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MEMOIR OF JOHN SHAW BILLINGS[1]

IT has been the custom of the National Academy of Sciences to commemorate in memoirs those whom death has removed from its ranks. Since the lives of men of science are little known except to those engaged in their own lines of research, some record is the more to be desired of one who illustrated the fact that scientific capacity may exist with varied ability for the conduct of large affairs. This combination of talents has been often found in the ranks of the Academy, although in the belief of the public, the man of science is presumed to be incapable of the successful management of commercial business.

The many tasks to which his life of work summoned the subject of this memoir have become, since his death, for the first time so widely known that it is unnecessary for me to do more than to put on paper a brief summary of his career and the reasons for his election to this distinguished body of men of science, where from 1887 to 1889 he rendered efficient service as our treasurer and served on eight important committees or as a member of our council. The life of our fellow member, in fact, needs less restatement from us, because since he died at least a half dozen men of importance have recorded their opinions of this attractive and much-loved man and of what he effected during his ever-busy existence. Moreover, a full and competent biography has been undertaken, and will, I am sure, do ample justice to one who owed nothing to newspaper notoriety. Through his mod-

[1] Read before the National Academy of Sciences, Baltimore, November, 1913.

est life of the labor he loved he accepted grave burdens and whatever duties, official or other, fell to him, apparently indifferent to praise or popular reputation while he dealt victoriously with tasks so various in their nature that any one of them would have sufficed to tax the technical competence of the most able man.

John Shaw Billings was born in Switzerland County, Indiana, April 12, 1838. From the time he went to college until after the end of his medical studies he was almost entirely without exterior aid. He was graduated from Miami University in 1857; A.M. in 1860. His personal struggle for a college education and the sacrificial privations by which he attained his medical degree in 1860 from the medical college of Ohio will, I trust, be told in full elsewhere. He won his way unhelped by taking charge of the dissection rooms and for one entire winter, as he assured me, lived on seventy-five cents a week, as he believed to the serious impairment of a constitution of singular vigor.

Hospital service gave him what the imperfect medical teaching of that day did not give and, as demonstrator of anatomy, he prepared himself for surgical practise, which was to find its opportunities in the clinics of the battlefield.

In the year 1861 came one of the many periods for decisive choice he was to encounter as life went on. A certain career as assistant to a busy surgeon was offered him. His strong sense of duty to his country made him decline the tempting opportunity and he entered the regular army first of his class in a competitive examination and was commissioned assistant surgeon, U. S. A., April, 1862.

To deal briefly with his army career, he became surgeon captain in 1866, surgeon-major in 1876, and colonel and deputy surgeon general in 1890. He was retired from active service in 1895 by President Cleveland at his own request and through the influence of the University of Pennsylvania, which at this time offered him the place of professor of hygiene.

During the war he was breveted major and lieutenant-colonel for faithful, gallant and meritorious service. Dr. Billings won in the field a high reputation as a very skillful and original operative surgeon, and a character for courage and resourceful administrative ability on many occasions, but especially when after the disastrous battle of Chancellorsville he conducted the retreat of the wounded and when later he was actively engaged in perilous service during the battle of Gettysburg.

While in army service he began very early to exhibit his constructive talent in altering or building hospitals, and his remarkable power of administrative command in these vast homes of the sick and wounded.

Without dwelling too much on this part of his career, I may say that there were many months of service in the field and also as an acting medical inspector of the Army of the Potomac. Dr. Billings's war service with the army ended when, in December, 1864, he was ordered to Washington, where he had charge of the invalid reserve corps, of matters relating to contract surgeons and a variety of other business.

Some time in 1864 he was sent by the President with others to the West Indies on an errand connected with the futile plan for deporting some of our recently made freedmen to an island. This scheme appears to have failed, as might have been expected, and probably the expedition in which he was included was meant to bring back the men previously thus deported. It was a somewhat fantastic scheme and I do not find any account of it in the histories

of the war. Probably Dr. Billings had an important share, for here, as elsewhere, no matter what his relation was to a body of men and officers, his peculiar talents soon found their influential place.

It becomes clear from what I have already said that his capacity to turn with ease from one task to another must have become by this time very well known to his superiors. His own desire was to return to the field, but the promise to so indulge him probably failed owing to the somewhat abrupt termination of the war. Meanwhile he was required to deal with the voluminous medical reports sent in by the medical staff of the Potomac Army. The records of this work and of his other more individual surgical contributions are scattered through the voluminous medical and surgical history of the war. Here as elsewhere he left in these papers his mark as a man of many competencies.

Some of the duties to which he was assigned before his retirement were curiously outside of the work of a military surgeon and he seems to have been lent by the War Department for a variety of governmental services. Thus while busy with the early work in connection with the museum and library, he was also occupied with the organization of the United States Marine Hospital Service in 1870. In 1872 he was vice-president of the brief lived National Bureau of Health, and was for a long period in charge of the division of vital statistics of the eleventh census of the United States.

During his career as a surgeon in the years before 1895, he became an authority on military medicine and public hygiene and revived his interest in hospital construction to which he had given a great deal of thought. He was one of five who submitted in 1875, by request, plans for the construction of the Johns Hopkins Hospital. His careful study of the conditions required in a hospital were accepted. They included many things novel at that time which it is not needful for me to dwell upon here, but some of them were very original changes from the organization and construction to be found in hospitals at that period.

During these years he went to Baltimore from time to time and lectured on the history of medicine and on hygiene. He also supervised the planning and construction of the Barnes Hospital of the Soldiers' Home, Washington, D. C., and later the buildings needed for the Army Medical Museum and the Surgeon General's Library. His final constructive work late in life was his connection with the plans for the Brigham Hospital in Boston and during many years he was continually consulted by institutions or cities in regard to hospitals and hygiene questions of importance.

The great work of John Shaw Billings which gave him finally a world-wide repute began at some time after 1864, when he was asked by the surgeon general to take charge of the army medical museum created under Surgeon General Hammond by the skillful care of Surgeon John H. Brinton. His formal assignment "in charge of the Museum Library Division and as curator of the Army Medical Museum" dates from December 28, 1883, but he had been informally librarian for many years before that time. It is quite impossible here to enter into any detailed account of the ingenuity and power of classification which has made this museum the greatest presentation of the effects of war on the bodies of men. It is, however, essential to say a few words about the varied capacities which built up and made finally available to scholars the library of the surgeon-general, now the

most completely useful collection of medical works in the world.

In some reminiscences of his younger days he speaks of his student aspiration "to try to establish for the use of American physicians a fairly complete library and in connection with this prepare a comprehensive index which should spare medical teachers and writers the drudgery of consulting thousands or more indexes or the turning over the leaves of many volumes to find the dozen or more references of which they might be in search." The opportunity he craved when young came now by singular good fortune into his possession. When he took hold of this work, the surgeon-general's library contained a little over a thousand volumes and all interest in its increase had been long at an end. Fortunately, as I so understand, at the close of the war there fell into the hands of the surgeon-general some eighty-five thousand dollars, the result of hospital savings during the great contest. He was allowed to use this money for the building up of the museum and of the library, which was an essential adjunct to the collection. It was a vast piece of good fortune that this task fell to the man who had craved such a chance since his youth. He brought to it powers which are rarely united in one man and an amount of knowledge of books, medical and non-medical, which few possess. When he was nominated for membership in the National Academy of Sciences, his claim to this high distinction was judiciously founded by his friends upon his application of skill in the scientific classification of books and of the medical knowledge of our profession through the centuries. No medical librarian who ever lived had, up to that time, shown such an almost instinctive capacity for the scientific classification of knowledge so as to make it readily available. It was eminently a scientific gift and of incredible usefulness in its results to the scholarship of medicine throughout the world.

When he gave up this charge at the time of his appointment to the chair of hygiene in the University of Pennsylvania, he received from the physicians of Great Britain and America at a dinner given in his honor a silver box containing a cheque for ten thousand dollars, as a material expression of gratitude for the labor-saving value of his catalogue.

The surplus of this fund enabled his friends to present to the Surgeon-General's library an admirable portrait of John Billings, by Cecelia Beaux.

The library as he left it contained 307,455 volumes and pamphlets and 4,335 portraits of physicians. At the present day in the skillful hands which took up his task, it has reached over half a million volumes and over five thousand portraits and has a unique collection of medical journals quite matchless elsewhere.

He went about the preliminary measures for the catalogue with cautious care and in 1876 prepared a specimen fasciculus of the proposed catalogue of the library, consisting of a combined index of authors and subjects arranged in dictionary order, and submitted it to the profession for criticism. In this he was aided by his able assistant, Dr. Robert Fletcher. In the first series of the index catalogue, 1880–1895, the material was selected and a scientific classification made by Billings. As a monthly supplement to the index catalogue, the Index Medicus was begun by Dr. Billings and Dr. Fletcher in 1879 as an extra official publication. When, in 1903, the second series of the Index Medicus was issued, it was seen that there was a risk of failure in this invaluable publication through want of means, but at this time by Dr. Billings's influence through the aid of the Car-

negie Institution of Washington, it was permanently established at the cost of some twelve thousand dollars a year and continues to be a helpful aid to scholarly physicians all over the world.

It was thus that Dr. Billings got his trainings for the still larger task which awaited him when he was chosen as librarian of the Astor-Tilden-Lenox library in New York. There at once this great enterprise found in him all the varied qualities which were needed in the construction of the building, the classification of its contents, the efficient administrative grasp on the forty outlying libraries of New York connected with the triple library, and in his singular power of uniting strict discipline with a capacity to attach to him those under his control.

Throughout his life he was a busy writer of essays on hygiene, hospital construction and administration, the statistics of war and addresses or essays such as his history of surgery, perhaps the best presentation of this subject ever made.

To comprehend the character of a man, he must have been seen in his relation to the various duties which test the qualities of both heart and head. The charge of suffering, crippled, wounded soldiers is a trial to the surgeon and here he showed the man at his best. He was patient with the impatient, never irritable with the unreason of sufferers, never seeming to be in a hurry, and left at every bedside in the long sad wards the impression of being in earnest and honestly interested.

It was thus I first knew John Billings when in the crowded wards wearied, homesick men welcomed his kindly face and the almost womanly tenderness he brought to a difficult service.

My own personal relations with John Billings began in the Civil War when he had for a time the care of my brother, a medical cadet, during a mortal illness contracted in the Douglas Hospital, Washington. I saw then how gentle-minded was this man and how he realized the pathetic disappointment of a highly gifted young life consciously drifting deathward. I saw thus a side of John Billings he rarely revealed in its fullness. Generally a rather silent man, he was capable now and then of expressing in eloquent brevities of speech the warmth of his regard for some one of the few he honored with his friendship. In the last talk I had with him, he said to me some things which remain as remembrances of this rather taciturn and reserved gentleman. I had asked him how many degrees and like honors he had received and, considering these notable recognitions, I remarked on the failure of popular appreciation. He replied with a jesting comment and then said, after a brief silence, that he was far more proud of his capacity to win the friendship of certain men and of the service he had been able to render to science in his connection with the Carnegie Institution of Washington. There indeed his always wise and broad-minded interest will be greatly missed. I served with him from its foundation on the distinguished executive committee of this body. Here, among men he liked and trusted, we saw him at his familiar best. Always a patient listener, his decisions as chairman were expressed with his quiet, courteous manner, and many times his large knowledge of the science of the day left me wondering how it could have been attained amid the amazing number of occupations which had filled his time. But in fact he was intellectually sympathetic with every form of scientific research, a somewhat rare characteristic among investigators. I ought also to say that the men of our committee and of the board of trustees felt at times a little surprise at the shrewdness, the common sense

and the commercial insight he brought to the critical financial consideration of this immense money trust. Not elsewhere was he better seen or understood as conveying the sense of character, and nowhere else was he better loved.

Numberless presidencies of societies fell to his share, and the list of his honorary titles from all of the greater academies and universities at home and abroad served at least to show in what esteem he was held by men of science. These recognitions gave, I suspect, more pleasure to his friends than to this retiring and singularly unambitious scholar.

On public occasions, his personality stood for something in the estimate of the man. Tall and largely built, he was as a speaker in the after-dinner hour or when addressing a body of men a commanding presence, with flow of wholesome English, ready wit and humor such as rarely came to the surface in his ordinary talk. The figure of athletic build, the large blue eyes, a certain happy sense of easy competence, won regard and held the respectful attention of those who listened. For me there was always some faintly felt sense of that expression of melancholy seen often in men who carry through a life of triumphant success the traces of too terrible battle with the early difficulties of their younger days.

What was most exceptional in this man was the unfailing fund of energy on which he drew for every novel duty and an industry which never seemed to need the refreshment of idleness. He had that rare gift—the industry of the minute. When once I spoke of the need for leisurely play and the exercise of open-air sports, he said that he obtained recreation by turning from one form of brain use to another. That was play enough. I ought to add that he found pleasure in reading novels, saying that one or two of an evening late were agreeable soporifics. But these, like more serious books, he devoured rather than read as most men read, and what he read he seemed never to forget. His memory was like a good index of a vast mental library.

Until his later years Dr. Billings possessed the constitutional vigor which befriended him earlier as he responded to the call of a succession of military and civic duties. Of late years he was obliged to undergo several surgical operations of serious nature. He went to them with confidence and courage, but before the last one he said to me, "I am for the first time apprehensive." He went on to add, "It is a signal of age; and of late, as never before, any new project, any need for change in the affairs of the library, I find arouses in me an unreasonable mood of opposition. This too is, I know, a sure evidence of my being too old for my work. I shall, I think, resign my directorship of the library." It was our last intimate talk. He died of pneumonia after the operation, on the eleventh of March, 1913.

The scene at his burial in the military cemetery at Arlington brought together many men of distinction, a much moved group of army men and the great library officials. We left in the soldier burial ground all that was mortal of a man who combined qualities of head and heart such as none of us will see again.

Dr. Billings married Miss Kate M. Stevens, in September, 1862. Their children are: Mary Clure, Kate Sherman, Jessie Ingram, John Sedgwick and Margaret Janeway.

Science is forever changing. The work of to-day is contradicted to-morrow. Few indeed are so fortunate as to leave in the permanent remembrance of science conclusive work. The man whose loss we regret

left to medicine in his catalogue of the Surgeon General's Library a monumental labor which none will ever better and to which he gave continuity of vigorous life.

S. WEIR MITCHELL

THE DUTY OF THE STATE IN THE PROSECUTION OF MEDICAL RESEARCH[1]

IT is an interesting manifestation of apparent humility and unwonted lack of self-conceit that man should have hesitated so long to emphasize the primary responsibility of the state for the physical well-being of its citizens. Health is a fundamental resource not only of the individual, but, in a very real sense, of the state itself. The happiness, the efficiency, and even the existence of every citizen is threatened by the presence of disease in the individual home. It would be interesting to discuss why an educated nation has so long permitted the existence and even encouraged the extension of sickness and disease among its citizens by failing to take means for the correction of the individual evil, and for the prevention of its dispersal among other unaffected members of the community. Discussion of this feature would demand more time than is reasonable on this occasion, and it is sufficient to have indicated the existence of influences which stand in the way of efficient work for the conservation and improvement of public health.

The state university has been organized and developed by the state in order to supply that trained knowledge which is essential for the comprehension and solution of modern problems. Unwilling that all knowledge should come to the public through private citizens, or that the dissemination of knowledge and the methods of its application should be dependent upon the liberality of the fortunate individual or in any way hampered by the conditions under which private munificence is granted and expended, the state itself, that is, the common men and women of the community working together, have contributed each one of their means and according to their ability that they may have in their midst a center of influence ready and able to gather the best knowledge from all sources, to assimilate it to their purposes, to apply it for their protection and advancement, and thus to make possible a broader and richer and freer and fuller life than they working singly could ever attain. Every man and every woman in the entire commonwealth who has sufficient honor and self-respect to pay taxes has contributed to the support of the state university as a whole, and of every one of its individual departments. The responsibility that the university and every one of its individual departments assumes is thus definite and grave. It involves the very best possible application of funds which represent many instances of self-denial and privation on the part of individual citizens that it may further the interests of every one of those citizens in the most efficient manner. This is the problem which stands before the medical department of the University of Nebraska in its new quarters so generously provided and admirably adapted for the work of medical education, primarily in its relation to the state of Nebraska itself, but since we are all members of one nation, and of one family of nations, in constant, intimate, and unavoidable contact with each other, really also in its relation to the nation and the entire world.

Men look at things from different points of view. Toiling up the steeps of knowledge, we reach different coigns of vantage, from which we may look out and get a somewhat imperfect and incomplete view of the achievements of the past, and the paths that lead on to the higher attainments of

[1] Address at the dedication of the medical laboratories at the University of Nebraska.