in addition to all his other duties, on a second edition, the form of which he had entirely changed, making the work in reality a treatise on the diseases of the heart and lungs. This was completed and published in May, 1826.

It was his last effort. The strength that he had gained in his long rest in Brittany had soon given out. His cough had increased. In April he developed fever

and dyspnœa and, soon, a persistent diarrhœa. His voice grew hoarse; he became profoundly emaciated, and in June, unconscious himself of that which all others could see, he left for Kerlouarnec where he died on August 13th. Two hours before his death, he removed his rings and laid them on the table by his bed. To the queries of his wife, he replied; "Someone else will soon have to do this for me; I would save him the trouble." He was forty-five years old.

In the ten years that had passed since his discovery of auscultation, he had brought the art of physical diagnosis of diseases of the lungs from a state of the utmost crudity almost to the point at which it remains today. He had done this not only through the introduction of his new method, but through the study and analysis of the changes in the organs themselves, and through the careful application to diagnosis, not only of auscultation but of all other methods then known, and by a conscientious objectivity which is a model. In his opening lecture at the *Collège de France*, he says that, if he presents hypotheses, "I hope to present them in such manner that one cannot attach more importance to them than do I myself, and I hope that I shall never give that which I think, that which I suppose, my point of view, my theory, in a word, for that which constitutes the true science, for *that which one knows*."

That which Laennec had done for the lungs was later extended to the heart with the growth of our knowledge of physiology of the circulation, by Bouillaud, Hope, Stokes, Corrigan, Graves, Flint and others.

It is just one hundred years since the appearance of Laennec's book. Since then great things have happened in medicine. The advances in our knowledge of the

natural sciences, the associations which attach medicine to a firm scientific basis, have increased rapidly. The developments in the domain of pathological anatomy, of bacteriology, of chemistry, of physics—to mention only the applications of electricity in exploration, and of the x-rays, have given us a deeper insight into the nature of the processes of life and of disease, and have augmented our powers of control and recognition and prevention, and, happily, in some instances, our powers of relief and conquest of disease.

The refinements of diagnosis and the possibilities of treatment demand today an increasing mass of knowledge and experience which we struggle, often in vain, especially in the United States, to crowd into an insufficient period in our universities and schools of medicine. All the new methods of research, however clean-cut and valuable their results may be, are of use only if they are exercised by one who has mastered them by practice and experience. A new instrument of precision, a new method of surgical procedure, in the hands of the inaccurate or the inexperienced, is of no advantage; it may be misleading and harmful. Refinements of method must themselves be studied and practised carefully. But even then they are in themselves rarely final; they are but additions to our basic armamentarium, new bricks for the edifice of diagnosis and treatment, useless if the foundation be deficient—nay, more than useless—dangerous. In the domain of diagnosis, the simple procedures of Auenbrugger and Laennec remain the basic essentials of the art. No man is fit to profit by modern refinements of diagnosis who is not experienced in the study of pathological anatomy, familiar with the changes in organs, and well trained in the fundamental methods of physical exploration,

who has not gained through practice at the bedside a skill and experience in the art of auscultation and percussion which has made him familiar with the physical manifestations of the activities of heart and lungs in health and in disease. How variable these manifestations may be in the normal subject should be known by all physicians.

“The power to explore is to my mind a great part of the art.”

This familiarity, this training, this power, is to be gained only in the necropsy room and in the ward. Books cannot teach it; it cannot be learned in the lecture-room; no magic power of inheritance can transmit it. “There are,” says Laennec, “some things which one can transmit well only by experience and practice; . . . however, it is precisely in these points that I count on training the students at the clinic; such are the distinctions of the various nuances of crepitant, dry and moist râles, the (distinction of) deep and superficial phenomena, . . . of the manner in which, in the most difficult and uncertain cases, in pericarditis, for example, one arrives at a definite diagnosis through comparison of the signs and by a process of exclusion.”

The experiences of the last few years have made it painfully clear that a very large proportion of our American physicians, and I understand that, to a certain extent, the same is true in this country, are sadly lacking in the essential foundations of a training in diagnostic methods. In the army there is apparent a widespread tendency to reason and act precipitately and without control on information furnished by the laboratory. Physicians forget that laboratory reports are in few instances final, that their value depends in great measure on their relation to the clinical aspects

of the situation, that at every point the human element comes into play, that a laboratory report from an unreliable source is worse than worthless.

It is becoming easier and easier for the physician to obtain x-ray plates or fluoroscopic examinations of his patients, examinations of sputa and excreta, cultures, agglutination and complement deviation tests, which come back to him as short and definite reports. Too often the x-ray report, especially, is written so as to convey to the practitioner a sense of finality which is generally unjustified. To the physician who is not wholly familiar with the clinical aspects of the case, this is a danger—a trap into which he falls in too many instances. To him who is incapable of controlling it, an x-ray report is often a liability rather than a help. In the army in France the greater part of the unjustifiable diagnoses of pulmonary tuberculosis were dependent upon the blind acceptance of an x-ray report. The same is true in connexion with many laboratory tests. I have seen the most obvious ulcerative endocarditis regarded and treated as typhoid fever because of the report from a health department of a positive typhoid agglutination test.

It is, alas, too common in private practice to meet with men who have almost abandoned the examination of the patient, and depend on the reports of consulting specialists and on laboratory tests. Not long ago, as I told my students this spring, I saw in consultation, a gentleman who was said by his physician to be suffering from cardiac disease; he feared, angina pectoris. I asked the physician what the symptoms had been. His reply was that at first *he* had thought that the patient had indigestion, but that Dr. X. had found his heart enlarged, that Dr. Y. had made a Wassermann test which was negative, that Dr. Somebody Else had

looked into the condition of the stomach and given the patient a test breakfast without notable result, that a differential blood-count had been made; that the urine showed no abnormalities. I asked if the patient had had pain. He had, over the heart. Did it radiate into any other part of the body? No. Was it associated with exercise? He thought not. After a little questioning, I realized that the doctor had practically no information to give me as to the symptoms or physical signs manifested by the patient. I then spoke with the patient, and in a few minutes learned that his pains did follow exercise and eating; that they did radiate into his arms in a characteristic manner; that the history alone was such as to justify a diagnosis of angina pectoris. The doctor had neglected all ordinary methods of investigation and had contented himself wholly with the reports of laboratories and experts on this, that, and the other detail. This is not to practise medicine. But, though a rather exaggerated picture, it is an example of what one met too often among younger as well as older officers in our hastily gathered together medical corps.

In one ward of one of our army hospitals in America during an epidemic of pneumonia, the Chief of Service discovered thirteen unrecognized empyemas among thirty-two patients. One hundred years after the publication of Laennec's book, the commonest event of my visits to camp hospitals in France was the discovery of unrecognized pleural effusion, pleurisy regarded as unresolved pneumonia.

Who is to blame for such conditions as this? Is it that the men who enter medicine today are incapable of acquiring the foundations of the art? I think not. On the contrary, in those hospitals in the United States Army where courses of instruction were instituted, it was surprising to find the avidity with which medical

officers, young and old, grasped the opportunities offered, and how quickly some acquired proficiency in methods of physical examination which, in the medical school, they had not properly been taught.

The fault lies in our methods of medical instruction, and here again I fancy that you, in Canada, have been less at fault than we. Nevertheless, I am disposed to believe that the general interest in bacteriological, serological, chemical, and the newer physical methods of exploration have in many schools led us to forget the necessity of prolonged and systematic training in laboratory, ward, and out-patient department, in pathological anatomy and in physical diagnosis in its more restricted sense, in auscultation and percussion. Training in diagnostic methods is useless if it be not preceded and accompanied by experience in the dead house. The student must be familiar with the anatomical changes in organs which he seeks to recognize in the living subject. He must follow the patient from the ward to the necropsy table. More than this, proper instruction in auscultation and percussion demands careful supervision of the student—instruction in small groups. The student must be led to make his own discoveries, to solve his own problems—he must be directed to a proper course of reasoning. Physical diagnosis can be taught only by the bedside. Again, this early instruction in physical diagnosis should not be relegated wholly to the young instructors. One of the most important duties of the professor of medicine is to give his personal attention to the students who are for the first time approaching the patient. It is at this point in the career of the student that the wise and experienced clinician can exercise his most important and lasting influence. It is, I believe, the attempt to teach the diagnostic art didactically that is at the root of

the inefficiency of so many practitioners today. If, at the outset, the student be encouraged to read books or to listen to discourses on diagnostic methods, he starts with a handicap of preconceived ideas which he may never overcome. Again, the necessity of familiarity with the normal is too often overlooked. No student should leave the medical school without appreciating the frequency, position and character of the sounds heard so commonly on the expansion of atelectatic borders of lungs.

No man should be allowed to enter the practice of medicine who has not, by experience, made himself familiar with the auscultation of the normal heart and with those murmurs which are the rule, rather than the exception, in young individuals, especially cardio-respiratory murmurs. If he be not familiar with the normal, he will be a poor judge of the significance of deviations from the ordinary.

“The power to explore is to my mind a great part of the art.”

In epitomizing the life of a great physician, I have desired to emphasize the thought that the kernel of the art of medicine lies in the power to explore. This power is gained only by experience and by practice.

The last century has perfected the art of diagnosis in many ways. But proficiency in the basic methods of exploration which we owe to Auenbrugger and to Laennec is as vital today as it was an hundred years ago.

In those parts of this paper which deal with the life of Laennec, the author has drawn largely on the works of Saintignon (Saintignon, Dr. Henri: “Laennec: Sa Vie et Son Œuvre,” Paris, J. B. Baillière et Fils, 19, rue Hautefeuille, 1904), and Rouxeau (Rouxeau, Alfred: “Laennec avant 1806,” Paris, 1912).

XVIII

LAENNEC'S VISIT TO NEW YORK ¹

'Tis interesting to reflect that when we meet tomorrow at the beautiful new building of the Academy, the point of reunion for all students of medicine in this great community, it will be about the Library that we gather. The Library—the book—is still the common point about which students collect today, as centuries ago readers met about the old tomes chained to their shelves.

In the dark ages of blind reverence for authority, the manuscript, the book, the great compilation gathered about the aphorisms of an old master whose word was as revealed, was the foundation of all knowledge. The old master generally had been a keen observer and a wise man; the scribe too often was his servile worshipper, spinning a web of more or less valuable discussion about the kernel of the annals of the seer. Man, who has always been a slave to the word, bowed down before the book. The tyranny of words is a dangerous menace to mankind.

But there were men who dared to look for themselves; who dared to seek and who found; who dared to knock and to whom it was opened. These men, who had burst the confining bonds of the tyranny of words, to whom the search for truth was above the worship of authority, consigned to the written page their observations, their experience, their perceptions, their deduc-

¹ Remarks made at the dinner of the New York Academy of Medicine, 17, November, 1926. From the Bulletin of the New York Academy of Medicine, 1927, III, 78-84.

tions, their opinions, sometimes in cryptic phrase, sometimes openly. Sometimes, as Michael Servetus, they gave their lives in payment. First, the anatomists, and then, as Allbutt has so well pointed out, the humble surgeon in the days when "sacerdotal, scholastic and military conventions" had excommunicated surgery and made that false and pernicious schism in medicine in its broader sense which exists to the present day. The anatomist and the surgeon led the way, in times when physicians were indulging in vain dialectic as to the arm from which one should bleed, or were entering on what Huchard calls "the antimonial war of a century." Precious milestones, these works, in the annals of medicine, preserved for us all in libraries such as yours.

The physiologist and the student of pathology in its full sense followed, and with the improvement of the art of printing, medical literature, no longer restricted to dissertations on the canons of the master, became a record of the experience, the achievements, the constata-tions, if one may use the word, the hypotheses of the observer and the experimenter.

The birth, one might almost say, of the art of diagnosis of internal disease, dating from the time of Auen-brugger and Laennec, placed the physician on his own feet, and began to wean him from his servile worship of the assertion of another. On the other hand rapidly accumulating contributions to medical science and art, printed in an increasing number of books and periodicals in all countries and in all languages, rendered the library more and more necessary to student and practitioner. Medical literature was no longer the record of authority; it became the record of achievement. The contributions of the last fifty years with the birth of

an art of therapy based on scientific foundations are recorded in a literature increasingly voluminous.

In this old world there are still vestiges of virgin forest. From the prostrate trunks of stately trees has sprung, alas, a literature that is as "a pestilence that walketh in darkness"—"a destruction that wasteth by noonday."

Have you ever happened, on river or lake, to meet with the birth of a generation of May-flies? You are gazing peacefully at a lovely sunset, and of a sudden, the air is full of flying things—light, thin, long, squirming, green, almost translucent bodies with large, transparent, spotted wings. They come in clouds. In a moment you are covered. They are in your eyes, your ears, your nose, crawling down your neck and up your sleeves. You rush for cover, and as you go you tread on a crackling mass, and slip on the slimy bodies crushed under your feet as they carpet the deck. Once within, you may open neither door nor window, through which light no longer comes. Without, everything is covered and hidden by layers an inch or more thick.

Ephemeridae, they are sluggish in the morning, shriveled and dead by another night, but in their lifetime they have shut the light from your eyes, and hidden all that you would see, while the slime from their bodies, crushed as you pass, tangles your feet and hinders your progress.

Even so from the trunks of the felled trees of the virgin forest has arisen a substance by courtesy or convention called "paper"—a crying insult to the paper of the past! From this burlesque upon paper there has burst upon us a cloud of "literature," not only general but medical, which obscures the sky. As by a generation of May-flies, we are submerged by medical ephemeridae. Advertisements of every imaginable

sort, periodicals, columns in the daily press, carefully "written down" for the intelligence of a child, books. Books written to record the experiments, studies or achievements of the author? Oh! no. Books written on time, at the request of a publisher—compilations, in great part, and too often of little value. For medical literature today, no longer the literature of authority, too rarely the literature of achievement, is largely the literature of the publisher.

Smothered and blinded by this plague of ephemeridae, 'tis to the library again that we turn. As the sailor sweeps the deck, so the devoted librarian sorts and classifies and catalogues or sweeps away and burns this incubus of literature, so that we may find more readily the jewels buried beneath the ephemeral cloud.

That this great and growing library should now at last have a home fully worthy its present excellence and its future promise is of happy augury for the profession and public of this city and of the country at large.

This year, the year of the opening of your new building, is a medical anniversary of some importance. 'Tis the centenary of the death of Laennec, and of the birth of the second, the great edition of his book in which is set forth for the first time the real basis of pulmonary diagnosis.

A charming figure he must have been. The little, spirited, spiritual man, the archetype of the Celt, with oval face, large, expressive eyes, long, humorous upper lip. Scholar and classicist, who at eleven had translated the first Georgic of Virgil into good French metre; poet, who at the same age was writing fables in no mean verse; lover of nature and of music; profound, devoted student with a deep reverence for those who had gone before; whose inaugural thesis was on the doctrine of Hippocrates whose works he had read and pondered in

the original Greek. Anatomist who, at the very outset of his career, had described the sub-deltoid bursa and the capsule of the liver. Pathologist, whose description of peritonitis as a pathological and clinical entity, published in the earliest years of his medical life, is a classic; whose anatomical and clinical descriptions have never been surpassed. Inventor of the stethoscope. Author of "*L'auscultation médiate*" in which is set forth a method of clinical procedure that is a model for all time; which contains descriptions—in good part original—especially those of bronchiectasis and emphysema—of pathological changes in the lungs and of methods of clinical recognition of such changes that are the very basis of modern clinical medicine. Vigorous defender of his ideas, and spirited, sometimes bitter opponent of his contradictors. Brilliant, successful, wise practitioner and teacher; devout withal, and one of a group presented to the Pope, which was greeted by the memorable exclamation: "*Medicus pius—res miranda!*" ("A pious doctor; marvelous object!"). Dead at forty-four of that disease to which he had given so much of his life. Father of modern diagnosis.

Fancy for a moment that the angel Ithuriel, disturbed by the reports of the press and Sinclair Lewis's novels, were to dispatch Laennec to inspect the medical circles of New York, as some years ago he sent Babouc to Persepolis. Fancy the delight of the little master at the advances in our knowledge of disease, at that which bacteriological and serological studies have brought; at the applications of chemistry and physics to the medical sciences; at the possibilities of modern diagnosis; at the multitude of instruments of precision, the clinical thermometer, the ophthalmoscope, the laryngoscope, the use of the electric light in endoscopy in all its forms, the sphygmomanometer, the x-ray; at the

growth of a therapy resting on a scientific basis; at the schools and libraries and hospitals such as you would show him today. But fancy for a moment his surprise, on entering a hospital ward—the little master in his swallow-tail and choker, his big stethoscope in its green leather case in his coat-tail pocket—fancy his surprise on entering the ward and finding himself face to face with a comely nurse with jaunty cap and bobbed hair, and plucked eyebrows, and slightly hectic cheeks, and pale nose, and curiously cyanotic lips, and shortish skirts; or on meeting, in the corridors, those visions of beauty with shorter skirts and *bobbeder* hair, whose very presence is a social service! Fancy what his feelings would be! But no, rather let us refrain! There may be reporters in the room. I fear that with the Reverend Increase Mather, he might suspect that the devil, appearing as an angelical apparition, might lurk behind these alluring visions! He would have to learn, but he would learn in time, that they *are* “Angels of light” after all.

And then fancy his surprise at the language employed at the bedside—Laennec who always dictated his opinions and diagnoses to his students in Latin, “*pour des raisons faciles à sentir*,” as he said. Latin! Gone in one short century! Latin—for so many hundred years the language of scholars. “What on earth” he would say “is the sense of wasting years in the acquisition of a few barbarous modern languages when in Latin all scholars may meet?” “That new word ‘standardization’ which rather offends my ear,” he would reflect, “that new word ‘standardization’ seems to describe a semi-religious ideal of this strange new generation which is feverishly seeking the shorter way. But the one standard which has endured through more than fifty generations, Latin, the language of learn-

ing and of the church, this one standard they have thrown away. 'Tis passing strange!" But when some bright-eyed enthusiast told him of "Esperanto," he would understand. He would open his mouth, nod his head, tap his forehead and whisper to himself: "Ah mad!—all mad!"

And when he saw men looking at x-ray plates before they examined the chest, making pulmonary diagnoses, perhaps, from an x-ray plate—or blindly accepting the opinion expressed by the radiologist, without so much as seeing the plates, when he saw this, he would cry aloud: "But these are shadows that you are chasing! Listen, touch, smell, look! Look at your patient before you turn to shadows! From the shadow you may learn much, but would you interpret life and reality which are before you from shadows alone?"

He would marvel at the new therapy resting on scientific foundations. But when he, who was so careful and considerate of his patient, saw the advertisements of our wholesale chemists, and the manner in which their products are used by some of our colleagues on the mere basis of the conscienceless and preposterous statements contained in this literature; when he saw the amazingly reckless manner, the levity, one might almost say, with which poisonous substances of all sorts, notably mercurial and arsenical compounds, are introduced into the circulation of the patient, he might ask himself what had become of the careful methods of clinical and pathological control which he had helped to initiate. He might indeed ask himself if the indiscriminate bleeding of his own day were not perhaps less harmful and equally intelligent.

Fancy his satisfaction at the cooperation shown in the study of diagnostic and therapeutic problems in our better hospitals and clinics; but fancy his surprise and

uneasiness at the exaggerated subdivision of work in some clinics and some institutions, and at the frank and open speculation on the supposed fortunes of their patients by some physicians and surgeons.

And then when he read "Arrowsmith" and talked with the misanthropic individuals who are always with us ready to gloat over the iniquities of this world, might he not well have some anxiety as to the future of medicine? But when he met the leaders of medicine in New York today, when he went out into the rural medical societies and associated with the country doctor; when he met and communed with such men as are in this hall tonight, he would surely realize that the doctors of today are, in the vast majority of instances, fine, high-minded fellows, trying to do their best, associating and working together far more intimately and far more harmoniously than in his day.

And when his visit was done and his report was due he would have made by the best founder in the city, a beautiful model of the new quarters of the Academy of Medicine, "composed of all metals, earths and stones—the most precious and the most vile," and laying it at the feet of Ithuriel: "May it please his Serene Highness," for he was a courtier, and even angels are susceptible to adulation, "I have visited New York. I have found men and women, physicians and laymen, much as they were in my own day; as credulous, as prejudiced, as suspicious, as covetous as we were. They have the same old faults, the same old passions, the same old prejudices. They live in a country which boasts much of its freedom, and sometimes they seem to me hardly so tolerant as we were a hundred years ago. But collectively they are responsible for this beautiful thing and all that it represents, infinitely more beautiful and beneficent than anything

that existed or could have existed—than anything we could have dreamed of in my day. Shall we break this lovely thing, because all that is in it is not gold and diamonds? Shall we condemn all this beauty and all this progress in the science and art of medicine, all this spirit of cooperation among physicians and surgeons because, after all, it is the work of men and women with all their human frailties. In your own words, ‘*Si tout n’est pas bien, tout est passable*,’ and so much more so than in my day. May it please his Highness, if I might be allowed to suggest such a thing, may I dare to hope that, in another century, his Serene Highness might consider the possibility of sending me back again? And may I be justified in expressing the hope that his Highness will assign me to The New York Academy of Medicine; and that if it be not too much trouble, his Highness might arrange to send George Stewart with me to preside at the dinner?”

XIX

THE CONTRIBUTIONS OF PASTEUR TO MEDICINE AND HUMANITY ¹

In his éloge of Littré, Pasteur, speaking of the Greeks says these words: "Ce sont eux qui nous ont legué un des plus beaux mots de notre langue, le mot enthousiasme—un Dieu intérieur. La grandeur des actions humaines se mesure à l'inspiration qui les a fait naître. Heureux celui qui porte en soi un dieu. . . ."²

Enthusiasm—a God within! Happy indeed is he who bears this "God within"! The son of a tanner, a non-commissioned officer of the armies of Napoleon, Pasteur was born at Dôle in the Franche Comté on 27 December, 1822. His first studies were at the *Collège d'Arbois*, whither his parents moved while he was yet a baby. In 1839, he entered the *Lycée* of Besançon, where he received his *Baccalaureat ès arts*. In 1842, he became *Bachelier ès sciences*. In the same year he entered the *Ecole normale supérieure*, fifteenth out of a class of twenty-two. Dissatisfied with this rank he resigned and went to Paris to an institution directed by a compatriot in the *Impasse des Feuillantines*. There he followed courses at the *Lycée St. Louis* and listened

¹ Address delivered at the Sorbonne on 22, May, 1923, on the occasion of a meeting organized by the American Committee for the Commemoration of the Pasteur Centenary. From *Science*, 1923, LVIII, 475-483.

² "They have given us one of the most beautiful words of our language, the word enthusiasm—a God within. The grandeur of the acts of men is measured by the inspiration from which they spring. Happy is he who bears a God within!"

to the lectures of Dumas at the Sorbonne. At the end of the year, he was admitted fourth in rank to the *Ecole normale*. Not remarkable as a student, he was classed seventh in his examinations for licence, and third out of four candidates who were received at the *Concours d'agrégation*; and when he presented himself for his *Doctorat*, his two theses received but mediocre appreciation.

But this modest student bore a "God within" which led him on his way. That pathway was singularly straight and direct, for, as has been pointed out by many, the logical sequence throughout all Pasteur's work is striking and remarkable.

Beginning as a chemist he was led fatally into questions of general biology and thence to questions of pathology and therapy, animal and human. To the careless eye the way might seem winding and beset by digressions, but from the patient labours of his early days to the triumphs of his maturity each observation led so naturally to the other—from his earliest studies in crystallography to his work on rabies—that the story of Pasteur's contributions to humanity and medicine is the story of his scientific life.

EARLIEST STUDIES IN CRYSTALLOGRAPHY

In the course of his studies between 1848 and 1853, while repeating certain measurements of crystals of tartaric and paratartaric acid and their salts which had been made by Provostaye, he observed that the crystals of the tartrates bore hemihedral facets like those of quartz; the crystals were dissymmetrical, the facets occurring only on the right side; solutions rotated polarized light to the right. Crystals of the paratartrates, on the other hand, although chemically identical, bore like facets *symmetrically arranged on both*

sides; their solutions were optically inactive. This led Pasteur to fancy that a relation might exist between the asymmetry of the crystals and the optical activity of their solutions—a relation like that between the asymmetrical crystals of quartz and the optical activity of blocks cut from them.

Struck by a statement of Mitscherlich that one of the salts of paratartaric acid gave rise to asymmetrical crystals similar to those of the corresponding tartrates, Pasteur discovered that, in reality, when this salt was crystallized it resolved itself into two groups of dissimilar, asymmetrical crystals of tartaric acid which were reciprocally symmetrical; that is, each was as the image of the other in a mirror. One group bore hemihedral facets on the right, the other, which was new to science, on the left. Solutions of one deviated polarized light to the right, of the other, to the left.

The rotatory power residing in solutions of these crystals, Pasteur ascribed to like dissymmetry in the atomic structure of the molecules.

In this fruitful hypothesis as to molecular structure lay the germ of the theory of stereo-chemistry.

More than this, Pasteur observed that in fermentation of solutions of paratartaric acid, associated with the growth of a common mould (*Penicilium glaucum*) the organism, in its development, consumed the dextro-rotatory component of the salt, thus changing an optically inert solution of paratartrates to a laevo-rotatory solution of tartrates.

Considering, in connexion with these studies, the optically active character of the principal constituents of living bodies, such as the albumens, the celluloses and the sugars, Pasteur conceived the importance of molecular dissymmetry in the phenomena of life.

In these initial studies Pasteur one day broke a piece from an octahedral crystal and dropped the injured crystal again into its mother liquid. With the renewed growth of the crystal a special activity was evident at the injured spot; in several hours the crystal had assumed its original form. And Pasteur, whose active mind always cast about for the ultimate significance of his observations and discoveries, called attention to the circumstance that the cicatrization and repair of wounds might well be compared with this physical process.

In 1849 Pasteur was made professor of physics in the University of Strasbourg. There in the same year, he married Marie Laurent, daughter of the rector of the university—a noble woman who throughout his life was his patient and devoted companion and helpmate, his assistant, his adviser, his inspiration.

FERMENTATIONS

Later, in 1854, when professor and dean of the faculty of sciences in Lille, the father of one of his pupils laid before him certain difficulties in the making of alcohol from beets, and Pasteur began the study of fermentations. Here from the beginning it was his earlier experiences that guided him on the way.

The growth of yeasts in association with fermentation had been known and discussed from the days of Leeuwenhoeck in 1689, but despite the observations of Schwann and Cagniard-Latour, purely chemical and physical explanations still reigned. Fermentation, according to the prevailing ideas of the day (Liebig), depended on the breaking down of the molecule by decay and disintegration, set in motion by the presence of some dead nitrogenous material. Pasteur's observa-

tions had shown him that, excepting in the presence of a living substance, molecular dissymmetry, which renders a body optically active, disappears with the breaking up of the original molecule. On the basis of his experience he was convinced that a dissymmetrical disposition of the elementary atoms of the molecule on which optical activity depended, could be created only through the intervention of some vital process. That vital process was the growth of a yeast.

In the fermentation of potato amyl alcohol is produced which is laevo-rotatory; but the molecular constitution of the amyl alcohol is too far removed from that of the sugar from which it is derived to retain the molecular dissymmetry and the optical activity of the sugar molecule. In the creation of such a substance some vital process must have intervened. The question of lactic acid fermentation was especially intriguing to Pasteur because Liebig had asserted that here no yeast was present. But Pasteur showed clearly that this fermentation was dependent upon a living organism, a bacillus, so small that its presence had escaped the notice of others. The organism was the ferment. At first he called it a yeast, so unimportant to him was its form. As Delezenne has said, "It is not in form, it is above all in functional aptitudes that Pasteur found the proof of the specificity of micro-organisms. For the first time morphology made way for physiology in the definition of species."¹ He showed that the ferment reproduced itself, and at the very beginning he asserted: "The purity of a ferment, its homogeneity, its free development without interference, with the aid of a nutrient medium adapted

¹ 100th Anniversary of the Birth of Pasteur, Bulletin de l'Académie de médecine, 3, série, tome LXXXVIII.

to its individual character, this is one of the essential conditions for good fermentations." And again: "If, in the saccharine, albuminous, clear solution one sow the yeast of beer rather than that of lactic acid, it is the yeast of beer that will develop and with it alcoholic fermentation, although there be no change in the other conditions of procedure. One must not infer from this that the chemical constitution of the two yeasts will be identical any more than that the chemical constitution of two vegetables is the same because they have lived on the same soil." In other words, he pointed out the specificity of these organisms and their specific physiological action. Finally, in an experiment of great beauty and simplicity he demonstrated the growth of micro-organisms with fermentation in a liquid free from organic nitrogenous matter.

"Alcoholic fermentation," said he, "is an act related to life, with the organization of the globules (yeast), not with death or the putrefaction of these globules."

In connexion with these studies he pointed out that, "Each cell of yeast has properties of species and of race which it shares with the neighbouring cells, and, moreover, special characteristics of its own which it may transmit to its progeny." Thus he called attention to variations of species, and in the end gave to the manufacturers of beer the precious principle of the selection of yeasts.

In 1859 he was nominated administrator of the *Ecole normale* and assistant director of scientific studies.

The development of a method designed to secure pure cultures from fluid media, the use of culture media of known composition, and the careful chemical study of products of decomposition all belong to this early period of Pasteur's life and were achievements of the deepest significance. . . .¹

¹ Herter, Johns Hopkins Hosp. Bull., 1903, XIV, 325.

BUTYRIC ACID FERMENTATION—ANAËROBES

Upon these studies followed naturally the demonstration of the dependence of butyric acid fermentation on an organism which could develop only in the absence of free oxygen—the discovery of anaërobes. He showed how, in a fluid medium, the action of anaërobes follows that of the aërobes which use up the oxygen and by the film which they form on the surface of the liquids prevent its further entrance, thus preparing the way for the anaërobes in the depths.

SPONTANEOUS GENERATION

Then, naturally (1860-1876), came the famous studies on spontaneous generation undertaken against the advice of his doubting masters, Biot and Dumas. On the basis of careful and well-conceived experiments he demonstrated the universal presence of bacteria in air, water, dust; he showed the variations in different regions of the bacterial content of the air; he demonstrated the permanent sterility of media protected from contamination, and he insisted on the inevitable derivation of every living organism from one of its kind. "No," he said, "there is no circumstance known today which justifies us in affirming that microscopic organisms have come into the world without germs, without parents like themselves. Those who make this assertion have been the playthings of illusions, or ill-made experiments invalidated by errors which they have not been able to appreciate or to avoid." In the course of these experiments he demonstrated the necessity of reliable methods of sterilization for instruments or culture media, of exposure for half an hour to moist heat at 120° or to dry air at 180°. And behold! our modern procedures of sterilization and the basis of antiseptic surgery.

STUDIES ON VINEGAR

Then came the studies on vinegar, undertaken in an attempt to relieve the embarrassment of an important national industry, and the demonstration that the formation of vinegar was a process of oxidation and dependent upon the development of a micro-organism, *Mycoderma aceti*, which forms a pellicle on the surface of the liquid and serves as a conveyor of oxygen from the air without to the alcohol within, from which it gains its sustenance. He resolved simply and practically all the important questions at issue in connexion with the protection of the manufacturers of vinegar. In the course of his studies he showed that in the absence of alcohol, its diet of choice, *Mycoderma* might go farther and attack and disintegrate the acetic acid, the product of its own creation. This not only explained certain annoying phenomena associated with vinegar production, but was the first demonstration of the ability of a living organism to destroy the product of its own development.

It is most interesting to note, by the way, that in studying enfeebled, "diseased" *mycoderma*, as he called it, he likened the oxidizing activity of the micro-organisms to that of the red corpuscles of the blood whose function it is to carry oxygen to the tissues, and asked himself what might happen in the human body if the diseased red blood corpuscles were inadequate to their task of oxidation.

Fascinating and interesting it is to see how, all along the way, his fertile, active mind sought the parallels between his observations and the diseases and injuries of man.

Certain manufacturers had taken advantage of his previous work and had secured patents for their own

interest. To prevent the repetition of such a procedure before announcing a "new industrial procedure for the fabrication of vinegar" he took out a patent himself, and threw it open to the public.

DISEASES OF WINE

Then he passed to the studies of the diseases of wines (1865) which he found once more to be due to the development of living organisms. It was easy to prevent their development by sterilization, but how could this be done without destroying the wine? In the end he showed how the further development of the bacteria could be inhibited by rapid heating to 55° in closed vessels, at the proper period, and we have the process of "*Pasteurization!*"

DISEASES OF THE SILKWORM

The silkworm industry, so vital for France, was in sore distress. An epidemic disease increasing in severity was ruining the population of the south, who appealed to the government. Pasteur, a chemist, who knew nothing of the silkworm or its diseases, was requested to undertake the investigations into the nature of the disease and measures for its prevention. For six years, from 1865 to 1871, he gave his whole time to this work.

The silkworms, raised from the egg by exposure to gentle heat at the moment when the first leaves of the mulberry tree are opening, are covered immediately by young leaves upon which they feed. The worms seem to sleep as they clothe themselves with one skin after another from which, in succession, they moult. After the fourth moult, they pass through several

days of extreme activity and voracity, following which they climb upon sprigs of heather carefully set out for them and form their cocoons. In the cocoons they remain for fifteen days. After this the moths emerge, sex-union occurs, and six hundred to eight hundred eggs are laid by each moth. If it be decided to use the cocoon for the manufacture of silk they are smothered in a vapour bath six or seven days after the worm has ascended the heather twigs. If, however, it be desired to collect eggs for the next brood, the emergence of the moth is awaited. When a brood appears especially good, through the regular development of its worms and the beauty of the cocoon, it is saved for its eggs.

For twenty years this disease had existed, and despite the importation of eggs from foreign countries, it had become worse and worse; it was known as *Pébrine* because of little, black, pepper-like spots which developed upon the diseased worms. In the diseased worms and in the eggs there had been found small, round corpuscles (psorosperms) which were regarded as evidence of the disease, and Osimo of Padua had already suggested that eggs should be saved for cultivation only from worms which did not contain corpuscles. But this measure had not been carried out with any regularity, and the true nature of the disease remained unknown.

In two years Pasteur solved the main problem. Although slow at first to recognize the infectious nature of the "corpuscles," he finally demonstrated that they were the infectious agents, that they might be introduced through the gastro-intestinal tract from leaves soiled by diseased worms; that they were hereditarily transmitted through infected eggs. He saw that the secret of protection lay in the microscopical examination of the moths at the time of their emergence

from the cocoon, and that where more than 10 per cent of these moths were "corpuscular," the eggs should not be used. By maintaining the cocoons at a temperature of 25° to 30° R, the emergence of the moths was hastened by five days. Test cocoons were submitted to high temperatures and where the number of diseased moths was too great, the attempt to collect the eggs was abandoned and the entire brood was used for the cocoon.

But this was not the whole story. Although, under these methods, the recovery of the silk industry seemed to be promised, yet there were puzzling circumstances. Sometimes the disease seemed to precede the appearance of the corpuscles; this might indeed occur in experimental infection of the worms. One day, with a despairing gesture, Pasteur announced to his colleagues that they must begin again; there were two diseases!

But in due time he solved the problem of the other disease, a sort of typhoid or cholera of the silkworm due to organisms widespread in nature. This malady was generally transmitted from worm to worm through the sticky excrement shed by diseased animals upon the leaves upon which they fed. *Flacherie*, as it was called, occurred alongside of *Pébrine* and had thus caused considerable confusion. *Flacherie* also was a hereditary disease.

With this knowledge the necessary prophylactic measures were soon devised. Pasteur had but to add to his former directions: "One should never use for eggs broods which have shown from the fourth moult to the cocoon, any languishing worms, or which have shown definite evidences of *Flacherie*," and the silk-worm industry was saved.

In the course of these studies Pasteur made observations of great interest. He found, for instance, that the period of incubation of the disease varied according to different circumstances; that when the infectious agent was carried from worm to worm through a series, the period of incubation was shortened. Repeated passages of the parasite through successive hosts increased its virulence.

He noted the difference between the period of incubation in worms infected by means of hypodermic injections and those acquiring the disease in the usual manner—the influence on the period of incubation of the portal of entry: he recognized that although the infectious agent was widespread, almost always present, the disease did not always arise, some worms seemed to resist infection—in other words, there were variations in resistance and susceptibility of the host.

As Duclaux says, he had brought the great questions of contagion and heredity into the field of experiment.

At about this time, the study of a mould, *Mucor mucedo*, led him to appreciate the possibility of the anaërobic life of aërobic species and the variations in form of an organism which may accompany the variations of the media in which it lives.

He then returned to his studies of wine, led by the desire to discover whence came the organisms which caused the alcoholic fermentation of grapes. By simple but ingeniously devised experiments, he showed that these organisms, *Saccharomyces*, were widely distributed and were to be found on the surface of the individual grapes. But they appeared only at a definite time in the development of the grape, at a fixed season of the year. On the other hand, the *mucor* parasites capable also of producing a fermentation were present at all times in the soil.

And his alert mind, ever seeking analogies between these processes in the vegetable kingdom and human disease, led him to these prophetic reflections:

May we not, by analogy, be justified in the belief that one day simple and easily applied measures of prevention will arrest these scourges which at one blow desolate and terrify whole populations such as the terrible disease (yellow fever) which has recently invaded Senegal and the Valley of the Mississippi, or that other (bubonic plague), more terrible perhaps, which has raged on the banks of the Volga?

In 1874 there came to Pasteur from Edinburgh a grateful and appreciative letter from Joseph Lister, who called attention to the beneficent results which had followed the application of his principles, scrupulous cleanliness, antiseptis, to the practice of surgery.

An era had passed—the old, black era of helplessness and uncertainty, of cruel doubt and hope deceived. The hand of the surgeon was freed.

ANTHRAX

While the old controversies concerning fermentations and spontaneous generation still continued, the victory was already won, and more and more Pasteur's mind turned towards the practical application of his discoveries to diseases of higher animals and man. For this, as Duclaux has so clearly pointed out, he was well prepared. His demonstration of the specificity of micro-organisms, his observations on their life history, and especially of their nutritive demands, his studies concerning the increase and diminution of virulence, of the variation, under different conditions, of the resistance of the host to infection—all these observations and conceptions had taken root in his mind and it is but natural that he should have turned to the study of infectious diseases in the higher animals.

In 1877, he began the study of anthrax—a cruel disease, fatal to sheep and cattle, especially the former. Sometimes nearly half a flock died in one season. There were special regions which seemed fatal, fields or hillsides on which sheep might not feed, over which they might not pass without acquiring the disease. To what was this due? For many years (Delafond, 1838) the existence of little rodlets in the blood of animals dead of anthrax had been known and the question as to the infectious nature of these rodlets had been raised (Davaine, 1850). Pasteur had discovered resistant spores in the bacillus of *Flacherie*, structures destined to preserve the life of the organism through long periods under adverse conditions. Koch, but a year before, had pointed out like spores in the bacillus of anthrax. More than this, Koch had cultivated the bacilli in the aqueous humour of the eye and in fresh drops of the blood serum of the ox. These cultures he had carried through eight generations, and from them he had transmitted the disease to small animals. But some objectors still raised the question as to whether he might not have carried over some vague virus from one to another of these small cultures.

Pasteur cultivated the bacillus in flasks containing fifty cc. of neutral or slightly alkaline urine and succeeded in carrying on these cultures indefinitely from generation to generation. The tenth generation was as capable of transferring the disease as the first. Here one could hardly imagine the transference of a virus other than the bacterium. Fowls were refractory to the disease.

GAS GANGRENE

During Pasteur's studies concerning the specificity of the bacillus of anthrax, other observers in carry-

ing out inoculations from animals dead with the disease had produced a fatal illness without the presence of the bacteridia. Pasteur discovered in the blood of these animals another organism, a long bacillus, found normally in great numbers in the intestinal tract, which, after death, might enter the blood and develop more rapidly than does the organism of anthrax. When both organisms were introduced at the same time the animal died from septicaemia due to the multiplication of the other bacteridium which he called *Vibrio septicus*, before *Bacillus anthracis* had time to grow. The new organism, closely allied to the so-called gas bacillus of Welch, was anaërobic and produced gas in the tissues of the animal infected—the familiar gas gangrene.

In a communication to the Academy of Medicine made on 30, April, 1878, Pasteur points out the danger of the entry of such organisms into the tissues, their relation to surgical gangrene, and insists on the importance of antiseptics in surgery. These are his closing words:

A few weeks ago one of the members of the section on medicine and surgery of the Academy of Sciences, M. Sédillot, after having meditated long on that which he had learned in a brilliant career, found a rational explanation in the principles on which rest the so-called germ theory, and that this would give rise to a new surgery, already inaugurated by a celebrated English surgeon, Dr. Lister, who, one of the first, had comprehended its fecundity. Without professional competency, but with the conviction of the qualified experimenter, I shall dare here to repeat the words of our eminent confrère.

These were busy days in which Pasteur's vision, penetrating into many vistas, was constantly making fresh observations and new discoveries.

Fowls he had found resistant to anthrax. But the organism of anthrax is readily killed at high tempera-

tures, and the ordinary temperature of a hen is 43° or 44° C. If the lower third of the body of a fowl be held immersed in water at 25°, the body temperature may be lowered to that of man or those animals susceptible to anthrax. But introduced into a hen with lowered temperature, the bacillus thrived and multiplied, and the fowl died.

STAPHYLOCOCCI AND STREPTOCOCCI

New observations succeeded one another in rapid succession. In 1879, Pasteur discovered in abscesses of the skin little, round organisms which grew in clumps like bunches of grapes, whence the name, Staphylococci, and later he found the same organisms in an instance of osteo-myelitis, which, forthwith and quite properly, he called an "abscess of the bone-marrow."

In the *Maternité* he found similar round organisms arranged, however, in chains (Streptococci) in the lochia of women with puerperal fever and in the diseased tissues of those who had died, and he suspected immediately that this organism was the cause of the disease.

At a meeting of the Academy in a discussion on puerperal fever, Pasteur, impatient, interrupted the speaker. "That has nothing to do with the cause of the epidemic; it is the doctor and his personnel who carry the germs from a diseased to a healthy woman." And when the orator replied that he doubted whether such an organism would ever be seen, Pasteur dashed to the blackboard and figuring a chain of streptococci, exclaimed, "There, behold its picture."

In 1806 at the *Maternité* one woman in four died of infection; today at the Baudeloque (Calmette) the mortality is one in two thousand.

In the words of Descour, "Thanks to Pasteur, maternity hospitals are no longer ante-chambers of death."

CHICKEN CHOLERA—VACCINATION

Next, Pasteur took up the study of a disease of poultry, chicken cholera, a disastrous epidemic malady which played havoc in the poultry yards. A parasite had been discovered by others and suspected of being the cause of the disease. Toussaint had shown that the disease could be transmitted by the blood of the diseased chicken; but he had failed in his efforts to cultivate the germ. He sent Pasteur the head of a cock dead of chicken cholera. Pasteur found the small bacillus which failed to grow in ordinary media but developed rapidly upon that which his insight soon suggested, a broth made of the muscles of the chicken itself. The infectious agent entered by the gastrointestinal tract, passed out through the excrement and was thus scattered about the poultry yards.

In guinea pigs the organisms of chicken cholera produced only local abscesses, but retained their virulence; and Pasteur pointed out how such infected pigs might, through discharging abscesses, spread the disease—the first example of carriers.

One day, after a vacation, he inoculated some fowls with an old culture which had stood, untouched, for some weeks; the birds were but slightly ill—and recovered. What had happened? He inoculated the same fowls with fresh cultures; they remained unaffected. But fresh fowls, inoculated for the first time with these same cultures, died in the usual manner. The old cultures had lost their strength. *Inoculation with these old, attenuated cultures had conferred immunity!* Pas-

teur had made his greatest discovery, that of the possibility of preventive vaccination!

It was no mere accident. To his prepared mind the experiment had immediately suggested itself. The analogy with Jenner's vaccination against small-pox was instantly grasped—an analogy in a disease known to be due to a micro-organism! The attenuation of the virulence of the cultures depended on their age. According to the age of the cultures, every degree of attenuation could be obtained. The characteristics of each generation of cultures were hereditary and fixed. Pasteur, as Roux has said, obtained races of virus as gardeners obtained races of flowers.

It was not so much that a method of preventing a disastrous disease of poultry yards had been found; the door had been opened.

Pasteur had meditated and speculated on many possibilities. Among other things he had noted that in certain cases, instead of killing rapidly, chicken cholera passes into a chronic state, the fowls succumbing only after weeks and months of languor. But when the parasite is grown from these birds, its virulence, contrary to what one might expect, is exalted to a maximal degree. And he observed that this interesting example of the combat between host and parasite found an analogy in those instances of rabies with long periods of incubation. Rabies already was in his mind. He was ever reaching for analogies. Among his papers of this period is a project for the study of plague such as that later and so fruitfully carried out by his pupil, Yersin.

PROPHYLAXIS OF ANTHRAX

At the same time Pasteur was still pondering upon the subject of anthrax. The neighbourhood of a pit in which diseased animals were buried was notably

dangerous. He had demonstrated living spores on the surface of the earth as long as twelve years after burial of the animals. How could these spores on the surface of the earth resist the dispersing influences of wind and rain? Where did they come from? Could it be that they arose from the depths? If so, how?

One day while walking in such a field freshly harvested, he noticed certain spots which differed from others in colour. These were the areas in which diseased animals had been buried. He examined them closely. The soil was thickly covered with the castings of earth worms; and the truth flashed upon him. It was the earth worm in its silent labour of aëration and drainage of the soil, burrowing to the depths and bringing again to the surface those particles which it deposits in its little spiral castings, it was the earth worm that brought to the surface again the spores of anthrax. He demonstrated spores in worms and in castings—and straightway an important measure of prophylaxis became apparent, namely, that diseased animals, if they could not be disposed of otherwise, should be buried only in dry, barren, sandy soil.

VACCINATION AGAINST ANTHRAX

The minister of agriculture demanded that Pasteur investigate a method of treatment of anthrax introduced by a veterinarian in the Jura. In the course of this study he was given two cows which had recovered from the disease. They resisted inoculation with virulent cultures. They were immune. Vaccination was possible. But how produce the vaccine? The spore-producing characteristics of the anthrax bacillus rendered this procedure difficult and puzzling. The organism does not grow at temperatures above

44°. Between 42° and 43°, however, the spores are no longer formed. If cultures are kept at this temperature for about a month, the time comes when they cease to grow on transference. With the age of the culture, virulence for sheep, rabbits and guinea pigs diminishes rapidly and progressively until it disappears. The characteristics of the organism at each age are stable, but the virulence may be raised immediately by passing them again through successive living subjects, beginning with the young, which are most susceptible, and passing the organisms through successively older animals. The analogy with the bacillus of chicken cholera was complete. Might not the cause of some spontaneous epidemics be the reestablishment of virulence in an organism which had reached a degree of attenuation so great as to be almost if not quite innocuous?

It was but a step to vaccination against anthrax with attenuated cultures. And when he was ready, the efficiency of the measure was demonstrated in dramatic fashion. Before a large audience, fifty sheep were inoculated with a highly virulent culture of anthrax. Twenty-five of these sheep had previously been vaccinated with attenuated cultures. The non-vaccinated sheep all died; the vaccinated all recovered. A reliable measure of prophylaxis against anthrax had been established.

SWINE FEVER

In March, 1882, Thuillier, at Pasteur's request, began the study of swine fever, a fatal and widespread disease. The pathogenic organism, a small bacillus, was soon isolated. Pasteur remembered his observations on the organism of rabbit septicæmia which he had found a year or so before in the saliva of a child

with rabies. Although harmless for old guinea pigs, this organism was virulent for the young. Passed through a series of young animals, the virulence was so far raised that it became pathogenic for the old as well. But he had made this striking observation: *In the course of its passage through guinea pigs the organism had lost its virulence for rabbits.* In these regions where swine fever prevailed, epidemics were frequent among pigeons and rabbits. The bacillus of swine fever killed pigeons rapidly and by passing the organism through a series of pigeons, its virulence, both for pigeons and for swine, could be raised to a degree considerably above that attained by strains carried alone from hog to hog. The same bacillus killed rabbits, but, although on successive passages through rabbits its virulence was augmented for them, the virulence for swine became progressively diminished, so that in the end an attenuated organism was obtained—capable of transmitting to swine a mild disease only, from which they recovered with an immunity lasting at least a year. A method of vaccination was at hand. Swine fever in its turn was conquered.

RABIES

That the mystery and the hopelessness of rabies had long been in Pasteur's mind is clear from the occasional references to the disease that appear in his earlier studies.

In 1880 the opportunity came to observe a patient in the wards of Lannelongue. From the sputa, as has been mentioned, he had obtained the bacterium of rabbit septicæmia which later turned out to be the pneumococcus of Fraenkel. All further attempts to cultivate a pathogenic organism failed. By intro-

ducing subcutaneously bits of the central nervous system, he had transferred the disease, but the period of incubation was distressingly long and uncertain, amounting sometimes to months.

Finally, by introducing bits of the substance of the medulla of affected animals under the dura mater of the brain, he succeeded in transmitting the disease with certainty, with an average incubation period of about fourteen days.

And then, guided by his experience with other organisms, which he had studied, he succeeded, by repeated passage from rabbit to rabbit, in obtaining a virus of great strength and of an incubation period of a maximum of seven days.

By passage through monkeys the virus could be attenuated to such a degree as to be nearly harmless on subdural introduction into the dog. *These injections conferred immunity.*

He reflected on the long incubation period following the bite and the short period which elapsed between the inoculation and the outbreak of the disease when the strong virus from rabbits was used. Might one not, by subjecting the cords of these rabbits to the action of oxygen in dry air, produce an attenuated virus which would yield a safe vaccine? And with such a vaccine with a short period of incubation, might one not hope, even after the patient was bitten, to produce immunity against the more slowly developing virus introduced by the bite?

Cords of rabbits dead with malignant rabies of an incubation of seven days were subjected to the action of oxygen in jars containing a little caustic potash. Attenuation was readily obtained.¹ By subcutaneous

¹ In the sense, possibly, only of a diminution in the *number* of organisms.

injection daily of bits of these cords of progressively increasing virulence, it was possible to immunize dogs to the most virulent material even if introduced under the membranes of the brain.

At this point in his studies there was brought to his laboratory a little Alsatian boy who, sixty hours before, had been terribly bitten by an obviously mad dog—bitten in such a manner that the development of the disease seemed certain.

Pasteur took counsel with his friends, and acted. He suffered, in silence, cruel anxiety. In nine days the little boy had finished his treatment and had received, finally, injections of the most virulent material, material tested step by step on control animals. The boy was saved. Others followed. The almost universal success of the treatment if begun early, was proven beyond a peradventure.

In 36 years, out of nearly 45,000 patients brought to the laboratory at various periods after the bite, the mortality has been but three per thousand.

The name of the master and the fame of his accomplishments were on the lips of all the world. Honours poured upon him. National subscription built the Institute, that Institute of which he had said: "There is not a stone which is not the material evidence of a generous thought," and there and in all lands thousands of his disciples continue the work that he initiated.

This, in brief, is the story of Pasteur's contributions to medicine.

And the man?

An artistic nature, gifted with powers of design that, early in life, seemed to point to another career.

A sensitive, poetic spirit which betrays itself again and again in the charm of his language. But the emo-

tions of the artist and the poet were controlled by an overpowering love of truth and the censorship, in matters of science, of a Puritan conscience.

He was a noble example of the disinterested student. When asked by the emperor why he sought no material advantage from his discoveries he replied: "In France men of science would consider such an act unworthy."

He was intensely human—human, if one may say so, in his very humanity, for with all his love of pure science, he was forever asking himself how he might use his achievements for the benefit of his country and his fellows; human in his tender-heartedness and gentleness and love for animals; human in his impatience toward opposition, for he was not always patient under criticism, especially if that criticism were born of prejudice or supported by careless or ill-formulated experiments or observation—against such opposition his polemics were sharp; nor in hours of work was he especially tolerant of those futile interruptions which are the despair of the student; human in his devotion to his parents and to his family, and in his profound patriotism.

From the foundation of the institute to the day of his death, in 1895, his quiet life among his friends and his students in the laboratory was a long triumph. As it has been said of Jeanne d'Arc, so was it true of Pasteur—he had become a legend while yet he lived.

Early in his career he had risen again from a physical blow that too often saps the vigour and initiative of the strongest. The "God within" carried him forward and onward over obstacles and through trials that would have baffled another.

Now, he was tired. The loving homage of grateful humanity was almost a burden. But he lived to see

the first of the harvest, and he died with the world at his feet.

In the 40 years of his active life Pasteur laid the basis of our knowledge of infections and infectious agents from which such inestimable blessings have flowed; he "revivified the biological sciences" (Herter), but more than this, as Widal has well said, he introduced into medicine accuracy and precision of technique and the habit of experimentation—"the realization of the necessity of precision and the means of satisfying it."

From the seed that he sowed, what a harvest has come forth! Improvements of technique introduced even during his lifetime have brought increasing certainty and accuracy into our methods. One after another the plagues of humanity are yielding their secrets to inquiring students. The questions of immunity and susceptibility on which he had but begun to ponder, have expanded into profound and complicated problems which for their explanations are turning us more and more back to the fundamental chemical and physical principles with which he began.

The scope of preventive medicine, which, one might almost say, began with Jenner and Pasteur, has widened until problems of public hygiene have become, throughout the world, matters of civic, national, international concern.

And finally, as Calmette has said:

Dans l'ordre social l'oeuvre de Pasteur n'a pas été moins féconde. En nous faisant connaître la cause des maladies, en nous montrant que ces causes sont justiciables de notre intervention, elle a complètement modifié les anciennes conceptions du devoir social vis-à-vis des malades.

Cet ensemble de notions nouvelles, dérivées de l'oeuvre de Pasteur et imposées à nos consciences par les sentiments plus vifs de solidarité que développe la civilisation, constitue ce que nous appelons l'hygiène

sociale. On peut envisager celle-ci comme la base même de la politique, science encore au berceau, quoique née déjà bien des siècles avant Aristote, mais science qui a ou plutôt qui devrait avoir pour essentiel object la conduite des peuples.¹

Prophetic words! Today in a world distracted, crippled, poisoned by the venom of war, there has risen one star of real hope—those efforts under the League of Nations, through the activities of the International Red Cross, to extend this work of Social Hygiene in its broadest sense. In this one field all have joined hands. In this one field jealousies, suspicions, selfishness, self-interest, are drowned in a common will to unite in combating the ravages of disease; in making the world a safer, better place to live in, that man may be stronger, wiser, saner; that the future may be spared some of the tragedies that we have known.

How far these beginnings may lead, we know not, for the future is veiled from the eyes of men. But this we know; they can lead only to better days.

The world is one in its will to strive for the continuation of the work of Pasteur.

France gave to the world this man—France, to whom humanity and civilization owe so much of that on which they rest—France, serene, wise, radiant with

¹ "From a social standpoint the work of Pasteur has been no less fruitful. In revealing to us the causes of disease, in showing us that these causes may be controlled, it has profoundly modified the old conceptions of the duty of society to the sick.

"This body of new conceptions springing from the work of Pasteur and imposed on our conscience by the more acute sense of solidarity developed by civilization constitutes that which we call social hygiene. This one may regard as the very corner-stone of politics, a science yet in its cradle, although born centuries before Aristotle; a science, however, the essential object of which is, or rather should be, the conduct of peoples."

the beauty that was Greece—France, to whom we of the western world owe our existence as a nation—We salute you in the name of your greatest son! Through him you have laid the foundations of the true science of politics that shall one day bring a fuller measure of peace and happiness to a troubled world!

XX

THE UNIVERSITY AND MEDICINE ¹

Let me thank you, ladies and gentlemen, for the opportunity which your officers have placed before me in inviting me to address this gathering. It is a privilege to take part in such ceremonies at one of the first and greatest of those American universities which have shown that the people of a self-governing state will support an institution in no way second to those older private bodies in this and in other countries, which have long prided themselves on offering to teacher and student freedom of thought, study and utterance; which have afforded them liberty to pursue truth for truth's sake.

The guiding principles of a university should be liberty and tolerance. The true university is a society of students and scholars, searchers for truth. Only such can be real teachers. The mechanical retailer of the assertions and convictions of others has no place in a university. He can not be a teacher in the true sense of the word. He can not be a successful teacher even in a secondary school. 'Tis one of the gravest defects of our secondary education in this rapidly growing country that with the wealth of opportunity open to all there are sadly few students or scholars engaged in secondary teaching. Too many are young people retailing information, teaching up to the limits of their knowledge, who have no thought of making their im-

¹ Address on the occasion of the dedication of the new hospital of the University of Michigan, 19, July, 1925. From *Science*, 1926, LXIII, 237-242.

mediate occupation a career. Secondary teaching is but a passing incident in their lives, a means to acquire the wherewithal with which they may pass on to other opportunities which to them are more tempting.

What a difference it would make to our boys and girls were they, in the secondary schools, thrown into association with real students and scholars, as is commoner in some of the older countries. Those individuals who have had the rare good fortune to fall under the quickening influence of a scholar in their early life, and those teachers who have had the opportunity to meet, later, with such men, know full well the enormous influence that the scholar in a secondary school may have on the character and the mind and life of his pupils—and indirectly on the future of the state.

A true university should seek primarily in all branches for those men and women who have shown themselves to be disinterested students and who seem to be especially qualified to profit by the advantages offered by its libraries, its laboratories, its unions, its opportunities for association with other superior men. To these men and women the university should offer its confidence, and then—freedom. One more privilege it always offers, the greatest of all privileges, that of association with those other students who are entering the field possessed of that blessed gift

. . . . , kind nature's richest dower,
Youth, the fair bud that holds life's opening flower,
Full of high hopes, no coward doubts enchain,
With all the future throbbing in its brain,
And mightiest instincts which the beating heart
Fills with the fire its burning waves impart.

For the association with the young is the greatest privilege of the teacher—the only vaccine against age

and apathy. Only the student can be a real teacher; for only the student can inspire. And to secure the services of the student he must be offered opportunities for study. But there are students and students, and, in all branches of learning, one meets now and then with quiet, modest individuals with minds of the delicacy of fine lace work who can not work in the open, who can not commune with the many, who need protection and seclusion. Teachers in the ordinary sense they are not. Yet the influence of some of these men is precious. Opportunity and protection and freedom for an occasional delicate vessel of this sort it is the privilege of a university sometimes to offer.

Freedom from the cares of the world, liberty to pursue the search for truth in his own way, liberty of thought, liberty of utterance, these are perhaps the greatest gifts that a university can offer to its faculty—and to its pupils.

The other guiding principle of the university should be tolerance; tolerance without which the word freedom is but mockery. Intolerance is the child of fear, and fear is the son of doubt and incomprehension. The university should offer to its staff liberty to search for truth; truth can never be dangerous.

“But,” say those in the terror of incomprehension and ignorance, “there are directions in which you may not search. For by that very search you deny the truth which is ours and is more precious than all else, our faith.”

But the searcher for truth attacks no faith. He seeks for truth alone and he has faith that truth once revealed will prevail. Truth is often very hard to find. To him who possesses or feels that he possesses truth how can there be such words as doubt or fear? To doubt

that truth will prevail is to doubt one's faith. The searcher for truth may doubt the faith of another, but he denies no man's faith. A poor and unworthy searcher for truth is he who attacks the faith of his neighbour, who lacks respect for the sincere belief of any man. Of this he is sure, that once revealed, truth will prevail, that truth needs no defense, that if, perchance, that which to his human vision has seemed to be a truth shall fade in the light of a new day, there yet remains hidden a greater, larger, purer truth for which with a wider horizon, his mind is open.¹ And if his neighbour blaspheme that which seems to him the higher truth, how shall that concern him? For has he not faith that he who blasphemes truth but lays bare his own littleness in the purer light which must, one day, burst even upon his blindness?

He who fears that the searchers for truth may destroy his faith, he who, possessing high ideals, fancies that this faith and these ideals may give way to anything that is not higher and broader and larger, thereby doubts and insults his faith. He who would seek to defend and protect those ideals by circumscribing the mental activity of his fellows not only insults his own faith, but stands forth as a cruel enemy to truth and progress and humanity. This is intolerance, a hateful beast of sordid ancestry.

The true university is the protagonist of liberty and tolerance and opens the way in its sphere to the search for truth. It attacks no faith. Fear it knows not, secure in the faith that new truths can lead us only into a higher and broader life. To the eager youth who seek to penetrate farther and farther into the great mysteries

¹ Cf. Maeterlinck. *Le temple enseveli*, Paris, 12°, 1902, Charpentier, pp. 106; 110-112.

of life and death it says in the words of the wise old teacher and poet:

Take from the past the best its toil has won,
But learn betimes its slavish ruts to shun.
Pass the old tree whose withered leaves are shed,
Quit the old paths that error loved to tread,
And a new wreath of living blossoms seek,
A narrower pathway up a loftier peak;
Lose not your reverence, but unmanly fear
Leave far behind you, all who enter here!

Truth needs no defense. Freedom, alas, may. And the true university through its tolerance toward all who are sincere should be the sword and the buckler of that liberty of thought and speech through which alone new truths will be revealed.

The opportunities and associations of university life you are now offering to the teacher and student of medicine and surgery, and 'tis well that it should be so. Instruction in the art of medicine, until relatively recent years, while often carried on under the wing of the university, was left largely to active practitioners of the art with few opportunities and little time to give to the study of its scientific aspects. But within the last century, and especially the last fifty or sixty years, the scientific basis of medicine has been greatly strengthened. For many years the fundamental sciences called into service in the study of medicine have been subjects for university study and investigation. Now at last we are coming to realize that even in the practical branches of the art the university must offer to a selected kernel of its staff the same protection, the same financial support, the same opportunities for research and study that it has long offered to the student in other branches of science and the liberal

arts. As to the student of the classics you offer your libraries, as to the botanist you give gardens and laboratories, so here you are offering to the clinical instructors in your departments of medicine and surgery this great hospital in which they may study and practise their art. At the same time you are giving to a selected group of men who desire to give their lives to study and university work that financial support which may set them free from many of the burdens and cares of self-support and place them on a university plane with the student of the humanities and natural sciences. It is a great step forward, advantageous alike to the profession and to the community.

The practice of medicine has changed amazingly even in a period so short as that of one lifetime. Forty years ago on my graduation from college the time demanded for the examination of a patient by the best equipped consultant was but short; the methods of examination employed were such that they could for the most part be carried on in the consulting room by the examiner himself. The few additional special studies that had to be made were easily carried out. But what is the situation now? The patient who is suffering from some obscure complaint, trivial or serious, it is immaterial, tells his story to the physician. The examination may uncover few definite revealing signs. The physician is in doubt; there are many possibilities. What shall he do? What would be the ideal thing to do? The ideal thing to do would be to make a thorough routine examination of the patient just as one makes his own physical examination in the consulting room, a systematic study, anatomical and functional, from head to foot. This would mean observation in a hospital, the consultation of a considerable number of special students and would involve many complicated and ex-

pensive physical and chemical investigations of special organs, of body fluids, excretions and secretions. That which one might do in the attempt to make a complete study in any given case is almost unlimited. Where shall one begin? Where shall one stop? Many studies which are desirable in a complete survey are impossible for the general practitioner to carry out. Indeed, they may be wholly out of his reach. With the physician lies the responsibility of determining what examinations are necessary, what desirable, what superfluous. In him the patient places his faith; he must consider all the aspects of the situation; he must know how best to utilize the diagnostic machinery, simple or elaborate, which may be employed; he must consider the measures at his disposal, the means of his patient. The student must learn the significance and the relative importance of different diagnostic procedures, for upon him falls the responsibility of deciding that which is necessary.

It is important for the public that there should be centres in which such studies may be made under proper supervision. A university clinic like this should afford every opportunity to the teacher and student to pursue these studies. To the students it should afford the necessary opportunities to acquire certain fundamental conceptions as to the nature of disease and the principles of therapeutics that can be acquired satisfactorily only where the necessary scientific apparatus is at hand, as well as the required knowledge of the significance and relative importance of a great variety of diagnostic procedures. Many of these he may be unable to employ himself, but occasionally or more often he will be obliged to make use of them for the benefit of his patients. For the public, medical and general, it is desirable that there should be centres to which the practitioner may bring his patient for those

special investigations and studies which are impossible other than in an institution with elaborate scientific equipment in the hands of highly trained and disinterested students.

It is needless to point out what an opportunity is offered in this connexion to the unscrupulous and the venal. There are today many so-called laboratories and clinics more or less commercial institutions, in which examinations are made by men who are far from competent. An examination, even if well made, the results of which are improperly interpreted is worse than useless. Too often the doctor or patient is confused or deceived, the patient perhaps suffers, the public is bled. It is not easy for the practitioner who has not had a good basic training to appreciate the significance and the relative value of new and perhaps valuable diagnostic procedures. Commercial laboratories conducted by men of shallow general training are not a public safeguard; they are a liability.

That the well-equipped school of medicine should have in its medical and surgical departments a group of men who are well-salaried and afforded wide clinical and laboratory advantages is, I think, becoming very generally recognized. These men are in a true sense university professors. Such a group of men is as valuable to the hospital as it is to the university. This truth is becoming more and more apparent to the intelligent public. An interesting example is the action, a few years ago, by the enlightened governors of a public institution which has for many years been conducted with unusual credit. The trustees of the Boston City Hospital having observed the value of university divisions in various private hospitals, deliberately, voluntarily and of their own initiative, established that model university division which is now presided over

by Professor Francis W. Peabody. By so doing they have established in the hospital a scientific centre of equal value to university, to city, to the hospital and its visiting staff and to the general public.

Such a division and such an association are invaluable to any large general hospital.

But it should not be forgotten that there is another element without which no hospital and no department of medicine is complete and that is a coordinate staff of expert clinical surgeons and physicians. The professor of medicine, the director of a university division of medicine or surgery, may and I think should be an experienced clinician or surgeon. But he can become so only through long experience in general or consulting practice of his art in all branches of society. Such experience may be offered by hospital in its public and private wards, but the experience is indispensable.

It takes many men to make a department of medicine or surgery—the adept in special branches as well as the experienced or skilled general surgeon or clinician.

What sort of man should be the director of a university department of medicine or surgery? As I have often said in public and in private there is no absolutely set type for a director of a university clinic; the essential thing is that he should be a learned physician or surgeon with a good scientific foundation and scholarly tastes, who is a good organizer and whose heart is in his work. He should in my opinion always be a man who has had a considerable and well-digested clinical experience. It is conceivable that such a man may have special interests, neurological, bacteriological, chemical, but if he is the right sort of man he will see that his clinic is complete. Ten years ago, in discussing the objections that had been raised by some to the estab-

lishment even of a nucleus of university professors in the clinical branches, I said:

So far as the student goes, the danger that under the direction of a salaried professor, he may be given a training more purely academic and insufficiently practical seems to me small. In the first place, it has already been pointed out that the professor of medicine will doubtless be a man who has had a considerable clinical experience with patients in all classes of life, whose training has been by no means purely academic, and although some of his associates will perhaps be men who have not yet acquired the ripened experience which should be that of the head of the department, yet no one for a moment fancies that *all* the instruction in medicine and surgery will be given by the nucleus of teachers wholly dependent on their salaries. In every large clinic, and in every large hospital affiliated with a university, a considerable part of the instruction in general medicine and surgery, as well as in specialties, must be entrusted to men with or without salaries, who are more or less actively engaged in practice. The fancy that because the director of such a clinic and many of his assistants are no longer at the beck and call of the public, the student is to be regarded as deprived of the opportunities offered by association with men who have been or are engaged in active practice, is a misconception.

This seems to me as true today as yesterday. But there is a danger which may be mentioned; the danger of offering chairs of medicine and surgery to young men of special promise who after two or three years of internship have given the great majority of their time to the study of special problems which have held them aloof from active clinical work. These men may make admirable professors of medicine in the sense that they may have a thorough and sound conception of what a department of medicine should be. But at the time when they enter on their duties such men are not—and can not have become—trained or experienced clinicians. The responsibilities of the chair of medicine in a great university are heavy and I fear that for some of these men the professorship may bar the way

to the acquisition of that experience necessary to make them finished diagnosticians or clinicians. To become a well-equipped diagnostician or clinician requires an amount of time spent at the bedside and in conference with patients that these men have not been able to give previously and are scarcely likely to be able to give in the future. Such men may be great administrators, profound students of a special branch, learned medical men, but, I am afraid, rarely great clinicians. In a properly organized clinic, it may be answered, these men will so select their staff that students and patients are offered association with the experienced clinician or surgeon. This may be, but, on the whole, it is I think unfortunate, especially for the professor himself, that he should be obliged to assume the duties of director of a large clinic at a time when he is not wholly at home at the bedside. I can not help feeling that the situation of some men who, too early in their careers, are tempted to accept a professorship, may be rather tragic.

An associate professorship in a university division should offer priceless opportunities for the acquisition of competence in any branch of surgery or medicine. These foundations bring to the clinic men of special talent and training in special lines. But if a man desire to become a clinician or an operating surgeon, he can not, at the same moment, give the main part of his time to teaching and to the investigation of special problems which confine him to the laboratory and classroom. He must of choice and deliberately give years of his life to the intensive study of clinical problems. This opportunity the university should offer him, profiting the while by his special talents which are occupied in teaching and in research in the field of his special competence. But he should be protected from

all unnecessary teaching while he devotes a large part of his time to the acquisition of clinical experience among patients in all classes of life. There is abundant room in the university school of medicine for the clinician and the student of special problems side by side. No clinician who is worth anything can fail to be pursued by the desire for research, but he must have daily and engrossing clinical duties if he is to be a clinician. The student of a special problem should not be required at the outset to teach subjects with which he is not wholly familiar. At the beginning of his career he must for a number of years give a large part of his time to clinical duties before he acquires that competence necessary for the general clinical teacher. He should be protected during those years in which he is not only pursuing his special studies but is also acquiring this necessary clinical experience, and during this period he should not be expected to bear the burdens of general clinical teaching. His most valuable contributions are for the time being in his special line.

A school with a purely university staff would be incomplete. It could not do its full duty to patient or student or staff. The patients would be deprived of the diagnostic and practical skill of men of larger experience and the student of instruction by such men. On the other hand, the burden of duties as instructors in an art in which they are not altogether at home would take the valuable time of specially trained men who should be protected in their investigations and offered opportunities, if they desire them, for the acquisition of that general clinical experience, highly desirable if not necessary for the director of a department. Too many duties in the way of general clinical teaching should not be forced upon these men too early in

their career. The desirability of association with an experienced clinical staff should be generally appreciated. The university and the clinical staffs should be interdependent.

The problems of teaching of medicine and surgery are engaging. You in Michigan have had among you some of the most distinguished students in this country. I need not name them. Many are here today. One whom I have especially loved and honoured has already spoken. The presence of these men has made Michigan one of the great schools. The efforts which the state and the faculty have made and are making will make it greater. You have had your critics. What an uninteresting school you would have had if you had not! But you have looked forward, and following the wise maxim of *Candide*, you have cultivated your garden.

And while we are working in our garden striving for better things, full of enthusiasm and hope, rejoicing at times, perhaps, in what we have accomplished, along comes our old friend with resigned air or cynical smile, and says: "Foolish man, you talk of your garden and even of the world as if 'twere a garden or a world of flowers. Wake up! Look about you! Is this a world of flowers? Is it not rather a world of weeds? And your very garden be it university or profession, what is the commonest thing in your garden, the flower or the weed? Is not your very garden in truth a garden of weeds?" And almost lovingly he directs our eye to the familiar, amusing or dreary or sordid and tragic picture of our omnipresent neighbour, the weed.

Ah, entertaining whisperer of half-truths, how familiar is your picture! How well we know the back yards and the ash heaps and the tin cans and the waste

iron and the neglected field. How well we realize that the bright flowers that illumine the road-side and the meadow are but spots, islands amidst the riot of stubble and weeds among which they rise. And in the world of which we are members are we not but too familiar with the infrequency with which the human flower raises its head above the drab and dreary monotony of weeds?

But why dwell upon the weed? Is it not the flower that counts? What is it that fixes and freshens the eye of the traveller on the road of life, the dusty weed or the gleam of the flower? Are the labours of the botanist and the gardener in vain—the gardener who prepares the ground for the growth of the flower; the botanist whose transformations may bring a halo even to the lowly weed?

There are, 'tis true, some earnest and serious but rather ponderous brethren who fancy that they may sharpen the enthusiasm of the gardener and the botanist by dwelling on the unloveliness and the omnipresence of the weed. And then there are those, usually rather young, who take a sort of perverse joy in pessimistic visions of the futility of life, and in the contemplation of the unlovelier characteristics of the weed, a shallow and sophomoric epicureanism. But why waste one's time in exaggerating or gloating on the unloveliness of the weed? Even the weed has its hour of charm. There is a moment at which even the weed flowers. And then is it not the weed with its modest blossom that time, the mind of the botanist and the hand of the gardener have transformed into the perfect flower? What if the botanist and the gardener in the beginning had been content with pessimistic or cynical contemplation of the unloveliness of the weed?

Consider the world of the Middle Ages and the Renaissance. What remains today? Is it the picture of the sordid ignorance and vice and eternal discord of the population? Or is it rather the lofty naves and domes and graceful spires, the glittering jewels of Chartres, the tombs of the Medici, the harmonies of the painter's art? The weeds are long forgotten; the flowers remain, more radiant and more lovely in the tender light of receding years. It is the flower that counts. Is it not our function to feed and nourish and transform the modest and transient blossom of the weed into the more perfect flower? And if our neighbour choose to devote himself to the contemplation of weeds, and close his eyes to the flowers; if he choose to dwell upon the unloveliness of the weed rather than upon *its* flower; if he be blind to the circumstance that in its modest and blundering way even the weed is seeking beauty, let us not be annoyed. So, somehow or other, in a devious way, is our perverse friend. It is the flower that counts. "Cultivons notre jardin."

XXI

RICHARD BRIGHT ¹

"For my own part I am very fond of seeing"

—R. BRIGHT: Letter to his father, 26, June, 1813.

Richard Bright, the third son of Richard Bright, a well-to-do and influential banker of Ham Green, Somerset, was born at Queen's Square, in Bristol, on 28, September, 1789, seven and a half years after Laennec. At the private school of Dr. Estlin, near Bristol, he was the companion of Henry, afterwards Sir Henry, Holland, who speaks of him as his "most intimate friend." Later Bright studied at Exeter under the private tuition of Dr. Carpenter, and in 1808 matriculated at Edinburgh, where, during his first year, he devoted himself largely to the lectures of Dugald Stewart on moral philosophy and political economy, to those of Playfair on natural philosophy, and of Leslie on mathematics. The following year he applied to the study of anatomy, working under Hope, Monroe, and Duncan.

In the summer of 1810 Bright and his friend Holland accompanied Sir George Steuart Mackenzie on an expedition to Iceland. Mackenzie speaks cordially of his young companions and of Bright's contributions to the study of the botany and zoology of Iceland, which are published in the history of the expedition; he shall, he says, "ever retain a grateful remembrance of the cheer-

¹ The Bright Oration delivered at Guy's Hospital on 8, July, 1927, on the occasion of the centenary of the publication of the first volume of Bright's MEDICAL CASES.

From the British Medical Journal, 1927, II, 87-93. The complete text may be found in Guy's Hospital Reports, 1927, LXXVII, 253-301.

ful and ready exertion he always displayed and the unfailing good humour with which he submitted to the cross accidents which sometimes befell us."

The journal of the excursion tells of a number of interesting experiences, one of which, the rather perilous ascent of the Snaefell Jokul, is really well told by Bright, who contributed several excellent drawings to the illustrations. The journey was not without event; they were nearly shipwrecked on their homeward voyage.

On his return Bright registered at Guy's Hospital in London where he studied under W. Babington, Curry, Astley Cooper, the two Clines, and Travers. From association with Babington he gained an interest in geology, and, in the fall of 1811, he contributed to the Geological Society a brief statement on the strata in the neighbourhood of Bristol.

Returning to Edinburgh in 1812, he worked under Gregory, at the same time studying geology and natural history under Jameson, and took his degree of M. D. on September 13th, 1813, with a dissertation "*De erisipelate contagioso*," on the title-page of which is the happily chosen motto: "*Fœnum habet in cornu, longe fuge. . . .*" (*Hor., Sat., Lib. I, Sat. iv.*): "He has hay on his horn; give him a wide berth!"

He was a member and president of the Royal Medical Society, a students' organization, to which he contributed a dissertation on "*Gangrene*"; and of the Speculative Society, where he was brought into association with companions interested in general literature and the law.

After two terms at Peterhouse in Cambridge he returned to London in the fall of 1813, becoming a pupil of Bateman at the Public Dispensary. In the summer of 1814 he passed some months on the continent in

Holland, Belgium, and Germany where, at Berlin, he studied under Horn and Hufeland, "besides profiting by the acquaintance of other eminent men of science," notably Klaproth, Rudolphi, and Heim. Passing through Dresden, he spent the winter of 1814-15 in Vienna, studying with Hildenbrandt, and in the ophthalmological clinics of Rust and Beer. He appears to have had a pleasant acquaintance with many interesting men, especially Jacquin the botanist, Prochaska, and the elder Frank. Napoleon at Elba, the Allies in Congress at Vienna, were dining and dancing and struggling with the problems of peace. Bright gives an interesting account of the social pomp and ceremony associated with the occasion, and a not unentertaining description of some of the leading figures as they passed before him at an evening function. His account of a visit to the little prince at Schoenbrunn is rather touching.

The spring he spent in travel through lower Hungary, arriving in Brussels again two weeks after the battle of Waterloo; here his experiences in the military hospitals are said to have been valuable.

These travels he described in a handsome quarto volume, illustrated with excellent sketches by his own pencil. The book is not written in a sparkling fashion. It cannot be said to betray a lively sense of humour, but the accuracy and catholicity of his observations—geological, botanical, agricultural, economical, ethnological, social, educational, political—his scrupulous objectivity, and the careful detail of his descriptions are very striking. It is clearly the work of a keen observer and a serious student. But the book shows something more. It gives the picture of a young man of six-and-twenty capable of observing and describing the strange customs and life of a people new to him with measure

and charity and understanding, seeking out and recognizing that which is good, and never allowing a hasty or an unkind criticism to escape his pen. Such measure and such understanding are not common at six-and-twenty; they are characteristic of Bright throughout his career.

Returning to England he read before the Geological Society a short note on some interesting volcanic formations in Hungary. In 1816 he was admitted licentiate of the Royal College of Physicians, and shortly thereafter was made assistant physician to the London Fever Hospital, where he himself acquired a severe fever of which he nearly died. In 1818 he again visited the continent, spending several months in Germany, the Tyrol, Italy, Switzerland, and France.

In 1820 he was made assistant physician at Guy's and resigned his position at the Fever Hospital. In 1821 he was elected Fellow of the Royal Society. Soon after obtaining his hospital appointment Bright began to teach, lecturing on botany in its relation to *materia medica* from 1822 to 1825. In 1823 he gave his first clinical lectures, and, in the following year, he was made full physician to Guy's Hospital, sharing with Cholmeley the course on theory and practice.¹ For many years afterwards he shared these lectures with Addison.

¹ How sincerely Bright appreciated this appointment is manifested by his remarks at the anniversary dinner at Guy's Hospital in 1826. "The Chairman next toasted 'The Physicians of Guy's Hospital.' Dr. Bright rose. He said somebody had told him he *must* return thanks. 'Gentlemen,' said the Doctor with great energy, 'I *will* return thanks: to hold the situation of physician to Guy's Hospital is to be placed at the pinnacle of the profession. I am thankful—I am proud of a situation which has produced a Saunders, a Babington, and a Cholmeley. . . .'"

There is an amusing reference to Bright in a somewhat facetious note in a contemporay medical journal signed Δ. Ε. Λ. In connexion with the program of lectures for the term the destructive chronicler says we may “. . . . almost fancy yourselves in the *seventeenth century* In the *Practice of Medicine*, disorders of the *intellect* will be *reflected* by *Dr. Bright*, of whom it is not too much to say with the poet,

‘Natura lo fece, e poi ruppe la stampa’!”¹

It was a stimulating period in medicine. After long centuries of more or less blind worship of tradition, of authority and of doctrine, during which that which was most certain in medicine was the rather conjectural art of prognosis, physicians were beginning to use and trust their senses, to investigate and explore for themselves. Morgagni had accumulated and placed side by side in massive volumes the brief clinical story and the description of the anatomical changes in the organs in hundreds of instances of mortal disease or injury. Auenbrugger—neglected for fifty years and rediscovered by Corvisart—had demonstrated how, with our fingers, we may determine the outlines and physical characteristics of the contents of the thorax. Bichat, in the few short years of his vigorous activity, had laid the foundations of pathological anatomy; and when Bichat fell, and Bayle, so full of promise, dropped by the way, the genius of Laennec had revealed methods of study which permitted the recognition and fuller comprehension, during life, of many processes which, unrecognized, led to those fatal changes with which they had become familiar in the dead. Freed from the bonds of dogma men were using their senses and their reason in the study of disease.

¹ Nature shaped him, and then broke the mould.

Bright was fired by the spirit of the times. From the day he entered Guy's Hospital he devoted himself whole-heartedly to the study of morbid phenomena, year after year spending as much as six hours a day at the bedside and in the necropsy room. Occasional notes of cases demonstrated during his visits show how carefully, even at this early period, he observed and noted the recondite; an example is a good description of what obviously was an instance of syringomyelia. For seven years he published little or nothing, but never were seven years better spent. On 13, August, 1826, Laennec died, leaving the legacy of the great work with the immortal descriptions of tuberculosis, of pneumonia, of bronchiectasis, of emphysema, the work which laid the foundations of modern physical diagnosis of diseases of the chest. Bright took up the torch, and, a twelvemonth later, one hundred years ago, rendered a noble account of his stewardship at Guy's in the form of the first beautiful quarto volume of his *Reports of Medical Cases*. This remarkable collection of observations, clinical and anatomical, was made for the most part during the three years of his service as full physician. Bright points out scrupulously that among the comments and inferences there are some for which he "must bear the responsibility alone. Such are the statements and conjectures regarding the dependence of a peculiar class of dropsies on disease and irritation of the kidneys. Such are some observations on the peculiar changes in the structure of the liver; . . . and such are the hints thrown out on the influence of the peculiar state of the mesenteric absorbents on the symptoms of phthisis."

He first discusses a group of "Cases illustrative of some of the appearances observable on the examination of diseases terminating in dropsical effusion"—nota-

bly “. . . . appearances to which I think little attention has hitherto been paid evidences of organic change which occasionally present themselves in the structure of the kidney; and which, whether they are to be considered as the cause of dropsical effusion or as the consequence of some other disease, cannot be unimportant.” With these conditions he has “often found the dropsy connected with the secretion of albuminous urine, more or less coagulable on the application of heat. . . . I have never yet examined the body of a patient dying with dropsy attended with coagulable urine, in whom some obvious derangement was not discovered in the kidneys.”

The observation that dropsy was sometimes associated with hardening of the kidneys was not new. Aëtius in the fifth century and William Salicet in the thirteenth had mentioned it. In like manner the association of albuminous urine with certain dropsies had been pointed out in 1770 by Cotugno, who quite misinterpreted its significance, and notably by Cruickshank, by Darwin, and later by Wells and by Blackall, each of whom noted the presence of renal disease in individual instances; neither, however, recognizing its full significance.

Such was the situation when Bright began his studies. In three years of hospital experience he had grasped the situation and was able to make the statements which have been quoted. Bright continues cautiously and judiciously:

Whether the morbid structure, by which my attention was first directed to this subject, is to be considered as having in its incipient state given rise to an alteration in the secreting power, or whether the organic change be the consequence of a long continued morbid action, may admit of doubt; the more probable solution appears to be, that the altered action of the kidney is the result of the various hurtful causes influencing it through the medium of the stomach

and the skin, thus deranging the healthy balance of the circulation, or producing a decidedly inflammatory state of the kidney itself:—that when this continues long, the structure of the kidney becomes permanently changed, either in accordance with, and in furtherance of, that morbid action; or by a deposit which is the consequence of the morbid action.

Where anasarca has come on from exposure to cold, or from some accidental excess, I have in general found the urine to be coagulable by heat.

During some part of the progress of these cases of anasarca, I have in almost all instances found a great tendency to throw off the red particles of the blood by the kidneys, betrayed by various degrees of hæmaturia from the simple dingy colour of the urine, which is usually recognized; or the slight brown deposit;—to the completely bloody urine.

Coagulable urine he has observed not only in these cases of sudden anasarcaous swelling but also

in persons long the subjects of anasarca, recurring again and again, worn out and cachetic in their whole frame and appearance, and usually persons addicted to an irregular life and to the use of spirituous liquors In all the cases in which I have observed the albuminous urine, it has appeared to me that the kidney has itself acted a more important part, and has been more deranged both functionally and organically than has generally been imagined. In the latter class of cases I have always found the kidney decidedly disorganized. In the former, when very recent, I have found the kidney gorged with blood. And in mixed cases, where the attack was recent, although apparently the foundation has been laid for it in a course of intemperance, I have found the kidney likewise disorganized.

It is nearly twelve years since he first observed the altered structure of the kidney in a patient who had died dropsical; and he still has the slight drawing made at the time. Then follows an excellent description of four-and-twenty instances of dropsy with albuminous urine, seventeen of which came to necropsy and showed renal disease. On the whole these four-and-twenty cases represent the ordinary pictures of acute and chronic renal disease—acute hæmorrhagic nephritis

subacute and chronic hydropigenic nephritis or nephrosis, slow chronic nephritis with or without striking general arterial change.

In his summary Bright distinguishes three stages of a disease which he inclines to believe to be progressive. In the first stage the changes consist largely in the cloudiness and mottling of the renal substance; in the second, granulation has begun; in the third, the kidney is sclerotic and contracted with an irregular, nodular surface. It is rather odd, as Rayer points out, that he pays so little attention to acute hæmorrhagic nephritis, of which he described at least one clear instance.

From a clinical standpoint Bright notes the frequency of complicating serositis—pleurisy, pericarditis, peritonitis—and comments on the insidious origin of these complications. He tells of the frequency of “apoplexy” (coma) and “epilepsy.” In four of the subjects the heart was found to be hypertrophied. He discusses the chemical reports of Bostock, which show that the specific gravity of the urine, varying from 1006 to 1032, is usually lower than normal, and he comments especially on the evidence of diminution in the quantity of urea in the urine and the presence of an urea-like substance in the blood serum in advanced disease.

With regard to treatment he is rather conservative; especially is he sceptical as to the wisdom of the employment of mercury.

The plates are of great beauty, and record that which Bright saw in such fashion as to make the subject clear to readers of that day and this.

Such are the simple and soberly written pages in which Bright laid the foundations of our present knowledge of nephritis. Bright's work was widely discussed at home and abroad, criticized by some who spoke arbi-

trarily but with authority. The essentials were soon confirmed by other students.

Before going on with the story of his life, let us pass rapidly over his later publications on this subject. In his second volume of *Reports*, published in 1831, he protests (p. x) against a misunderstanding on the part of some of his contemporaries who had assumed that he believed that coagulable urine was observed only in the presence of organic renal disease, and, quoting the careful statements made in his original publication, he ends with the words: ". . . . I am inclined to believe that the functional derangement of the organ may sometimes precede a structural change for a period of many weeks and many months, and that the kidneys of a patient thus affected, who has been cut off early by some disease, may afford very little evidence of diseased structure."

He repeatedly mentions pial (arachnoid) œdema in individuals dead of uræmia, and points out that the same cerebral manifestations, convulsions and coma, which, in suppression of urine, precede death, are met with in diseases which "pervert the qualities of the secretion. . . . That such derangements in the natural secretions and excretions should greatly influence the brain, ceases to be a matter of astonishment, when we find that the blood of those who have albuminous urine is often highly impregnated with urea, while it is deficient in its due proportion of albumen Effusion of blood or serum into the brain is one of the great causes of danger in renal disease."

Experience has confirmed him in taking a rather serious view of chronic albuminuria (p. 449). There are long remissions but frequent relapses. He speaks of the grave prognostic influence of functional or organic disease of the kidney as a complication of acute

disease or severe injury. The urine should always be examined before contemplated operations; but one examination is not enough, for sometimes when the disease is advanced, "a simple serous secretion passes with scarcely any albumen; . . . and I early perceived that there was no direct ratio between the degree of disease and the quantity of albumen . . . Perhaps, in some doubtful cases, an examination of the serum of the blood to ascertain its condition both as regards the presence of urea and the proportion of albumen might be useful."

In his Gulstonian lectures, after discussing the character of the normal urinary secretion, the variations of the specific gravity, and the methods of testing for albumen, especially the use of heat and nitric acid, he refers to the confusion which may be caused by the precipitation of phosphates by heat or of urates in testing with nitric acid. As renal disease goes on, the urine loses the properties which it derives from the presence of urea, while urea becomes demonstrable in the circulating blood. Whatever becomes of the urea in the blood, "it is plain that what appears to be the great office of the kidney—the depuration of the blood—does not take place." Anasarca itself does not always accompany albuminous urine, and it should be remembered that anasarca may occur without albuminous urine. He reviews the arguments which justify his assumption that renal disease is at the root of the clinical symptoms which he has described, and he refers again to the common complications of the disease.

In 1836 he gives a more or less complete summary of his work and tells the story of the disease in a clear and concise manner. He emphasizes the frequency of the condition and discusses with almost legal caution those which he regards as its commoner

causes—"scarlatina or some other acute disease"—intemperance, exposure to cold. In his description of the clinical symptoms, among which he notes the fullness and hardness of the pulse, and his discussions, anatomical, physiological, and pathological, he has done about as much as one could do without the microscope and the ophthalmoscope.

Following this is a tabular review of the morbid affections in one hundred patients with albuminous urine in which he treats especially of the complications of renal disease. In the discussion of the cause of the common left ventricular hypertrophy, he asks whether it may be due "to an affection of the minute and capillary circulation so that greater action is necessary to force the blood through the distant subdivisions of the vascular system."

Four years later he again protests against the assumption by some writers that he regards albuminuria as necessarily evidence of a progressive and fatal disease, and relates a series of instances of acute, many of scarlatinal, nephritis. In 1842 Bright published a brief note on some microscopical studies with Toynbee, which led them to believe that the essential element in the disease was the glomerular change.

This ends the contributions that Bright made to the study of renal disease in his own name, although, as we shall see, valuable studies were made later under his guidance and direction. In a little less than ten years he had brought into medicine a remarkably clear clinical and pathological conception of those forms of renal disease which since then have come to be associated with his name. Bright's contribution was not a mere recognition of the association of clinical symptoms with anatomical change; studies had been made not only of the urine but of the blood serum and body fluids, and

he had been led into various speculations of a physiological nature. *He was one of the first to introduce methods of quantitative chemical study into routine medical practice.*

One may say, as has been said, that the world was ripe for his discoveries. Perhaps it was. The world is always ripe for men such as Bright.

But Bright did much more than discover the relation between albuminuria, dropsy, and renal disease. In his first quarto he took up the study of dropsical effusion connected with disease of the liver, presenting with remarkable clearness and precision, a series of cases of hepatic cirrhosis, of which he treats in his later observations on jaundice and on abdominal tumours. He records two cases of cardiac infarction with intraventricular thrombi, one associated with sudden death; their nature he does not recognize. He describes the chronic peritonitis occurring in ascites of long duration, which he believes to be due "to a slow inflammation kept up by the unnatural stimulus of the fluid."

He relates the histories of a series of cases of bronchitis with several necropsies; one wonders whether Laennec would not have regarded two of these as instances of emphysema. Sections are devoted to the termination of pneumonia in suppuration and gangrene, and to phthisis pulmonalis; they are accompanied by beautiful illustrations. "Obstruction of the mesenteric glands by tuberculous disease" he regards as an important cause of emaciation, and he describes and pictures the caseous ("engorged") lacteals making their way to such glands.

There are admirable descriptions and plates of the intestinal lesions in typhoid fever, "changes never suspected to be as general until brought into view by the French physicians."

During the four years between the appearance of the first and second parts of the *Reports*, the greater part of Bright's time appears to have been given to his hospital studies and to his teaching. He played an active part in the regeneration of the Guy's Physical Society, of which he was President for the year 1829-30. The only other publications appear to have been the outlines of his lectures for 1827 and a brief report of an instance of unusually profuse sweating.

In the second quarto of his *Reports*, devoted to diseases of the brain and meninges, Bright records over three hundred cases, for the most part with necropsy, and with comment which is often strikingly acute and discriminating.

He describes and pictures suppurative meningitis and abscesses of the brain secondary to diseases of the middle ear and of the accessory sinuses and to erysipelas. In his account of "acute hydrocephalus" he recognizes its association with tuberculosis in brain, meninges, and elsewhere, but he concludes that ". . . it would seem that the Hydrocephalus is rather the result of the constitutional tendency than of the tubercles, though these morbid deposits are probably often the exciting cause." How close he came to that which Papavoine was recognizing at the same moment, which Gerhard set forth so clearly two years later! He regards headaches as usually dependent on cerebral congestion.

He describes sclerosis of the medullary substance of the brain in an instance of familial spastic diplegia, and of the cord which was "remarkably firm throughout, almost like cartilage," in a case of pontine tumour, ascribing the spasticity to these changes. He mentions the frequency of venous thrombosis under the influence of debilitating causes. He calls attention to

the "leaden gray colour" of the viscera and later to the pigmentation ("colour of black lead") of the brain in patients who had evidently died of pernicious malaria.

He recounts many instances of Jacksonian epilepsy. But, more than this, *he recognizes the significance of the syndrome* and describes it repeatedly with great clearness.

Among the many recorded instances of hæmorrhage, softening and pressure by growths, there are interesting and acute observations on cerebral localization. Later, he reported two instances of tumours situated at or about the cerebellar-pontine angle; one apparently cerebellar in origin. Of these he says: "There has been so great a resemblance in the symptoms, as to confirm the feeling which I always entertain and wish to enforce—that in disease, as in other matters, there is a fixed relation, which it is possible we may discover between cause and effect. . . ."

In connexion with two instances of amnesic aphasia with central lesions he observes: "When we review the cases which I have thrown together, I trust that, in one point, the connexion between them will be obvious; in as much as they all serve, more or less to establish and keep up our conviction, that the symptoms which arise in cerebral and spinal disease are actually the results and therefore the fair representatives, of the lesions which the different portions of the nervous system have suffered." Defects of speech he has observed are often associated with lesions of the posterior part of the corpus striatum. He recognizes the frequent sclerosis of the arteries at the base of the brain and notes that the common seat of hæmorrhage "is undoubtedly a little to the outside of the corpus striatum in either hemisphere, just at that part where many

large vessels may be traced coming from the trunks in the Fossa Sylvii, and pervading the brain."

In connexion with the formation of bullæ in several cases of paraplegia, it occurs to him that ". . . this connexion between interrupted nervous action and the formation of Bullæ, might hereafter be found to throw light on the nature of that most singular disease Herpes Zoster, which, from the peculiar pain with which it is associated, as well as its striking confinement to one side of the body, seems to be connected with some peculiar condition, perhaps the distention, of the sentient nerves."

In a necropsy on a negro he noted that the "skull was thick and heavy in a remarkable degree"—a racial characteristic familiar to those of us who live in the South.

He describes, I believe for the first time in literature, a characteristic instance of that which later was known as Addison's disease with caseated adrenals.

In an instance of diabetes he notes the extreme scirrhus degeneration of the pancreas. He describes an obvious example of what later came to be known as "Adams-Stokes syndrome" with slow pulse and sudden death.

Conservative in therapeutics, he makes an observation in connexion with the treatment of chorea which, in a broader sense, might well be meditated upon by the profession of today: "I have occasionally known instances in which arsenic has been successfully administered; but I object to this remedy where others less hazardous will act as well."

The association of rheumatic fever, chorea, and cardiac disease is discussed often and interestingly. In a later article, he refers to pericarditis as an occasional cause of chorea.

Convulsive phenomena are discussed at some length.

The clinical account of tetanus is remarkable; that of hydrophobia is masterly. How striking is the following observation:

As regards the symptoms of the confirmed disease they bespeak the highest state of nervous irritability; and affecting, as they do, almost exclusively in the first instance, the functions of respiration and deglutition, and in some degree the circulation, they seem to be immediately dependent upon some morbid action excited in the nerves of organic life, or that particular set of nerves which has been so beautifully illustrated by Mr. Charles Bell as connected with the respiratory apparatus:—and looking to the large proportion of those who are bitten, yet who escape entirely from the disease, it might perhaps arise as a legitimate question, whether it is not one of the conditions necessary to the production of the disease, that some nervous fibre immediately connected with that system should have been wounded.

The second quarto appeared but seven years after Bright had acquired the opportunities offered by wards of his own. The quiet, modest young man who had schooled himself from the beginning to observe, to note, to picture, to record all that which he could grasp of Nature and her works, had been true to his promise; in his medical inquiries he had shown the same keen, sure powers of observation, the same industry, the same mental poise, the same sound, sane judgement that he had manifested in his earliest writings. At the age of 42 he had seen and comprehended and recorded and illustrated his experiences in communications which stand out among the great contributions to medicine.

In 1832, following the publication of his second quarto, Bright was promoted from Licentiate to the full Fellowship in the Royal College of Physicians. He had become distinguished among his colleagues and loved by his pupils.

The introduction to his course of lectures at Guy's, published in 1832 at the request of his students, contains passages which can scarcely be passed over. He

insists on a "sound classical and mathematical foundation on which to build," on the study of the fundamental sciences as the "corner-stone" of the "edifice," but he warns the student to remember that "the practice of medicine is the most important part of the medical practitioner's education" and urges the necessity of obtaining a "connected knowledge of those diseases which will be the chief objects of his practice, the daily betrayers of his ignorance, or the touchstones of his skill."

In Bright's days also there were those who failed to comprehend until too late, that long-continued, often wearisome, daily experience in clinical observation is vital for the development of the true physician.

"We have all of us senses, it is true," but ". . . . without much experience our senses remain most imperfect, compared with the exquisite perfection to which they are brought by practice" On the accuracy of his observation all the deductions of the physician must depend.

"By the eye you will learn much; many diseases have the most distinct physiognomy. The sunk and shrivelled features derived from the long-continued disease of the abdominal viscera; the white and bloated countenance often attendant on changes in functions or structure of the kidneys;—the sallow and puffy cheeks, of the liver" (a surprising picture if taken literally!) "diseased from habitual intemperance;—the squalid and mottled complexion of the cachexia dependent upon the united effects of the mercury and syphilis" (*sic*); "the pallid face of hæmorrhage;—the waxen hue of amenorrhœa;—the dingy whiteness of malignant disease;—the vacant lassitude of fever—the purple cheek of pneumonia;—the bright flush of phthisis;—the contracted features and corrugated brow of tetanus." We

can forgive the liver's "puffy cheeks" in one who could have written "the vacant lassitude of fever." He refers to the perfection to which the sense of touch is elevated in the blind, and says: ". . . . to a certain degree we may all acquire such accuracy of touch, and it is our duty to do it." The necessity of continued observation of common clinical phenomena is emphasized, especially regular and repeated visits to those suffering from acute disease.

In the same year Bright described, for the first time in medical literature, the passage of large quantities of neutral fat in the stools of individuals suffering from disease of the head of the pancreas and duodenum, and in his admirable discussions here, and later, he is inclined to regard the phenomenon as due to "obstruction" in the pancreas.

Bright's father-in-law, William Babington, died in 1833, and the first Gulstonian lecture was preceded by a warm tribute to his friend and teacher. The qualities which he praises in his master are curiously like those which his friends discovered in him. In these lectures on the functions and diseases of the abdomen, lectures which are full of wise observation and comment, he refers briefly but very clearly to an instance of generalized scleroderma.

A little farther on he describes the character and significance of peritoneal friction, and the "dough-like sensation" or "hard, knotty feel" in the abdomen, the seat of chronic, proliferative peritonitis, of which malady, two years later, he gives the first clear account. In the course of this article he throws out the suggestion that if, in serous effusions, some method could be devised of inciting inflammatory action short of producing grave adhesions, it might have a curative effect on the effusion.

In 1836, and again in 1839, Bright was a censor of the Royal College of Physicians. In the former year appeared the first volume of *Guy's Hospital Reports*. How active Bright was at this time is indicated by the eight communications from his pen. The first of these, on the treatment of fever, begins with the words: "It is a duty incumbent upon the physician who has ventured at any time to lay before the profession his ideas of disease and its treatment, to review from time to time his published opinions that he may see how far subsequent experience has borne out, or modified, his former impressions: and if he detect any material alteration in his mode of viewing disease, more particularly as respects the practice he has found beneficial, it is right that he should take an opportunity to make it known." This statement gives the opportunity to an anonymous and atrabilious scribe for the assertion that ". . . . Dr. Bright had for *many years* abandoned a practice which he had previously recommended for its excellence to the profession, without ever hinting to them until this very day, that that practice was materially calculated to keep up the disease which he originally designed it to lessen."

Whatever Bright's inward reaction to attacks of this sort may have been, he appears to have followed the wise advice of the Rev. Cotton Mather: "*Sile, et funestam dedisti Plagam.*"¹

Besides the description of a case of tetanus and studies of cerebral and renal disease already referred to, there follows a well described and little known observation of diaphragmatic hernia and observations on

¹ Mather, Cotton: *Manuductio ad Ministerium*. Directions for a Candidate of the Ministry, etc., 8vo, Boston, printed for Thomas Hancock and Co., 1726, 142.

jaundice in which acute yellow atrophy of the liver is described for the first time, and an interesting note on the manner of spread of cancer in the liver. In one note he comments on the frequency with which the swollen liver of passive congestion is evidence of an overlooked cardiac disease. At another point he refers to the frequency of rigors in cholelithiasis.

Bright had become one of the leaders of the profession. His observations on renal disease were the subject of active discussion the world over. In the following year he published the first of a series of articles on abdominal disease, especially tumours, which, later, were collected into a volume and edited under the auspices of the New Sydenham Society by Barlow. These communications are a mine of valuable observation and sane and acute comment. His observations on hydatid cysts, especially those relating to the development of the daughter cysts, are quite original. His discussion of ovarian tumours, of diseases of the spleen, of the kidneys, and of the liver are full of suggestive, interesting and original observations. He recognizes the frequency of anæmia and the hæmorrhagic tendency in connexion with disease of the spleen, and he describes clearly an instance of that which later became known as Hodgkin's disease. He emphasizes the association of cirrhosis of the liver with alcoholic habits.

In 1837 he delivered the Lumleian lectures on disorders of the brain which, apparently, remain unpublished, and in the same year he was made Physician Extraordinary to the Queen.

In 1839 appeared the first volume of the *Elements of the Practice of Medicine* by Bright and his associate, Thomas Addison; the second volume was never published. Written as a book of reference for students, it is notable for the clearness and conciseness of its

excellent clinical pictures, and its accurate anatomical descriptions. The authors, for example, recognize that fæcal abscess "in the right iliac region, arises in a large majority of instances from disease set up in the *appendix cæci*." The description of this process, as Hale-White has pointed out, is far in advance of anything of its time; it can scarcely be excelled today.

But excellent though the work was, "the *Batts* and the *Owls*" muttered, and to a leading journal of medicine one of the former contributed a dismal and depreciatory review of the volume. The critic who airs his familiarity with, and betrays his incomprehension of, the French literature asserts solemnly that "these 'Elements' rank much, much below mediocrity." The review ends with an attack on the existing method of distributing hospital appointments. "So long as it exists, laziness will be the distinguishing characteristic of those who hold them." The rich who buy their positions will think of naught but striking bargains; the enthusiasm of the poor man "will be crushed, ere it can lead to action, and his spirit soured as he looks on the disgraceful inefficiency of

" those baleful, unclean birds,
Those lazy owls, who (perched near Fortune's top)
Sit watchful with their heavy wings
To cuff down new-fledged virtues that would rise
To nobler heights, and make the grove harmonious! "

This is indeed a sad picture!

And there were the "*Owls*" as well as the "*Batts*." In 1839 one Richard Bright of 25, Ely Street, Holborn, M. R. C. S. and "Author of a Popular Treatise on the Diseases of Females; entitled *Every Woman's Book*; or *Female's Physician*," published a small octavo volume on the treatment of dropsy. After a somewhat prepos-

terous discussion of "dropsy" as a disease, there follows a rather hazy description of the author's successful treatment of the malady, and a series of illustrative cases. It is obviously the work of a member of the profession whose eye was fixed upon the main chance. At the conclusion, the writer devotes a page to the defence of his medical character and standing, which have been attacked by evil-minded men. He has, it appears, attended lectures for nearly six years at Guy's, and acquired his physician's diploma in 1837. In proof of his good standing, he adduces a series of carefully worded but pleasant testimonials from Sir Astley Cooper, Sir Benjamin Brodie, Addison, Gordon, Bransby Cooper, Robert Keate, and Charles Aston Key. But the author appears to have suffered from doubts and premonitions; all his testimonials are dated 1837, two years before the publication of his book.

The "*Batts*" may annoy, but profit little by their feverish flutterings; the "*Owls*" are wiser. One may fancy that Richard of Holborn may have drawn from the public a fair measure of the balm that he sought. As he may have hoped, his great work has for nearly fifty years been ascribed, in one important medical bibliography at least, to another Richard Bright whose name does not appear in the book.

But the "*Bats*" and the "*Owls*" failed to disturb Bright, who seems to have gone his way unperturbed, notwithstanding what old Mather called "the unregardable allatratations" of his adversaries.¹

¹ Bright's equanimity appears to have been remarkable. One Holloway, an advertising quack, announced in print that Bright had recommended his treatment, and the *Lancet*, scandalized, demanded a denial. Bright ignored it all, telling his friends that the advertisement was beneath his notice. Bright was probably wise, for at Holloway's elbow stood none other than our old friend Richard of Holborn.

Bright had enjoyed the privilege of his position at Guy's for nearly twenty years. He had made the most of his opportunities, and had observed keenly and recorded accurately and conscientiously that which he had observed. That "chastened power" of generalization, and the "cautious habit of reasoning upon facts" which he had urged upon his students had enabled him greatly to enrich medical literature. In 1843 he was seriously ill, and at the early age of four-and-fifty he retired from the hospital positions of which he had made such good use. But the last use that he made of his service at Guy's was notable. In the spring of 1842 he obtained the permission of the authorities to set aside for a period of six months two clinical wards of 42 beds in all, with an intermediate room for consultations and the recording of histories, and an adjoining and communicating laboratory for the intensive study of renal disease. Bright refers to the experiment as the first made in England "to turn the ample resources of an hospital to the investigation of a particular disease"

The results of these studies were published in the *Hospital Reports* for 1843 in the names of his chief associates, Barlow and Rees, with a short prefatory note by Bright. The communication, with detailed clinical histories, thorough and accurately recorded physical examinations, careful necropsies, chemical studies of the urine, blood, and body fluids, is a fitting climax to Bright's labours on renal disease, and marks in striking manner the progress which clinical medicine had made in his day. But what is yet more striking and quite characteristic is that these studies, planned, inspired, and directed by Bright, should have been published in the name of his associates who had done the detailed work—that his name should have appeared

only in the preface, in which he scrupulously mentions the names of Barlow's internes and Rees's laboratory assistant.

Bright's remaining years were given to his consulting practice, to travel, and to his many artistic interests. His practice, which had been slow in coming, grew to be large, perhaps the largest in London. The honours that he deserved came to him. He was given the Monthyon prize by the Académie des Sciences of Paris. The degree of D. C. L. was conferred on him by Oxford in 1853. As the years passed by he is said to have interrupted his work by long vacations. He was aware for many years before his death that he had a valvular disease of the heart, but he was not interested in his own ills, and the one colleague who is known to have had an opportunity of placing his stethoscope over his sternum was not allowed another chance.

On the night of December 11th, 1858, Bright was seized with melæna associated with great prostration, dyspnœa, and anginoid pains. He failed to rally, and four days later, just after midnight on December 14th, he died.

One cannot look back on this life of unusual achievement without a sense of warm admiration for the man. Happy in his birth and in the surroundings and conditions of his early life, cultivated "by travel and society," an artist, a linguist, a man of scholarly tastes, Bright made full use of his opportunities. Modest, simple, high-minded, mellowed by the broadening and softening influences of the experience of a practising physician, Bright appears to have been in the true sense of the word a gentleman, possessed of the *μεγαλοψυχία* of Aristotle, one who moved among men, high and low, with courtesy and sympathy and charity. His equanimity, the sober restraint of his language, his

studied avoidance of intemperate or provocative words or acts, excite one's admiration. He seems to have had a rather unusually winning simplicity and purity of character to which his obituary notices bore touching testimony.

He was a great observer. He was not given to hasty speculation. His mind seemed never to wander from nor to anticipate the phenomena on which his attention was fixed. He examined that which was before him with an objectivity which amounted almost to genius. That which he observed he *saw*, he remembered, he appreciated; often he recorded. To him who knows how to observe, who has that which we call "insight," to him truth reveals much that she hides from the many.

A disinterested lover of truth, Bright appears to have been quite oblivious of questions of priority or of personal fame, going out of his way to give credit to his colleagues and to his associates for work done at his suggestion and under his direction. He lost nothing by his generosity. For generosity fame has a sharp and comprehending eye.

One may easily fancy that the reputation which he finally gained as a consultant was justified.

We have gone a long way since the days of Bright. The great advances in the natural sciences and their increasing application to the problems of medicine have revealed to us many secrets of physiology and pathology, and have immensely broadened our knowledge of the causes and nature of disease and of the means by which it may be avoided, recognized, arrested, or healed. A new and scientific therapy based on a broader conception of the functions of the human body, and on the application of sound biological, physical, and chemical principles, is full of promise for the future. The

simple basic methods of physical diagnosis of the day of Laennec and Bright have been greatly augmented. The little clinical laboratory, the child of his fertile mind—with what wonder and delight would Bright have contemplated its offspring today!

Science has contributed much to medicine. But after all how far we are from the day when medicine may be practised by rule of thumb! Science has added greatly to our knowledge of pathology, to the art of diagnosis and of therapy. New and fascinating opportunities for research tempt the student at every turn. The increase of our knowledge and of our technical skill has brought it about that men may devote a whole career to the practice of specialties of surprisingly limited boundaries, specialties which have given rise to a terminology bordering sometimes on the ludicrous. The other day I heard a good fellow solemnly descanting on “the science of sinuology”—the “science,” if you will, of the accessory sinuses of the nose! The problems and procedures which a physician must consider today when consulted by a patient are far more complicated than they were in Bright’s time. But all this new and precious technique supplements, it does not supplant, the fundamental procedures of observation and physical examination of which Laennec and Bright made use. And we must not forget that a thorough training in the indispensable art of physical exploration is as vital as ever, that the necessary period of experience spent at the bedside of the patient has not been shortened by a day. Familiarity with the symptoms of disease, an ability to recognize and interpret these symptoms—which may be obtained only by experience—are among the first requisites for him who would be a competent physician. No amount of learning can supply this familiarity, this ability. The intel-

ligent interpretation of symptoms is the first step. He who has not seen the development and progress of disease, he who has not followed the affected subject to his recovery or to his death, he who has not seen his diagnosis confirmed again and again after death, will never attain this familiarity; he will be unfit to practise, much less to teach the art of medicine. The art of diagnosis may not be acquired by the contemplation of radiograms, by the perusal of reports of studies of tissues, body fluids, secreta and excreta, or by the critical consideration of data accumulated by others. As Sergeant has well said, one sense may not be substituted for another; the senses are complementary; he who neglects one at the expense of another narrows his horizon.

Laennec and Bright worked with simple tools. Medicine would be poor had we today no more. But they worked passing well. They laid foundations on which much has been built; the foundations that they laid were sound.

Between the histories of these two men the contrasts are great. In one respect their lives were similar. Each had a good general and classical education; both were men of wide interests. This is generally true of the greatest figures in medicine. Bright showed early an instinctive interest in the works of Nature, in geology, in botany, in zoology. His was the eye of the naturalist. To most men—indeed to every man with scholarly tastes—life would be unendurable did it not hold for him some engrossing task to accomplish which he is striving in the midst of the routine of existence, some problem he seeks to solve, some investigation he is endeavouring to carry out. With many a man life slips by, and, in the end, it may seem to have been a vain

effort, but after all it was that effort, that hope, that carried him on, that brought out the best that was in him.

Without this spirit of inquiry no one can go far. Spurred by it, the superior man may find the school of practice less alluring perhaps at the outset than the opportunity to devote himself uninterruptedly to the study of some concrete scientific problem; but he will find it no less broadening and no less repaying in the end, and quite as full today as it was in the days of Laennec and Bright of opportunities for enduring contributions to science and to humanity.

This spirit Bright carried with him throughout his career. He could not have been called a brilliant man. He made at first no great impression on those about him. But brilliancy is often ephemeral; very often brilliancy spells instability. Bright showed a steadfastness of purpose and an equanimity that are rarer and more precious than mere brilliancy. He was a simple, straightforward, kindly man, who met life with charity and tolerance and serenity; a conscientious, painstaking physician; a patient, careful, modest, scrupulous, time-taking observer. He became a wise and a learned man, and the fruits of his labours assure him a well merited and honourable immortality.

Bright was buried in Kensal Green. There is a tablet dedicated to his memory in St. James's Church in Piccadilly. The inscription ends with these words:

“ HE CONTRIBUTED TO MEDICAL SCIENCE MANY DISCOVERIES
AND WORKS OF GREAT VALUE
AND DIED WHILE IN THE FULL PRACTICE OF HIS PROFESSION
AFTER A LIFE OF WARM AFFECTION
UNSULLIED PURITY AND GREAT USEFULNESS.”

XXII

DUTIES AND PROBLEMS OF THE PHYSICIAN ¹

'Tis with unfeigned pride and gratitude that I appear before you today, in a position of honour which I had never expected to occupy. But more than this 'tis a particular pleasure to meet in this city and in this part of the country. A New Englander by birth, a Southerner by adoption and by ties which have made the history and traditions and people of the South very dear to me, the West had always charmed me, but from afar. My real introduction to the West dates from the last meeting of this association in Minneapolis. At that time I had crossed the Mississippi but once. Since then I have reformed. In not one of the last twelve years have I missed a glimpse of Western mountain and plain, and the homesickness that I feel so often during the winter for the broad, free spaces, for the rushing rivers and clear lakes, for the jack pine and the quaking asp and the sage brush, the rosy gleam of the peak at sunrise and the purple glow of the mountain-side at sunset, and that crystal air through which the sun shines, ever warm, and the moon and the stars become one's neighbours—the homesickness that I feel for all this now, and for a people who speak my language, has made me ask more than once: "Where is home after all?" I remember especially that meeting of June, 1913, which, indeed, seems in a past existence—for with me, as with many, I fancy, the war

¹ President's address before the American Medical Association at the Seventy-Ninth Annual Session, 12, June, 1928. J. Am. Med. Ass., Chicago, 1928, XC, 1917-1923.

cut life in two—and your cordial and charming greeting. It is good to be with you again.

It has been customary for the President in his inaugural address to touch on some of the many problems which confront this association, which represents what we sometimes speak of as “the organized profession of medicine.”

For what are we organized? The objects of the association are admirably set forth in the Constitution: “. . . . to promote the science and art of medicine and the betterment of public health”—a brief and comprehensive statement. We are associated to seek further knowledge that we may gain power individually and collectively to prevent and heal disease. Our primary object is not one of self-interest. We are members of a learned profession the objects of which are altruistic, a profession of which we are, or should be, proud. We are members of a profession, not a trade. Not that a trade or a business is unworthy. There are few trades, few branches of business, into which the human element may not enter, in which an artistic or indeed a scientific side may not be found. There is no narrower, no more intemperate attitude than that of him who assumes that the career of the business man or of the banker or of him whose life is of necessity largely given to buying and selling must inevitably lead to a narrow and sordid outlook. Far from it. But the member of a learned profession or the artist in the broadest sense of the word, which may well include the artisan in many instances, is peculiarly fortunate in that his daily activities are such as to lead him away from mere considerations of gain.

The difference between a profession or an art and a trade lies in the essential circumstance that in trade the immediate object is financial success, while in a

learned profession the constant daily preoccupation of the student or practitioner, whether he be a lawyer, engineer, chemist or physician, is the acquisition of learning or skill, the promotion of the science or the perfection of the art to which he devotes himself. The common objects of the law and of medicine are to aid and to protect mankind. True physicians and lawyers are always conscious of this. Some, as in every profession, forget it. Prompted by the acts of such men, critics often accuse our profession and our association of self-interest and commercial aims. Alas, it is the acts and the words of the transgressor and the evil doer that are good "copy" in the language of the day, and too often, and quite naturally, 'tis the scheming and conscienceless who gain publicity and who occupy the public eye. But remember, it is the exceptional that constitutes news. If it were not exceptional it would not be news. 'Tis not on the front page of the newspaper or in the works of the popular novelist¹ that one looks for comment on the characteristic virtues of a people or a calling, or for observations on the circumstance that most men, on the whole, are honest and law-abiding. In these days of easy publicity too many of us carelessly generalize and judge the individual or the calling by its black sheep. We physicians are no exception. I am not likely to forget the response given by a large assembly of physicians in London when the Lord Chief Justice, in a graceful address, spoke of the fundamental likeness between the profession of law and that of medicine, each humane and devoted to the alleviation of the ills of mankind. The audience laughed. I was mortified and pained. My father was a lawyer who loved his profession as we should love

¹ Souday, Paul: Académie française: Prix littéraires et prix de vertu, *Le Temps*, Paris, 24, Nov., 1927, p. 3.

ours; to whom law was a science as well as an art; who never forgot that its great aim was to promote justice and fair dealing among men. We, who, like others, complain that we are sometimes misjudged, are we not, after all, very like our neighbours?

He who attempts to estimate the success of a physician or a lawyer by the consideration of "what he makes" is as far from understanding the significance of medicine or law as is he removed from any true conception of art whose main interest in a lovely building or monument or painting is in its cost or its financial value. An individual, speaking of a lawyer, once said to me: "Why, X is a \$40,000 man." What did that tell me? Of the lawyer, practically nothing; of the speaker much, for it gave me a very clear picture of his crude, un-understanding and sordid point of view. The physician or the lawyer or the painter or the chemist or indeed the carpenter, the cabinet maker or the locksmith has to earn his living and educate his children and see to it that he is not a burden to others in his old age. This is a necessary care in his existence. But if his main interest be not in his profession or his art—if financial gain be his sole object—he will accomplish little. He will not contribute toward our common ideals and his name will soon be forgotten.

Important and necessary though financial considerations may be to most physicians, happily the main aims and objects of the doctor are the humanitarian and scientific aspects of his work; it is a privilege today to be a physician. There are few greater opportunities in life for immediate service to one's fellow and for that intimate association with men and women which cultivates human charity and sympathy and understanding and tolerance, one of the most beautiful of words, and temperance, one of the most abused. He

who can practise medicine for a lifetime without becoming more charitable, more tolerant and more temperate has missed his calling.

We, as physicians, need not complain that the results of such a life, when they are what they should be, are misapprehended or unappreciated by the public even though they be not the subject of daily comment on the front page of the newspaper. It behooves us rather to look to it that we deserve and preserve the enviable reputation that is ours. Do you remember the last scene in "The Enemy of the People," one of the strongest plays of that great student of human nature the centenary of whose birth the world celebrates this year, in almost every one of whose characters, good or bad, we may recognize qualities which are our own? A poignant story, that, of what has happened often all over the world—nowhere more often than here in America. The little town, at considerable expense, is establishing a sanatorium in its suburbs. It is to be a famous watering place. The work is almost done when the doctor discovers that the water supply is gravely contaminated. When sure of his ground, he loses no time in communicating his information to the city council, which is shocked and grateful. They investigate and find that the measures necessary to relieve the situation are financially almost prohibitive. In their distress they begin to question the soundness of the doctor's information. He is blamed for acting too hastily. The matter becomes one of public comment and argument by the ignorant and unqualified, whose self-interest subconsciously changes the question from one of truth and reason to one of prejudice and sentiment. There is discussion and recrimination. Accused of sensationalism and disloyalty the doctor is discredited, abandoned by his patients, and ostracized socially;

he is "the enemy of the people." At the end two men stand alone, hand in hand, facing an angry and a hostile community: the sea captain who knows the world; the doctor who knows men.

Besides this invaluable human experience medicine offers absorbing opportunity for study and investigation—the chance to explain the unexplained, to add something to our store of knowledge, to give us new arms with which to prevent and combat disease. No matter what his sphere or his position in the profession, opportunities for study are always before the physician—nay, with improved methods the problems have increased by the bedside, in consulting room, in laboratory.

Fully to exercise that personal influence which he should exercise on his patients and on their families, the physician should acquire and is acquiring, more and more, a basic education sufficient to permit him to move easily among his fellows, an education which should enable him to appreciate that which is fine in life, in art and in literature. To comprehend or superintend or apply many valuable methods of investigation or treatment he must have acquired a knowledge of many of the natural sciences far above that of the practitioner of a generation or two ago. The cultivation of the doctor in relation to the community in which he lives is steadily improving. This has brought it about that the position of the physician in society has risen correspondingly in regions where one or two hundred years ago his social status was, to say the least, modest. More and more, physicians, as the years go by, stand out as notable figures in the community—notable not only for their contributions to the science and art of medicine but for their general human accomplishments and influence—men, to speak only of our own countrymen and

of those who are gone—men like Holmes, Mitchell, Osler and him¹ who died but yesterday, who went so far and might have gone so much farther. There are few communities in this country, large or small, in which one may not, on the whole, be proud of the position occupied by the doctor.

This association, the object of which is “to promote the science and art of medicine and the betterment of the public health,” has brought together more than 94,000 of the physicians in the United States, of whom 85 per cent or more receive its journal. In cities and rural communities the local society provides opportunity for that mutual understanding and harmony which can be brought about only by acquaintance. Through the libraries which have sprung up in many centres, and through local, state and national scientific meetings, the Association has furthered the spread of medical knowledge and the exchange of experience between its members.

Through our admirable journal and the various special monthly periodicals we are putting forth a mass of medical information of great value for the profession, and through *Hygeia* and the activities of the Bureau of Health and Public Instruction, for the public. By wise organization we have made our central library more accessible to our members. We are laying the basis for a museum by the preservation of the more important material from our annual scientific exhibit, which of recent years has become so important.

The fine bibliographical work of the *Quarterly Cumulative Index* has led to its union with the *Index Medicus*, so that, with the generous aid of the Carnegie Institution, the *Quarterly Cumulative Index Medicus*,

¹ Francis W. Peabody.

the recognized standard medical bibliography of the world, is today edited by our association in cooperation with the corps of the Army Medical Library in Washington. This is a great and highly honourable achievement.

The work of the Council on Pharmacy and Chemistry and its laboratory has been beyond praise and its investigations and reports on the therapeutic worth of new chemical and biological products, together with its other publications, are of practical and scientific value to the medical profession not only of America but of the world. Our women's auxiliaries are valuable agencies in the efforts to preserve the public health.

These are but a few of the activities of this association, which, in every way, has manifested its desire to cooperate and to lend its assistance in the coordination of those ever increasing public and private movements which relate to the promotion "of the science and art of medicine and the betterment of the public health."

Problems related directly or closely to medicine, the physician, his education, his distribution in the community, the prevention of disease, the furtherance of medical research, questions of public health, local, national, international, occupy a position in the public mind today such as they have never occupied before. With some of these this association has been directly and honourably associated.

Let us touch briefly on some of the questions with regard to which there has been or is active discussion and difference of opinion in and out of our profession and our association.

Questions relating to medical education have been discussed among us with peculiar vigour for the past quarter of a century. It is six and twenty years since a committee on medical education was appointed by

the President of this association. At its head was Arthur Bevan. Twenty-four years ago the Council on Medical Education was appointed as the result of the recommendation of this committee. Through the faithful and courageous action of the council led by Bevan, wisely supported by Simmons, a great revolution has taken place. Scores of improperly equipped institutions have gone out of existence. The standards of preliminary education for physicians have been materially raised and existing schools have improved their curricula until today the opportunities for medical education in America, fundamental and post-graduate, are second to none. Few realize the unremitting labour that the work of this council has required and still requires. So accurate and so notable have been its surveys that more and more has been put upon it until, today, it is the repository for information not only as to medical schools but as to hospitals and schools for nurses throughout the country. The medical profession and the public in America should never forget what they owe to Bevan and Simmons and the indefatigable secretary of this committee, Dr. Colwell. The rapidity with which this revolution in medical education has taken place, the efforts to raise the level of the character and attainments of the doctor, have been accompanied by active discussion and by interesting and valuable experiment.

In the course of this discussion, even the work of the Council on Medical Education and Hospitals, or at least some of its results, have been criticized and sometimes rather sharply attacked. Despite the great improvements in medical education which have followed the work of the Council there has been undoubtedly a tendency to over-standardize the curricula of the medical schools of the country. Some states have

erred in excessive and unduly specific demands on those applying for a licence to practise. There have been those who feared, and who fear, that through exaggerated attempts at standardization there is danger of killing that independence and initiative in serious institutions of learning without which normal progress is impossible. Rightly or wrongly, others have insisted and continue to insist that the requirements for admission to schools of medicine have been so rigidly regulated that valuable men are being lost to the medical profession. No doubt some good men have been lost, but from how many ill fitted has the public been spared?

Yet others regret the loss of teaching opportunities for some excellent instructors formerly associated with proprietary schools which have disappeared, an objection which is answered to a certain extent by the opportunities offered for post-graduate instruction to internes and, I think, to a greater extent, by the realization that the best post-graduate opportunities are always to be found in assisting eminent practitioners or students.

Recently we have met with rather severe criticism in the delightful, although somewhat acrid, address of Sir Andrew Macphail,¹ who bitterly complains that the raising of our standards of admission to schools of medicine is flooding some of the institutions of a sister country with undesirable men. To which one can only reply that we are truly very sorry. We should be only too happy to deliver him from the plague of locusts from which we have been delivered ourselves. We did not mean to turn the cloud in his direction. But would he ask us to take them back?

The admirable report of Abraham Flexner on the medical schools of America was followed by manifesta-

¹ Macphail, Andrew: *American Methods in Medical Education*, *Brit. M. J.*, 1927, II, 373-380.

tions of special and munificent interest in problems of medical education on the part primarily of foundations which had already contributed open-handedly toward medical research and toward the elucidation of questions relating to the public health, notably those organizations which we owe to the generosity and vision of the Rockefellers. As a result of all this not only have the schools of medicine in this country become more and more children of its universities but academic methods and standards have been brought into medical teaching to a degree that would have seemed incredible but a few years ago. Interesting experiments have been carried out in the management of clinical departments resulting in better direction and organization by a responsible head so well provided for financially that he is more able to give the greater part of his time to university work and to choosing his clinical and laboratory assistants on the basis of merit alone. Moreover, in the better schools, adequate laboratories with suitable endowment have been provided for the clinical services, and through more generous salaries the opportunity has been given as never before to young men of promise to spend five, ten or fifteen years after their graduation in an active medical unit acquiring clinical experience while devoting themselves at the same time to the study of special problems. These laboratories have been an immense blessing to the university, to the hospital and to its whole staff, affording to the clinician opportunities for investigation which had never been his before—opportunities which in many instances have been seized on with avidity. But with all these advances and advantages there have been associated circumstances which have provoked active criticism—criticism which has been directed largely at certain details of organization of some of the earlier of these university clinics.

Somehow or other this effort to place clinical divisions on a fuller university basis has come to be referred to as the "full-time plan," a deplorable misnomer against which I have never ceased to protest. This very expression has helped to fasten on the public certain false ideas which have become strangely prevalent and have given rise to heated discussion.

I will merely refer to three of the most important of these misconceptions; namely, that in some schools an understanding exists that the professor may not engage in private consultations. I know of no such school.

Secondly, that the understanding existing in some clinics that the receipts of the professor from his private consultations shall be turned into the budget of his department is a *vital principle* rather than an experimental *detail* of the plan of organization of the clinic. This matter I¹ have referred to often, first, publicly, in my address as President of the Congress of American Physicians and Surgeons in 1916.

The third and most important is the false conception that the ultimate ideal of the university school of medicine is to place clinical teaching wholly in the hands of university professors and gradually to exclude the practitioner from hospital and school. I need not say that such ideas could hardly enter into the mind of one experienced in medical teaching. Nor did they, I think, enter into the heads of those who first discussed the experiment. The sole object of these efforts has been to free, not to restrict, the professor; to make it possible through adequate salary for him to devote the time that he will to his clinic and his university work, and to

¹ Thayer, W. S.: Teaching and Practice. Science, N. S., 1916, XLIII, 691-709. See p. 181.

afford the department an endowment suitable for the maintenance of the subsidiary divisions with their laboratories, and for the salaries of those who may preside over these laboratories, while doing their share of the teaching and acquiring that invaluable experience best afforded by a service in a large and active clinic.

There has been nothing new in the ideals or revolutionary in the methods employed, which have followed the natural evolution of the trend of the last fifty years. The misunderstandings have arisen, I think, largely because in some schools the attempt has been made to establish a university clinic in the absence of the first fundamental necessity; namely, a hospital of size sufficient to provide adequate material or to allow the professor properly to utilize his clinical staff. This has been, in my opinion, an unfortunate mistake which has worked hardship on university and clinical instructors as well as on the students. It has been especially unfortunate in that it has confirmed in the minds of critics a false conception of our ideals.

Whatever criticism may be justified of some details of conception and of administration, the effort to place the clinical departments of our schools of medicine on a fuller university basis has been productive of great good. For a discussion of some of the phases of this question let me refer you to the admirable words of Francis Peabody,¹ in a recent issue of this journal.

Other problems widely discussed today, and closely related to medical education, are those concerning the training of nurses.

There is a strong feeling in many of the better schools of medicine that we have been trying to crowd too much

¹ Peabody, F. W.: *The Soul of the Clinic*, J. A. M. A., 1928, XC, 1193.

into a four years' course. And here let me say that I wish I might live to see the day when such elementary methods as a prescribed four years' course had disappeared from American medical education; when our schools were so organized that a student of medicine might be treated as a man rather than as a schoolboy. More and more we are realizing that our schools should give a thorough training in the essential foundations on which medicine must be practised, instruction which must include a considerable amount of practical experience in ward, out-patient department, laboratory and operating room, while offering opportunities later for special studies for advanced men. The foundations must be good. A man must learn the basic principles; he must have practical training in the science and art of diagnosis and therapy and the principles of surgery, and must gain a familiarity in the use of the common instruments of precision that he must employ by bedside, in consulting room and in laboratory. The medical school is not the place for training of specialists, nor can one emerge from a school of medicine a skilled surgeon. The specialist who has not had a good basic medical training is a danger to society. Too early specialization is one of the great faults of modern American education.

Now it is a curious phenomenon that, as physicians are seeking more and more to abandon classroom for the ward and the laboratory, those engaged in the training of nurses are tending to give more hours to the classroom and to complain that too much time is given to practical work in the wards, and this in connexion with a training in which the practical side is of especial importance. One hesitates too hastily to criticize, but I wonder whether our friends interested in nursing education may not be headed in the wrong

direction? I wonder whether, in the worthy effort to make a nurse's education so complete as possible, they are not attempting to crowd into the years which should be given to their fundamental training subjects which are analogous to the medical specialties as well as other desirable but not necessary knowledge? I wonder, for instance, whether it is wise or prudent to attempt to give the nurse, in her fundamental course, a training in public health nursing and social service. And, again, is not the elaborate teaching of the history of nursing which is insisted on in some schools a luxury rather than a necessity? Are they not making perhaps the same error that we are now trying to correct in the teaching of medicine? Are they not committing that fault which is commonest in all our American education, medical and non-medical; namely, the attempt to give a smattering of many things at the expense of the foundations?

More or less contemporaneously with the increased interest in medical research and medical education, in the improvement of schools of medicine, in the establishment within and without universities and hospitals, of institutions offering special opportunities for investigation, there has developed a widespread and growing interest in the public health and in the prevention of disease. Among the first of the results of this interest were the efforts directed against tuberculosis, which have accomplished so much. Great philanthropic organizations working wisely through local, state, national and international agencies, from some of which, alas, short-sighted political action has held us apart as a nation, are bringing the city, the state, the nation and the world together as never before in concerted and cooperative movements directed toward the study of the physical ills of mankind and their prevention. I

doubt whether there has ever been a period when the interest of the public has been so directly centred on so many subjects and problems with which we as physicians are closely concerned. In these problems, so far as they tend "to promote the science and art of medicine and the betterment of the public health," we, as an organization, are necessarily interested.

With the advances of the last fifteen years in our knowledge of infectious disease, which have revealed invaluable prophylactic and therapeutic possibilities, the duty of government to occupy itself with the public health has been generally recognized. In the larger centres of population, boards of health occupy a position of importance and responsibility undreamed of in the past. The necessity of registration of disease, of inspection, of disinfection, of prophylactic vaccination, has resulted in the delegation to such boards of powers which, only a few years ago, one would have fancied scarcely possible in a republic. The love of personal liberty, instinctive in the English-speaking, rebels always against that which sometimes seems meddlesome control. It would be infinitely more agreeable if we could live in the wilderness where there were no considerations of government or "politics"—but "politics," which mean government, are, alas, necessary in a populated country. They are the ransom which we pay for a greater good.¹ Every larger centre of population has now its city laboratory in which necessary diagnostic assistance is given to practitioners in the care of their needy patients. Through visiting physicians and nurses the city is protecting its school children from a prophylactic standpoint, and the medical profession and the public are seeking more efficiently

¹ Souday, Paul: *Le Temps*, 9, Feb., 1928.

to provide for the care and the sanitary education of the poor. Social service departments in hospitals often cooperate with city departments of health and sometimes with those schools of hygiene which have been organized within later years for the better training of administrators and students of subjects relating to sanitation.

In many regions, lay public health organizations are arising which seek on the one hand to cooperate with city and state departments of health or, on the other, to guard them, improve them and remove them from unhealthy political influence.

The philanthropic public, conscious of what has been and may be accomplished by wisely carried out sanitary measures in the large centres of population, has begun to turn its attention to rural communities. Several organizations interested in the improvement of the public health are seeking through cooperation with county boards of health and with the local medical profession to establish medical centres analogous to those existing in larger communities, with laboratories, district nurses and sanitary demonstrations which may furnish to profession and public alike the advantages which the city enjoys, in the hope that community, county or state may see fit later to contribute suitable funds to their support.

Other lay organizations have conducted an active propaganda setting forth the advantages of periodical physical examinations. Many large newspapers, indeed, have their "health column," in which advice, wise or unwise, is daily proffered to a public increasingly inquisitive as to such matters.

Great changes have come over life and society within the memory of many of us who are now living. Mechanical devices of all sorts resulting in mass pro-

duction to an ever increasing degree, great industrial development leading to associations of employers and employed, and all manner of cooperative procedures have led to conditions in which considerations of the individual have been more and more sunk in consideration of the masses. The day of the skilled artisan seems almost to be disappearing.

At the same time great changes have come into medical practice through the advances in our knowledge and the spread of specialization. That which constituted a reasonably thorough physical examination when I was a student was a simple affair. Today it may be a long and time-taking procedure in the course of which one is obliged to seek information through a variety of methods of study available only by reference to colleagues with well equipped laboratories or trained in special methods. The amount of time that a physician must give to the study of his patient in order to satisfy himself is surprisingly greater than it was a few years ago. The expense demanded to secure adequate medical attention has greatly increased for the public. The expense of giving adequate and conscientious attention has likewise increased for the physician. The question as to how adequate medical attention may be given to the public at figures which it can reasonably afford, the question as to how the physician in these days may support himself at the same time that he satisfies himself morally by practice in regions in which the necessary laboratory and special assistance is not at hand, are questions discussed everywhere by the physician and by the public. The tendency toward that which is sometimes spoken of as group practice is unquestionably growing, sometimes wisely, too often unwisely. The introduction of so-called pay clinics in hospitals where groups of physicians cooperate that

they may afford to those in moderate circumstances adequate attention at minimal cost is becoming more common. Great industrial combinations are beginning to appreciate the advantages of systematic provision on a large scale for the preservation of the health of their employees. In some cities they are seeking to cooperate not only with the local sanitary boards but often with the schools of hygiene in the establishment of better sanitary conditions in factories and stores, and to one school with which I am familiar, more than one large corporation has given generous support. Such concerns, all over the country, are employing physicians in increasing numbers for the care of their employees, and trained sanitarians for the general supervision of the public health of their organizations.

There can, it seems to me, be no doubt that the close personal association between physician and patient, the human influence, is in many ways the most vital and important element in the practice of medicine. Every serious physician recognizes this. Every serious physician realizes that, excepting in the rarer emergencies, his greater work lies in the exercise of this human influence—in his ability to lift and to encourage his doubting and fearing patient; to put sound ideas into his mind; to teach him how to live, to discover and to teach him how to avoid those daily influences that are breaking him down. And yet the tendency in medicine has been so definitely toward specialization that the opportunity for the exercise of this sort of influence seems to be diminishing. But in like manner the tendency in industry and in government and in human life in a general way has been toward combination, cooperation and collective work in which the individual is more and more lost sight of. In Germany and in England and, but yesterday, in France, statutes pro-

viding for old age and a certain measure of health insurance have been adopted by government. All over the world such measures are being discussed. Health insurance is already practised by some large industrial organizations in this country.

These are but a few of the problems which meet us as individual physicians and members of the American Medical Association. How are they to be solved? What effect are these changes which are occurring in life going to have on medical practice and on medical ideals? What are our duties as individuals and as members of this association? These are questions that no one of us can answer at the minute. I shall not attempt to answer them. Time alone will settle them. On the other hand, I wish sincerely to say a word or two as to the general attitude which seems to me becoming to us as individuals and members of a learned and humane profession. Certain fundamental truths we should remember.

Our main functions as physicians are to care individually for our patients, to treat them when ill and to give them such advice that they may preserve their good health. These are our first and most obvious duties. But equally important is our duty to prevent the spread of disease from our patients to others within the household or outside; such duties, for instance, as may be ours in the care of the excreta, the utensils and the fomites in a case of typhoid fever; this is an equally obvious duty to the family and to the public at large. Again, it is our duty to cooperate in every respect with local boards of health in the early reporting of registrable disease and through thorough and scrupulous attention to all prophylactic measures. These, then, are our immediate duties. With *Candide* let us cultivate our garden.

But there are other duties which are ours with regard to the public health which we share with the public, for it is not within our power to organize and direct and administer on our responsibility those governmental measures which relate to public health with regard to which it is the right and the duty of the general public to concern itself. In the care of the public health the physician, individually and collectively has heavy responsibilities. Just as in matters of legislation it is the lawyer who is the specially qualified adviser, on whom special responsibilities in connexion with the framing of laws should fall, so in matters of public health it is the physician on whom the burden of special competence, and therefore special responsibility, lies. This special responsibility we should never forget. In the first place, we should use every means in our power to maintain the character of our public health officials. We should use our influence in every way to bring it about that only trained and experienced sanitarians are placed at the heads of municipal, county or state departments of health.

Every physician who has had a decent education knows that the preparation for such a position demands special training and equipment and experience. It is the duty of the local medical profession and of the local branches of this association to see to it that only qualified men occupy these positions of heavy responsibility. This is a subject of which I¹ have spoken in public more than once in the last twenty-five years and on which I have long insisted in my annual talks on medical ethics to my students.

¹ Thayer, W. S.: On Some Public Duties of the Physician, Maryland M. J., 1905, XLVIII, 431. On Some Relations of the Physician to the Public: Duties and Opportunities, J. A. M. A., 1908, L, 1877.

Conditions have changed for the better but we are still treated too often to the humiliating spectacle of a mayor who appoints his family physician or some friend who has tired of practice to the position of Commissioner of Health; and to the more humiliating spectacle of the acceptance of this responsibility by the thoughtless appointee, who too often is a member of this association. It is our duty to impress on the public that sanitation is a very definite specialty of medicine, one burdened with peculiarly heavy responsibilities, which no physician without a special training is qualified to undertake as an expert. The commissioner of public health should be chosen with care as great as that exercised in the selection of a university professor. We physicians and this association in all its branches should seek, in public and in private, to bring it about that such care is exercised.

Our relations with the public may be, and often are, delicate and sometimes trying. They are not dissimilar to our relations with the friends and the family of our patients, relations which call constantly on the tact, the good judgement, the charity, the tolerance and the temperance of the physician. But on our tactful guidance of and cooperation with the friends and family of the patient depend often the life and the happiness of many individuals. The patient and his family are free agents and have a perfect right to change their physician at any moment.

In the broader matters of public health the public has the same right, after seeking what advice it will, to take just what action it chooses. It is our privilege to be in a position where individually and collectively we are especially qualified to advise the public in these matters. This privilege implies a heavy responsibility. We must seek to direct the public toward sane and

efficient action. But we must remember that neither as individuals nor as an association have we the right to demand that the public accept our views.

As an association we are placed in a peculiarly delicate position. Do what we will we shall be accused by those who disagree with us of selfishness, of attempting to protect our own personal interests, of using our power as an organization to oppress others. We must be exceedingly careful to see that such reproaches are wholly unjustified. We must not expect that we can go our way without adapting ourselves to circumstances beyond our immediate control. A well balanced life is one long compromise. We must compromise as best we can with existing conditions while we seek to direct events toward that which we think the wisest course. We cannot stop the general tendencies of the day by violence or heated opposition. The late King Canute was not successful in controlling the rising tide. The rarest and most valuable of human qualities is the ability to square one's ideals with the realities of existence. We must as a profession and as an association make this effort. We must deal with conditions and not with words. Happily we can point to the objects of our association—"to promote the science and art of medicine and the betterment of public health"—and to a past of dignity and temperance in an intemperate world. If we are right we shall make ourselves heard.

Ladies and gentlemen: In this life there are always those, often superior men and women, who are so occupied in their special interests and pursuits that they lose touch with the larger activities of life, scientific and political. Such good people are very likely, subconsciously, to manifest a certain impatience with public movements or discussions. From the privacy of their peaceful alcove they are prone to regard with suspicion

and distrust those who enter into public life. There are such men in our own profession who, rarely departing from the quiet round of their existence, look on those who direct the functions of this body with something of the suspicion that newspapers foster in the public toward our legislative representatives. I wish that some of these men might have the opportunity that has been given to me to see the working of the central organization of this association, its councils and its boards. They could only feel, as do I, a sense of the deepest admiration for the character and devotion and idealism of those men who represent us. And they could not fail to marvel at the magnitude and the beneficence of the work they have accomplished and are accomplishing.

XXIII

JOHN HOWLAND ¹

There are certain comrades of whom we like to say: "He was a man"—a simple and rather obvious comment which carries with it a deep meaning. Such a one was John Howland. As we speak his name there comes to us a mental picture of strength, courage, vigour, energy; a physical frame which was a finely adjusted machine, sure, accurate, graceful, unfailing in its movements; a clear, bright, frank, alert, penetrating eye; a mind as keen and agile, as accurate and well adjusted as the frame in which it was housed; and with it all, a character simple, clean, pure, wholesome, strong.

He was a man and a leader. He could not have failed to be a leader wherever he might have been thrown in life. Of the best New England ancestry, of which he was proud, the son of an honoured and distinguished father who, outside of his legal eminence, was known throughout the country for his brilliancy and his peculiar and unusual personal charm, it was through his physical activities that Howland first distinguished himself. In his college life he became one of the ablest tennis players in the country. So good a player did he become and so devoted was he to the game, that when he chose medicine as his mistress he realized that he must beware of a tempter who might one day put his loyalty to too great a strain; and, as

¹ Remarks at the unveiling of the plaque by Manship in memory of John Howland. From Bulletin of The Johns Hopkins Hospital, 1930, XLVI, 155-158.

Bayle, nearly one hundred years before, tore himself from his muse, so Howland abandoned tennis. But to give himself that exercise which his physical frame demanded, he took up golf to which he gave his Saturday afternoons and Sundays. And straightway it appeared that, had he given himself whole-heartedly to golf, he might have occupied an equally distinguished position among adepts.

From the outset he was a marked man in whatever he did. In New York, in St. Louis, in Baltimore he was a commanding figure. He was a man. In his work and in his play he was fired by that enthusiasm which is the surest evidence of youth and the eternal antidote of age. His vigour, the intensity of his emotions, the fervour with which he pursued his ideals, might easily have made him a fanatic, but one of his distinguishing attributes was that rare balance of mind and character which enabled him to adapt his enthusiasm and his ideals to the actualities of life. An ardent student, a tireless investigator whose notable contributions to science are too familiar to need mention, he was equally devoted to the cultivation of his art. He was wise in discovering the relations and in applying the results of his studies to the practice of his profession. He was an able and inspiring clinician. He realized that to be a clinician he must live among his patients; he realized that the art of practice is learned at the bedside. With all his learning and his experience, with his active, inquiring mind constantly leading him into new fields of research, he had a rare measure of practical common sense. He sought naturally the simple, obvious way of doing things, the simple, natural explanation of the question before him. In approaching clinical problems he employed first his unaided senses, his eyes, his ears, his nose, his fingers, before turning to the

more elaborate mechanical, physical, chemical and bacteriological methods of study and treatment. He had a deep respect for nature and her ways to which he sought to adapt himself wherever he might.

Of the human side of his profession he never lost sight. He was charming in his relations with children, and to this vigorous, strong, rather rugged man whose smile was irresistible, the frightened, little child turned naturally and fearlessly. Wherever he went, his eyes sought the child. In public places his mind would seem to wander, and then his hand would fall on your arm as he said: "Look at that child. See the deep blue semicircles under its eyes. Poor little thing! It probably sat up until twelve o'clock last night."

The students recognized him as a master; he was a master. His enthusiasm was as catholic as it was contagious. He loved beauty in all its forms, in nature, in art, in literature. The emphasis which he used to put into the word "beautiful" is remembered by all his friends. He loved poetry which, at home, he often read aloud.

I can see him now and hear his exclamations as he looked out, one morning, on the sun glistening on the blue waves and the rosy plumage of a long line of swans as, craning their necks, and looking back at the invaders of their watery realm, they swam slowly away from our approaching boat. I can see him and hear him as he stood one day at his desk looking up at the picture of Pasteur and speaking with deep emotion of the beauty of his character and his career.

His knowledge of history and his reverence for the great figures of the past were profound. He had longed to wander among the scenes and monuments of ancient Greece. In the end that great joy was granted him, and three of the fullest and happiest weeks of his life

were spent with her with whom he shared all, by the waters of the blue Aegean, where he drank to the full the inspiration of the beauty that surrounded him, lost in dreams of a heroic age.

He was a man, and finely adjusted and well controlled as was his body and his mind, there were characteristics and actions of which he was intolerant. With indirectness, pretense, injustice, untruth, pusillanimity he had little patience. Among his friends he gave full vent to his enthusiasm for that which stirred him, and to his indignation and impatience with anything that seemed to him weak and unmanly, mean or unworthy. His simplicity and frankness were charming. Indirection was entirely foreign to his character. He was quite unable to hide his disapproval. The utter blankness of his countenance from which every line disappeared at the mere mention of a name which excited his disapprobation is amusingly familiar to those of us who knew him well. I have known few men so wholly incapable of dissembling. He was a man, and for him who behaved other than as a man he had little consideration.

During his life among us there came days and events which stirred him deeply. His reaction was what one might have expected, the reaction of a strong, just, loyal, high-minded man. When others more fortunate were called to active service, his duty held him largely at his post. This was hard for him to bear. But he did his duty without a murmur, and in every act, in precept and in example, no man was more loyal, no man more gallant than he. "Gallant" indeed, is the adjective that comes to my lips as I think of him.

His learning, his experience, his wisdom, his enthusiasm gathered about him inevitably a group of active and able students. His clinic became the great centre

of productive research inspired and guided by his fertile mind. He was the undisputed leader in his special field. To him all turned.

At the height of his powers, when the future seemed brightest, when the world looked to him for so much, fate mysteriously took him from us. But nothing can take from us the memory of the joyous, strong, manly figure; the fearless, loyal spirit; the gentle heart; the clear, wise brain so full of suggestion and inspiration; and nothing can extinguish the fire of the ideals which he kindled in the hearts of his students and his friends.

Led by one of the most devoted of his disciples, these students, these friends and those to whom he was dearest have wished that some material token of their affection and admiration might adorn the precincts consecrated by his activities. At their behest the cunning hand of a great sculptor has modelled this beautiful plaque which graces the hall so full of memories of him. It is good to think that its beauty, and the sentiments of admiration and respect and love to which it testifies, would have made him happy. It is fitting that his name should be preserved in a work of art which will charm the eyes of generations to come, and tell them who knew him not, of the flame that he kindled, that we would transmit.

XXIV

A VACANT TABLET¹

Mr. President:

You have referred delicately to the circumstance that this is the forty-fifth anniversary of my graduation. The correctness of your historical reference cannot be denied. Your other kind words, however, remind me strongly of the remarks of a worthy woman on the painful occasion of her husband's funeral. In life he had trodden the primrose path. His character had not been exemplary. He had abused his wife. On his death she was forgiving and urged the priest to be gentle with his memory at his funeral. The kindly man outdid himself until, in genuine alarm, the bereaved widow in an undertone whispered: "Hold on, Father! Is there another corpse here?"

The circumstance, however, that this is our forty-fifth anniversary may justify me in saying a word with regard to a question which to some may seem to belong to the past although to me it is still a question of the moment. It refers to a structure very dear to Harvard men—to Memorial Hall which, with all its nineteenth century plaits and flounces, is, in its larger lines, so noble and impressive a structure.

When first I came to Cambridge as a boy of ten, the foundations of Sanders Theatre were yet to be laid, but the main hall and the tower were finished, and the tablets, bearing the names of those whose "aureoled presence" occupied so special a place in the imagina-

¹ Address to the Alumni of Harvard University on Commencement Day, 19, June, 1930.

tion of most New England boys of my age. There was something legendary and sacred to us about those names and the figures that they evoked.

I see them muster in a gleaming row,
With ever-youthful brows that nobler show;
We find in our dull road their shining track;
In every nobler mood
We feel the orient of their spirit glow,
Part of our life's unalterable good,
Of all our saintlier aspiration;
They come transfigured back,
Secure from change in their high-hearted ways,
Beautiful evermore, and with the rays
Of morn on their white Shields of Expectation!

I have never forgotten my first impression of the silence and the dignity of that noble hall, the subdued light filtering through the stained glass, the tablets and the names.

I was born of a family of abolitionists; but from my earliest childhood we were taught never to mention the Civil War outside of the family circle; for there were others like ourselves who had suffered, others of whom we must always think, others whom we must never hurt. And even in my youth as I gazed at those tablets I felt a certain sense of incompleteness and regret that other names might not be there.

Soon after graduation fortune led me toward the South where most of my life has been passed. There, in households like our own, I found on wall and mantle, faded photographs of boys in uniform, surprisingly young, so like those I had known at home. Like, did I say? They were the same faces, the same boys.

In one of the oldest cities of the South at the opening of the war, there was a family of six children, five girls and an only boy, the youngest. As a mere child he en-

tered the Confederate Army. He was a gallant, handsome fellow. Two years later he was found dead on the field of honour; he was but eighteen years old. There was no one to tell the story. A little tablet in the dear old church tells the simple tale of his short life. His father rarely spoke his name in after years.

In the midst of the shambles of Cold Harbor a western volunteer found himself near a wounded Confederate soldier. That there was no hope was clear. Struck by the youth and the unusual charm and beauty of the dying lad, and moved by his suffering, he gave the boy water from his canteen, made him so comfortable as he could, and as he left, asked if there were any last message or commission that he might fulfil. There was but one. He gave his promise and was swallowed up in the battle.

That boy and his name the Union soldier never forgot. All else fled from his memory. Now and again, in after years, whenever he met with that name he wrote asking if, by chance, a relative had lost his life at Cold Harbor—but in vain.

Twenty-one years passed. One day, in 1885, an old man in a southern city received a letter from a stranger in a western state asking if, perchance, a young fellow who had been killed at Cold Harbor was a relative. In answer to his reply came the whole story and his son's last request, a message. It was not long: "Tell my mother that had I another life to give I would still give it for my country."

By the corner of the mantelpiece in my bedroom hangs a little faded photograph; the photograph of a mere boy in the uniform of a Confederate soldier. He was my wife's uncle. There are other faded photographs of days before the war of family groups among whom were visitors—friends from the north, Nortons

and Appletons. That boy was not a graduate of Harvard but my old Horace bears on its title page the same name—that of a cousin of the Class of '49 who answered the same call.

They were the same boys, these, as their comrades here commemorated, of the same race, the same tradition, the same family, alike in their generous emotions, in their devotion to their ideals, in their courage, in their sacrifice. They were companions and mates in their youth. Blind life with its cruel human conflicts divided them. But in the very conflict the unity of the traditions which nourished them and of the spirit which moved them shone more clearly, and their common progeny is today the heart and the hope of our country.

We have a share in the memory of all these boys, a proud and precious possession. Is it not time that we should pay our pious tribute?

Is it not time that we place alongside the tablets which commemorate our fathers and grandfathers, a memorial of those other sons of Harvard who gave their lives as freely and as gallantly to the cause that called them; comrades and mates in their youth, comrades and mates again in the memory of their children?

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