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ONE HUNDRED AND FIFTY YEARS*

From Tallow-dip to Television

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IT would be a neglect of duty and show a want of respect did we not pause, at this halfway mark in our second century, to recall and give praise to our founders. Their story often told, by James Thatcher of Plymouth in 1828, by Samuel Abbott Green in his Centennial Address fifty years ago, by James G. Mumford, that gifted writer who had he lived would have been the proper person to deliver this address today, by our beloved Secretary Walter Burrage in that invaluable source-book published only eight years ago, and still more recently by Henry R. Viets, as this Society's contribution to the Tercentenary Celebration,—the story, I say, though often told can never grow stale from retelling on occasions such as this.

1781

A century and a half goes a long way back in the short history of our country. Another stretch of equal length takes us to the wilderness with its coast-line fringe of scurvy-stricken and stockaded settlements whose establishment we have so recently been celebrating. When a medical student here in the '90's, I once accompanied a friend to Plymouth to take Thanksgiving dinner with his grandmother. This charming old lady, who had lived to see more than eighty such festivals, pointed to the symbolic three dried grains of Indian corn by her plate and remarked that only two people stood between her and the child that was born on the "Mayflower"; for her grandfather had once told her that he knew an aged man who as a youngster had witnessed Peregrine White's funeral.

That was forty years ago and despite this passage of time four persons might still easily relay the same period—even three should they have followed the prescription for longevity recommended by that vigorous centenarian, Edward Augustus Holyoke, the first President of this Society who is surely with us in spirit at this gathering. In his childhood there were persons still alive who had participated in that migration of sturdy and God-fearing Puritans from East Anglia to our shores; and only a hundred years have passed since he, on his one hundredth birthday, dropped his practice in Salem long enough to come here and give this Society his benediction.

To most of us in this audience Armistice Day of 1918 is still a recent memory. Fifty years ago at the time of our centennial celebration the surrender of Lee at Appomattox was an equally vivid episode and those who had then seen military service were still young—almost as young as are today's veterans of the Great War. "There are those here present [said Samuel A. Green in his Centennial Address] who have been obliged to perform severe operations of surgery, in the dark hours of the night, by the faint glimmer of smoky candles and dingy lanterns, on an extemporized table, or perhaps with no table at all." And he goes on to give a long list of the medical officers from Massachusetts, his friends and comrades, who were either killed in action or died during or after the war from illness contracted in the Army.

The real horrors of that prolonged struggle for preservation of the Union were not for Northerners to know, and the devastation of the late war affected another continent than our own. Even so, we favoured ones of the present day have seen enough of the postbellum state of mind to realize how unsettling and disillusionizing is the period of reconstruction during which the generation growing up is at loose ends and the generation suddenly grown old distraught for want of some constructive programme. This has been the inevitable aftermath of any long-drawn-out war both for victor and vanquished though it is not what our school histories are prone to dwell upon.

But these two wars were only four-year conflicts, our distant share in the last of them having been only half of that, whereas over six years of turmoil and uncertainty had already passed and the end was not yet in sight (far less the ratification of peace) when at the instigation of fourteen Boston doctors, on May 11, 1781, an *Act to Incorporate certain Physicians by the*

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name of the Massachusetts Medical Society had its first reading before the Legislature of the Commonwealth.

To be sure, with the evacuation of Boston by the British, the campaign had long since moved out of New England and just now, after that discouraging winter when Washington had managed to hold his ragged, unpaid and nigh mutinous troops together, it was moving from the Carolinas into Virginia. That Cornwallis was soon to be trapped in Yorktown Washington himself could scarcely have foreseen, much less this group of Boston doctors who were probably as war-weary as were people elsewhere. What is more, the prosperous among them, as was natural enough, if not actually out of sympathy with the rebellion were "near" Loyalists, some of them indeed having seen service with the British. So it is all the more remarkable that at such a time and under such circumstances a constructive programme for the betterment of professional conditions in Massachusetts should have been successfully launched.

Who were these men—our fourteen Boston founders—who for the better part of a year had been holding meetings at the Green Dragon Tavern off Union Street and whose corporate number was soon to be increased by the addition of seventeen more, chiefly from other parts of the Commonwealth which then included the District of Maine? Some years ago, I had occasion to seek information regarding the settlement of what was once called Upper Canada which at the close of the Revolution came to be split off from the Province of Quebec. The first governor of this new province was General Simcoe who had been Lord Cornwallis' Chief-of-Staff and a large proportion of the settlers that took up land grants were either retired army officers or those who continue to be referred to across the border as "U. E. [United Empire] Loyalists." And I was told by a Toronto historian that people in the States were encouraged to forget that from Massachusetts to South Carolina most of the prosperous and well-to-do persons in the Colonies at the outbreak of the revolt got back to England if they could or, like Sir William Johnson with his Mohawks, made their way as refugees across the border to settle in Canada.

History is what historians choose to tell us, and the names of the Boston doctors who joined the Tory exodus from these parts to Halifax at the outbreak of the rebellion is unrecorded. They were doubtless the élite of the profession who were often seen at Province House and were well content with the established order of things. We need not be surprised, therefore, to find that of those who remained to found this Society seven were young men from twenty-two to thirty-two years of age, almost all of them having seen active military service, whereas the other seven, all older men, were either acknowledged Loyalists or were known to have had a lukewarm sympathy, to say the least, with the uprising. Even Edward Holyoke was induced by some of the substantial merchants among his Salem patients to sign a political manifesto favourable to the Royal Governor—a step he found it expedient ere long publicly to recant.

The "Tories" were but Conservatives by another name and their satisfaction with things as they stood was natural enough. Well established in practice, the war meant the scattering of their clientele; and such of them as felt obliged for one reason or another to remain and face unpopularity, had no easy time. James Pecker, the oldest of the group, in his fifty-seventh year, had narrowly escaped arrest, and Samuel Danforth only did so by temporarily absenting himself until long after the Evacuation when the intensity of local feeling had quieted down. James Lloyd, who had received first-hand from the two celebrated Williams—Hunter and Smellie—that knowledge of midwifery which made him the leading obstetrician of the colony, had long held the position as Surgeon to the British garrison. With the notable exception of Joseph Warren, most of Lloyd's many pupils inherited his political sentiments and some of them, like John Jeffries, enlisted in the British service. Thomas Kast had been an officer in the British Navy before he turned to medicine and walked the wards at Guy's and St. Thomas's Hospitals; and Charles Jarvis had not only been educated in England but had married into a prominent English family. They had much to give up.

To weld these discordant elements into a common society while the outcome of the war remained uncertain was a genuine accomplishment. Who the ringleaders may have been is now impossible to say; but almost certainly they were the younger men, and from what we know of his subsequent career it is not at all unlikely that John Warren, scarce turned twenty-eight, provided the yeast in the dough. "An artful man," said a contemporary, "certain to get to the windward of us all." After two years in active service he had returned to Boston and been put in charge of a military hospital where, on unclaimed bodies, he soon began giving anatomical lectures to army doctors. What he had to do with the founding of the Humane Society, the Academy of Arts and Sciences, the planning of the Massachusetts General Hospital, and the establishment of an embryo Medical School in Cambridge, beside presiding over this Society for a period of eleven years is well known; but it is less well known that he meanwhile was obliged to provide the wherewithal not only for the upbringing and education of his own seventeen children but of his older brother Joseph's five who had been left fatherless since that eventful day on Bunker Hill. Of such stuff were our founders made.

We easily forget what distances they had to

cover. From Boston Common to Harvard College is now a matter of ten minutes by subway; but John Warren, when the weather was such as to make the water-crossing to Charlestown precarious, was obliged to trek along Boston neck through Roxbury and Brookline a good seven miles to Cambridge to give his anatomical lectures to the Harvard seniors. A pleasant enough walk for a summer's day but in the winter months when college was in session it was a wearisome journey even astride a horse. Still these lectures were worth the labour and time had they done nothing more than turn toward Medicine the thoughts of a young undergraduate listener named Jacob Bigelow of whom we shall soon hear more. Distances, indeed, were then so great that Dr. Holyoke, still in his vigorous middle age, came only once all the way from Salem to preside over our sessions. And when we consider that it was fifty-four hours hard travel by stage to New York over a well-beaten road, there was every reason for our members from far away Berkshire to feel disinclined to pay dues to a Society which chiefly benefited the members from Suffolk. They expostulated about this in vain and finally clamoured for a separate organization.

With its population of some 12,000 persons the town of Boston was still a most primitive place. There are dwellers on Beacon Hill today who are legally entitled to pasture and exercise multiples of two legs on Boston Common—two legs a goose—four legs a cow—six legs a cow or a pig and a goose. Of friction matches to light a fire, of coal to heat the draughty clapboard houses in winter, of refrigeration to preserve food in summer, there was none. The water from the wells was brackish, the slops went into the gutters of unpaved streets, and there were no rubber overshoes to protect leather from snow and slush. Doctors visited their patients shanks-mare in good weather or, if fortunate, astride a horse in bad. Phthisis was prevalent and in winter-time the children died overnight of membranous croup, the old of pneumonia; in the summers agues, fevers and fluxes took their seasonal toll. Only the sturdy survived and even they were almost certain to have pockmarked faces for smallpox, scarcely checked by inoculation, was endemic. Of all this, familiarity bred a certain contempt. It was only when actual pestilence such as cholera and yellow fever gained a foothold that terror, such as we no longer can appreciate, struck deep in the hearts of the people. But when these times came—

> None too learned, but nobly bold
> Into the fight went our fathers of old.

1831

Fifty years go by and 1831 sees the passing, at fourscore, of Thomas Welsh, the last surviving founder, the venerable Edward Holyoke—at five score and one!—having preceded him by only two years. The Town has become a City wisely governed for six years past by the first Josiah Quincy, even to the point of having a modest department of health. Some streets are being paved if only with a central strip of pebbles, and there are cobblestone sidewalks broad enough for a single wayfarer. Jamaica Pond has been tapped for water which is brought to the town in buried conduits of wood. The question of sewage disposal is under discussion. And preparations are being made to utilize gas from the works at the foot of Copps Hill to light the principal thoroughfares.

In all this effort to make the young City a model of sanitation, the doctors, by now a well-knit group, lend their combined influence. Times have greatly changed. It is a buggy more often than a two-wheeled chaise at the door which now betrays the doctor's visit. The projected hospital, already become famous, has adorned the banks of the Charles nigh twenty years and the medical school, long since transferred from Cambridge, is in active operation. But it must stir itself if it is not to be outdone by a rival institution in Pittsfield set going, under the able and energetic leadership of Henry Halsey Childs, by the Berkshire members who still feel out of touch with the parent society. And well they may, for with Robert Fulton's steamboats plying the Hudson they are in point of time much nearer to New York.

I happen remotely to know something of this for my great-grandfather practised in the Berkshires till 1815 when he died of what was called typhus caught while caring for fever-stricken prisoners brought down to North Adams after the Battle of Bennington; and eight years later his son after a period of apprenticeship entered the Berkshire Medical Institution in its opening year with Mark Hopkins as a friend and classmate.

Meanwhile to this maritime region great prosperity has come. Yankee Clipper Ships, the pride of the seas, are seen in every foreign port where trade is to be found. More young graduates in medicine than ever before can afford a postgraduate period of study abroad, and the fame of Bichat, Laennec and Louis, of Flourens and Magendie, of Depuytren, Velpeau and Cruveilhier has been luring them to Paris. Those that have returned are full of new ideas concerning fevers, the taking of clinical histories, the value of medical statistics; and they produce tubes to listen to the sounds in the chest in imitation of their recent master, he of the sweet-smelling name. And some of them, thanks to a man named Daguerre bring home for parents or sweethearts that latest marvel, their image on a tin plate which is to replace the old black-paper silhouette of bygone days.

To be sure, not all the rising generation had moved in this familiar groove. There were nonconformists then as now. One of them, an ap-

prentice of Jacob Bigelow's, that Byron-mad young adventurer, Samuel Gridley Howe, has just returned to Boston after four years' absence spent as a participant in the insurrection against Turkish rule in Greece. Not for him to slip back into the old groove. Mature before his time, he is turning over in mind the problem of educating the blind — more particularly those born blind. Fame is a vapor and reputation an accident. His wife ere long was to become celebrated overnight on a hymn of battle, whereas his name has become lost in the fame of the Perkins Institution, of which he was Superintendent for forty-three years, and in the reputation of Laura Bridgman, his most celebrated pupil. Nor need we forget that it was he, when on a visit to England, who encouraged the young daughter of his friend Nightingale in her ambition to become a hospital nurse, which would by no means be the dreadful thing others had said it would be.

James Jackson is now, in 1831, nearing the end of his seven-year period as President of this Society, at whose annual meeting, to judge from the meagre report in the three-year-old *Boston Medical and Surgical Journal,* no reference is made to its being a semi-centennial anniversary. But a fiftieth milestone of a local society meant little or nothing with similar organizations everywhere coming into existence like corn popping in a pan. It was a time to look forward, not back. The first great migration of the people to the West in covered wagons was going on and things of great medical significance were happening on the very frontiers—in the village of Danville, Kentucky, where a man named McDowell has been successfully removing ovarian cysts; at a remote army post on the distant island of Mackinac where, thanks to a charge of buckshot which left a permanent hole in the belly of a young French Canadian, a man named Beaumont has been shedding light on the mystery of gastric digestion. Given the divine spark, it may burst into flame in a setting however primitive.

It was in this same year of 1831 that cholera swept over Europe and when in due course the epidemic reached this country its ravages in Boston were checked by the wise sanitary rulings of Jacob Bigelow then in his prime and soon in turn to preside at our meetings. Botany so essential to materia medica was still one of the principal medical disciplines; and Bigelow's magnificent treatise, with its engravings devised and printed in color by himself, is outranked only by the Opera of that other doctor botanist, Asa Gray. And his Annual Discourse "On Self-limited Diseases" shortly to be delivered before this Society put many an apothecary out of business by its vigorous scepticism in regard to the superabundant drugging to which the profession had been all too long addicted.

It was in this same year also that the legislature passed "An Act more effectually to protect the Sepulchres of the Dead, and to legalize the Study of Anatomy in certain Cases." In the course of the debate it is stated that:

> "An honorable member from this city, after expressing very briefly, but impressively, his accordance with the sentiments expressed in this bill, added, that so solemn was his conviction of the great benefits to society of human dissection, and of its unqualified necessity to the comfort and happiness of mankind, that it was not improbable he should make, in his will, such a disposition of his own body."

And so he did: for John Collins Warren, holding the combined Chair of Anatomy and Surgery in the local school, well knew that could this bill be passed it would mark the end of those gruesome nocturnal expeditions in which students were accustomed to engage to provide themselves and their teachers with the material necessary for their training. The few standard operations then undertaken had to be done with speed and dexterity for which a precise knowledge of human anatomy was essential. But something more than this was needed to make surgery what it was to become—two things, indeed, of which we begin shortly to see the foreshadows.

Plans were on foot in this year of 1831 for a lying-in hospital which for want of knowledge was soon to find itself a place, like most others of its kind, to be shunned as a pesthouse. All were fully aware of this, but when a youthful member of the Massachusetts Medical Society, who had shown a capacity to write prize-winning dissertations, published in 1843 his essay "On the Contagiousness of Puerperal Fever" a storm of criticism was aroused. He was not an obstetrician himself, indeed was without medical experience of any kind, for practice never came his way—a fact which he took humorously: "Small fevers gratefully received." What business had such a one to assert with arguments unanswerable that the blame lay at the man-midwife's own hand? Seventy years before this Charles White, the obstetrician of Manchester, England, had said much the same thing and it had been forgotten. Even now the time was not yet ripe and the profession had to wait for the Hungarian Semmelweis finally to ripen it after an interval of nearly two decades.

A year before Dr. Holmes had so definitely called attention to the principal cause of puerperal sepsis, a still younger man in the village of Jefferson, Georgia, having accidentally noted the stupefying effects of inhaling sulphuric ether, was undoubtedly the first to employ the drug for the purpose of what we call surgical anaesthesia. He published no report of his observations and, even did he realize their significance, he was scarcely in a position to make himself heard. Holmes had an audience but no opportunity to put his views to the test. Crawford Long had accidentally hit upon one of the great discoveries of all time, but he had no audience. And probably neither of them had

the crusading spirit and combative vigour necessary to force their views upon a reluctant and traditionally conservative profession.

In science credit goes to the man who convinces his contemporaries, not to him who first propounds the idea. The medical world was unprepared for a statement published in 1800 by Thomas Beddoes' young assistant at the Medical Pneumatic Institution set up at Clifton, England, to study the treatment of disease by respirable gases. Humphry Davy was much excited by his discovery that nitrous oxide was "respirable"; but no one else seems to have been aroused by his published statement that it "appears capable of destroying physical pain and may probably be used with advantage during surgical operations". Thomas Beddoes unfortunately was not interested in surgery, and it was left for an obscure dentist in Hartford, Connecticut, forty-four years later to put this idea to a practical test which was checked by the misfortune of a fatal accident. One shudders to contemplate what might have been the setback to surgery had a similarly fatal accident occurred on that momentous October 16, 1846, in the dome of the Massachusetts General Hospital when J. C. Warren permitted an unknown person to administer by inhalation an unknown drug to a patient during the course of a hurried operation. Can one say that the time happened at last to be ripe for surgical anaesthesia or should we grant that Morton succeeded in ripening it?

The possibility that a man may be able to ripen his own time—which I hasten to add is not a fancy of my own—is worthy of thought. One traces the conception of *contagium vivum* to early times; and the soporific sponge used at the School of Salerno was an ancient tradition. No idea is wholly new; what *is* new is getting people to adopt it and to act upon it. We know from his Notebooks that Leonardo fairly bristled with novel ideas, but, whether from indifference or inability, failed to register them on his contemporaries. He was probably a more observant and skilful dissector than the youthful Vesalius who, however, had the vigour and determination, when the world was content with Galen, to enforce upon his contemporaries the ripening of modern anatomy. And so did Harvey for modern physiology, though instead of a huge folio it was a small, badly printed tractate of seventy-two pages full of typographical errors which turned the trick—and incidentally ruined his practice.

Even the written word must find its audience. An unknown Augustinian monk has no chance to ripen his time and thirty-five years must elapse before de Vries calls attention to the important law Mendel had discovered and published in an obscure journal. Darwin might not alone have convinced his contemporaries, or "The Origin" even been read, had the theory put forward not had a doughty protagonist in the person of Thomas Huxley. And in more recent times, Willard Gibbs is an example of another who was ahead of his time and either did not realize the full significance of what he had done or cared not at all.

Who possibly can tell how often precious fruits of brilliant minds have been unrecorded windfalls? In this day and generation some like Einstein and the lamented Michelson appear to have the capacity to ripen time for their revolutionary ideas even though the vast majority of people are at a loss to know what it is they are talking about. So the discoveries that revolutionize medicine may sometimes, like that of Laennec and of Jenner and of Röntgen, find the time apparently ready for their reception whereas others either make no impression or are vigorously combated. Opportunity, personality, position, chance, in addition to vision and the prepared mind—all have a hand. If Oliver Wendell Holmes had been a visiting physician to the new Lying-In Hospital and had set about aggressively as did Semmelweis to prove his doctrine: if Crawford Long had remained in Philadelphia to become surgeon, let us say, to the Pennsylvania Hospital where he might have tried out his idea and gained an audience as did Morton at the hands of J. C. Warren and his surgical colleagues—what a different setting there might have been for these signal events of our second fifty years.

1881

Let us move on to the time of our centennial. It is still a horse-drawn era though a network of iron rails is rapidly making the country smaller, and that convenient nuisance, the telephone, is already installed in some progressive doctors' offices. There are members of this society still active who attended that celebration and visited the new abattoir at Brighton, lunched in Memorial Hall, took an excursion down the Harbour, and at the annual dinner the next day listened to toasts and speeches—not forgetting a "brilliant and sympathetic poem" by Dr. O. W. Holmes, "read in his own admirable manner". Professors of anatomy still write poetry, I'm told, but they now keep it dark by anonymity.

The more fortunate among the younger men at that centennial gathering were fresh from their postgraduate studies abroad but the talk was now chiefly of Vienna and the *Allgemeines Krankenhaus,* no longer of Paris, of *La Pitié,* and the *Neckar.* Only one possible member, so far as I know, had been trained in Paris, the grandson of Jacob Bigelow, who having been given a place in the laboratory of a certain M. Pasteur, on the pretense that he could blow glass, became his first and—with one later exception, if I am not mistaken—his only American pupil. With vision what profit might we

not have made out of this adventure! But on his return in 1879, who showed the slightest interest in the cultivation of microscopic organisms and the disproof of spontaneous generation? No one. And instead of becoming the pioneer American bacteriologist the only opening for Sturgis Bigelow was in a surgical outpatient department from which he soon resigned to abandon medicine altogether. Five years must elapse before experimental pathology and bacteriology, transplanted with its Teutonic roots by Welch and Prudden, is finally to get a secure footing in America. A German-trained pathological anatomist, to be sure, we already had—and few have been more famous—but Reginald H. Fitz was a pupil of Rudolph Virchow and like Osler, another pathologist-physician, returned from abroad too soon for a training in bacteriological technique.

It was in August of this very year of 1881 that the great International Medical Congress under the presidency of Sir James Paget was held in London, and there Henry J. Bigelow gave a demonstration of his ingenious method of treating stone in the bladder. It is highly doubtful whether he could have heard, or, if he did hear, whether he understood any better than many others who were present, the significance of the address, given by his son's recent teacher this same M. Pasteur, on "Vaccination in Relation to Chicken Cholera and Splenic Fever." It was at the conclusion of his discourse—and before paying a tribute to Jenner—that Pasteur said:

"In France, we lose every year by splenic fever animals of the value of 20,000,000 francs. I was asked to give a public demonstration of the results already mentioned. This experiment I may relate in a few words. Fifty sheep were placed at my disposition, of which twenty-five were vaccinated. A fortnight afterwards, the fifty sheep were inoculated with the most virulent anthracoid micro-organism. The twenty-five inoculated sheep resisted the infection; the twenty-five non-inoculated sheep died of splenic fever within fifty hours. Since that time, my energies have been taxed to meet the demands of farmers for supplies of this matter. In the space of fifteen days, we have inoculated in the department surrounding Paris more than twenty thousand sheep and a large number of cattle and horses."

Was such an announcement as this headlined in the medical press? It was scarcely noticed. Such a demonstration might be of interest to sheep raisers, but what had it to do with the practice of Medicine? Had not that irascible Benjamin Waterhouse of Cambridge carried out on Noddle's Island under the auspices of the local board of health a precisely similar experiment eighty years before by first vaccinating nineteen children with cowpox and three months later the same nineteen with the virus of smallpox which failed to "take"? That was a demonstration worth talking about!

We Americans appear to have had a peculiar blind-spot in the eighties which prevented our seeing in their true light and proportions the two great revolutionizing movements that were under way. Neither Lister nor Pasteur appears, with the single exception I have mentioned, to have attracted any pupils from the United States. Lister had had visitors of course. During his last days in Glasgow in 1869 the second J. C. Warren had paid him a brief visit on the conclusion of his long period of study abroad—had indeed brought back with him some lac plaster and other samples of the antiseptic dressings of the time. But with such new-fangled business a mere surgeon to out-patients makes no great headway. Wounds heal well enough by the old methods, and as for abdominal operations, except under dire emergency, they'd better not be done at all at least in a hospital that cares for its reputation. Consequently the particular John Homans (tertius) of that epoch, being an independent and venturesome soul, began to separate the women of New England from their cumbersome ovarian cysts on his own responsibility in a mist of carbolic spray at a private nursing home.

All this new talk regarding microscopic plants and their relation to the infectious diseases was not easily taken in by the older generation in the early eighties though scarcely a month passed by without some new definitely pathogenic organism being isolated—anthrax, malignant oedema, the streptococcus, and gonococcus, the lepra bacillus, the pneumococcus, Eberth's typhoid bacillus yesterday, Laveran's malarial parasite today, and tomorrow—most important of all—the tubercle bacillus. Nor was the relation of bacteria to the surgical infections quickly grasped or wholly welcome in spite of the fact that Joseph Lister, now four years in London, with fortitude, patience and dignity was slowly but surely ripening *his* time. What was important was not so much carbolic acid and the much debated "spray" as the great underlying principle that was involved; and this the Germans had been the first unreservedly to accept.

Efforts, to be sure, were being made by American surgeons also to fathom the depths of Lister's pronouncements. But without a training in bacteriology no surgeon can well understand the real meaning of wound infection, far less know how to prevent it. This training Sturgis Bigelow had had, and at a meeting on "Wound Management" before the Suffolk District Medical Society on April 15, 1881, he said:

"Every antiseptic operation ought to be carried out with as careful attention to the small details as if it were an experiment in spontaneous generation. . . . A single wipe with an imperfectly disinfected sponge is as sure a manoeuvre as could be devised to invalidate the effect of every other precaution."

If I am rightly informed, Henry O. Marcy of Cambridge was at the time almost the only ardent advocate in this community of the com-

plete antiseptic ritual, while others, if interested at all, took a middle ground in the controversy—to spray or not to spray. Fifteen years later in the days of my house-officeship, surgery was not very effectively one thing or the other—intelligently antiseptic or aseptic. We then swabbed our patients' wounds with sea-sponges that were merely wrung out in tap-water and soaked overnight in crocks of carbolic acid, to be used again the next day.

Marcy's voice at the London Congress during that celebrated symposium "On the Causes of Failure in the Primary Healing of Wounds" was a small one compared with the thunders of Lawson Tait against the antiseptic methods and of Richard Volkman in support of them. The time finally came for Lister to close the debate. He made no particular defence of any special technique. He contented himself with the description of further carefully conducted experiments (which he had been obliged to perform abroad owing to the recent anti-vivisection law), showing among other things that blood serum itself possesses bactericidal properties and that the actual closure of a wound is not essential to perfect healing, for healing in the absence of inflammation may occur in an open wound filled with a blood clot if it be properly covered and left alone.

Out of all the Congressists in that vast assembly there were perhaps only two besides Lister who could by any possibility have foreseen that these new experiments had sounded the knell of active surgical antisepsis and at the same time had announced the birth of something far better, even though more difficult to carry out. These two, so soon after the Franco-Prussian War, were difficult to bring together, but it was somehow accomplished. And though it is not even recorded in the copious *Transactions* of the Congress, unquestionably the most important happening of that eventful week of August 1881 was when Robert Koch, in the presence of Lister and Pasteur, one afternoon at King's College demonstrated his new method of cultivating bacteria in solid media and showed the efficacy of steam sterilization. Meanwhile, possibly that very afternoon, Clifford Allbutt was reading at one session on Scrofulous Glands of the Neck, and Theodore Kocher at another on Strumous Disease of the Knee Joint, wholly unaware that on his solid media this same German doctor had, likely enough, already cultivated the minute bacilli which proved that the scrofula, and struma, and tubercle of our forefathers were one and the same disease.

But to the Congress at large all this about microbic infection was a minor issue. There were far greater attractions with Charcot to hear, and Donders, and Hughlings Jackson on epilepsy, and Virchow in defence of experimentation on animals, and Thomas Huxley on the conneetion of the biological sciences to Medicine, and our John Shaw Billings on medical bibliography, the first volume of the Index Catalogue, one of the major contributions of this country to scientific medicine, having just been published.

So in this year of 1881 two months after this society had celebrated its modest centennial, the great figures of the medical world were gathered in London; their words we still quote; on their broad generalizations we still build. In 1913 another, the last of the great international congresses, was again held in London and though the gathering was double the size, with the possible exception of Paul Ehrlich there was no one to be mentioned in the same breath with those whose names I have briefly recalled. Meanwhile in those glorious years that come between Pasteur's demonstration of protective inoculation against anthrax and the introduction by Ehrlich of chemico-therapeutics which made pharmacology a science, Medicine found herself wholly transformed. And then in another year—the disaster, from the ruins of which the world is still trying to extricate itself.

1931

Every generation is prone to overvaluate its own accomplishments and to feel that it has lived through the most eventful era in history. So it is music in our ears to be told that this recent half century has seen the greatest progress of all. Not everyone is entirely happy about it, for with standardization and mass production and the mechanical robot has come a vast deal of unemployment and any day some new machine or centralized control may throw still more of us out of work. But despite the talk there is nothing new in this. Five centuries ago countless scribes and illuminators were obliged to find other jobs because of that robot, the printing press with its movable type, an unwelcome invention which transformed their world far more than has the gas-combustion engine ones.

Nevertheless, science and those who apply its discoveries have in these recent years provided us with an amazing hodge-podge of novel and revolutionizing things to which we are obliged to adjust ourselves whether we wholly like it or not. The telephone, the incandescent lamp, the dictaphone and the typewriter, the automobile and the aeroplane, the x-ray and radium, wireless messages and vitamines, motion pictures and television, have come, for better or for worse, permanently to change our very manner of thought of life and of living. From Zeppelin to submarine, the most fanciful imaginings of Jules Verne have been outdone in fact. All that remains is for the cow to jump over the moon, and she may be expected to hop off any day now that two Belgian physicists have found the stratosphere to be so accessible and such a pleasant place when you get there.

There is a disagreement among modern astronomers as to whether the universe is expand-

ing at such a rate it will some day wholly disintegrate, or whether it is constantly regenerating itself by cosmic rays let loose while helium atoms are in the process of formation. We might well ask whether Medicine too is not expanding at such a rate it is likely to disintegrate and whether something can't be done to insure the constant regeneration of those fundamental principles which from the beginning have made our professional standing and solidarity what it is. Since Medicine has become "news" our ancient code of ethics tends to be neglected—along with the Ten Commandments and the Golden Rule—as something unsuited for these advanced times. Huge hospitals have been built richly endowed by great foundations. Magnificent laboratories fully equipped for research are at every hand awaiting the right people to utilize them for further discoveries which, like the cause of cancer, will bring fame to someone. Meanwhile the torch which passed in turn from Italy to Holland to Scotland to England to France to Austria and Germany has passed, or is in process of being passed, to our own country where foreign medical graduates now flock as our ambitious and favoured graduates once flocked abroad.

Are we entirely prepared for this? And are we, in our process of rapid expansion, not running the risk of losing something precious that made our medical forebears what they were? Medicine has always utilized scientific discoveries but can never become a science so long as it has to do with individual human beings. As of old, life is short, the Art long, opportunity fleeting, and yet, our preliminary requirements for all who wish to join our ranks are such that an education for medicine has come to be drawn out to cover a period of six to eight years. The practising doctor of today will express his gratitude to those who have given him some conception of the sciences which have sprung from the loins of medicine; but he will join with the doctors of all time in saying: "I honour as my father the man who taught me the Art."

I can imagine old Dr. Holyoke, with whom in his Salem home thirty-five apprentices in succession had worked elbow to elbow, appearing among us and bluntly asking questions embarrassingly difficult to answer:

"Your scientific progress is very wonderful, but are you on the whole training your students to be as good doctors as we made of them in the old days, and do you yourselves hold as strong a position in your several communities as the doctors once held? If so, who are these chiropractors and Christian Science healers that infest the land and thrive on that inherent trait of mankind—blind credulity? Does not the long and expensive science training now demanded for a medical degree have something to do with their birth and prosperity, and the sum-total explain in part the high cost of medical care?

"What are these richly endowed anti-vaccination and anti-vivisection societies that I am told continue, with the aid of clever lawyers, to pester our profession and hamper its progress? Are leaders in this Society no longer to be found serving in the Legislature? Have you forgotten that two of our early members were Governors and three of them Lieutenant Governors of the Commonwealth? Your professional public health officials must certainly exercise a greater influence on public opinion than did those amateur ones who volunteered their service in my later days?

"Did not my friend and neighbour, Joshua Fisher of Beverly, one-time President of this Society for a term of eight years, get the Legislature to pass what laws were needed for proper licensure, and at one time become a State Senator, and at his end establish the professorship at Harvard that made possible the services of Asa Gray? You never heard of him! Well, you certainly have heard of my protégé, John Warren, and my pupil, James Jackson, and his junior colleague, Jacob Bigelow, most brilliant of them all. Men who are poets and wits don't always carry weight. But here was one seething with ideas, one to whom people listened, one who got things done—one who could by earnest, persistent and intelligent persuasion (to borrow the phrase I've just heard) "ripen his time". The first Institute of Technology; the first rural cemetery; a great botanist who utilized his knowledge not to put more drugs in the pharmacopoeia but by eliminating the useless ones to simplify the treatment of diseases most of which, given a chance, recover of themselves. And being an active practitioner universally respected and beloved, did he not do more for the public health than specialists in sanitation are likely to accomplish without the people back of them? We didn't know a century ago that the strumous diatheses of children were akin to tubercle, much less that they came from infected cow's milk. But this you have fully understood for nigh thirty years thanks to a man named Theobald Smith, and yet are only now taking steps to legislate against it.

"We had to fight the anti-dissectionists for the sake of anatomy, so why don't you for the sake of your modern physiology get a bill passed, as we did, permitting you to go on with animal experimentation unmolested? Do I understand that your pre-medical science teachers have had no experience at the bedside? If this is so, how can they be proper instructors of those who are to become worthy members of this ancient society?

"The public health officer is taking the place of the doctor, did I hear someone say, with this new slogan of preventive medicine? Yes, what's been done to lessen typhoid and malaria and yellow fever is all most creditable, but could he keep out cholera more successfully than we did; and what of these modern pestilences with the

long names—poliomyelitis, encephalitis and influenzal pneumonia of which I hear so much? If they cannot as yet be prevented, what then? Some doctor must care for those who are struck down by them.

"The worth of an ounce of prevention was an adage old even in my day. The longest period I was ever away from my practice was in the Spring of 1764 when, after making my will, I came here to be inoculated with smallpox virus by my friend Perkins who kept me in quarantine for twenty-nine days. I then went home and as a self-appointed health officer inoculated two hundred of my Salem people with only two fatalities, whereas two out of three were dying elsewhere from the scourge taken in the ordinary way. It was the proper thing to do; the people knew me and whether they liked it or not they took my word for it.

"But what this old-time inoculation might accomplish was a mere drop in the bucket to what Edward Jenner did single-handed, and he too a mere country doctor. No pestilence ever spread with the speed the news was carried round the world that smallpox need be no more. The dead tell no tales, but the pockmarked survivors were for all to see and they were once to be met at every turning in the lanes of Boston. All this, I fear, is forgotten with a movement now on foot to discredit vaccination and to rescind our hard-won laws. The natural way to combat such a movement is for his family doctor to say what is necessary in the legislator's home. But it would seem that a modern apartment with its victrola, its radio set and bridge table is incompatible with the idea of a home and a family life and a family doctor—the three safeguards of happiness and health.

"Does not your present-day boast that you have greatly increased the expectancy of life merely mean that there are going to be just so many more persons in the world growing old who some day will be in need of a common-sense practitioner to advise them how best to get along with their stiffening blood-vessels, their troublesome kidneys, their bronchitis and indigestion and diabetes and a thousand other things; and no less of a skillful surgeon to set their broken bones, remove their enlarged prostates, take out their tumors, cure their ruptures and what not—*ocyus, jucunde et tuto;* skillfully, sympathetically and safely? Are you, either in your older or newer school of medicine educating, and in the right way, the proper sort of people to be *our* successors and *yours* in work of this kind?

"There are specialists, I'm told, for every malady, for every age, for every viscus, for each and every orifice, to whom the people go; but how can they learn to whom to go, or whether to go at all, without the sage advice of a trusted general practitioner? Can the dependability and usefulness of these unostentatious public servants—dim figures, to be sure, in the background of history's canvas — ever be supplanted by anything better? Theirs was the broad and comprehensive view; your specialists are said to be persons who know more and more about less and less—very useful, to be sure, on occasions, but not always the safest persons first to consult.

"Those thirty-one men over whom I presided not so long ago had their strong differences of opinion but they shared the common ground of culture, knew their classics, and at the same time had been taught to write good English with a legible hand, even though they cut their own quills, mixed their own ink and made the best possible use of what hand-made paper was available. Can you do as well or do you merely talk your correspondence into a machine for someone, who corrects your grammar and who knows how to spell, subsequently to put through another machine onto machine-made paper?

"To be sure we knew little of chemistry. Medical chemistry was then in its antiphlogistic infancy; but even so, Lavoisier and Cavendish and Rutherford and Berthollet, not to speak of Humphry Davy and those Josephs—Black and Priestley—knew a thing or two. And after all, was not botany an equally good discipline? It at least afforded us a deal of pleasure on our country rounds, and took doctors to their gardens and orchards in their old age. Some of them, to be sure, like Samuel Philbrick, broke their necks of a Sunday morning pruning apple trees, but that's a more picturesque end than dropping dead on a golf course on the Sabbath. With all your synthetic drugs, what have you today to take the place of the bark, of opium, of foxglove and belladonna and ipecac—and I might add Jamaica rum? You still prescribe Dover's powder, I understand—and probably not enough of it.

"When we first came together to found this Society the population of Boston was estimated at 12,000 persons. It had increased to 60,000 in 1831, to over 300,000 in 1881; and today I'm told about 1,500,000 are crowded in your metropolitan area. At this rate, with a five-fold increase every fifty years, by the time of our two hundredth anniversary we may expect Greater Boston to have a population of some seven million. With the most perfect health organization conceivable, at least three or four times the present number of practicing doctors will be needed for this thriving place some of you will live to see.

"My own Alma Mater at present not only restricts the number of its matriculants for a medical degree but by pushing the entrance requirements back into college excludes from our guild many we would welcome into it. Having been slow to make up their minds they are now driven into business, which to salve our

conscience, we are elevating by the boot straps into a "profession". New schools—co-educational ones at that—are here and may teach us of the older school a lesson just as once did that flourishing school in the Berkshires. One of them bears the family name of my old friend Cotton Tufts of Weymouth, one of the secondary founders who never missed a meeting of this Society, and whose great-grandfather formerly owned the very acres of land on which Tufts College is built. And there is that other vigorous upstart, Boston University, with its thriving medical department which in another fifty years will be looked upon as one of the older schools. Will these three at the time of our bi-centenary be able to supply the necessary doctors for this community, or will other schools have to come into existence?

"Then, too, I'm puzzled not a little by these life extension examinations. It looks like a good thing for someone—not necessarily the patient. An insurance examiner after listening to the heart takes a specimen of urine and lets it go at that, well aware that it's often extraordinarily difficult to tell what's wrong with people who complain of some definite symptoms, let alone those who have none. I should think these periodic examinations with their tappings and probings and listenings and testings for something wrong would give apprehensive people what we used to call the vapours. Isn't expectancy of life after all pretty much a matter of heredity combined with decent living? To be sure, you keep a lot of children alive that would tearfully have been buried in my day. Sad enough. But isn't it better to have plenty to begin with rather than to teach people who ought to be having them how to escape the responsibility?

"From what I've glimpsed today of the folks who pass their time riding about with no apparent purpose in these horseless contraptions that crowd your broad thoroughfares, too many people of the wrong kind are kept going in your modern world. The able bodied ones, still able to walk across the street, are rapidly getting killed off; the weak and feeble are protected, survive and soon will be the only ones left to propagate the species. In my day it was just the reverse; only the vigorous survived to marry and beget children, any one of whom with plain food, hard work, good habits, an outdoor life and that form of morality which includes piety might be expected to keep going as long as I did—and that's long enough.

"But I've already said unnecessarily much—even for an old man and a back number. When I come again in 1981 we shall then see—what we shall see. Human nature being what it is, and having changed not at all since history began to be written, we may suppose that people will continue at odd times to get ill or get injured and as of old will need a doctor and will prefer one of their own personal selections. And it will still be the duty of some one to train for this express purpose the most likely, wholesome, intelligent and cultured young men we can attract into what will continue to be the greatest of the professions. God be with you."

With this benediction the old man with a bow departs from the hall, climbs into his one-horse gig, and at the street crossing, scorning that modern impediment to progress, the red light, disappears in the general direction of Salem.