

THE EVER-LENGTHENING CHAIN OF
MEDICAL LITERATURE *

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A man attempting to carry a chain to which new links were being continually added would, in time, find himself fastened to a certain spot by the accumulation, his movements restricted to a circle, the size of which would be determined by the number of links his particular physical development would enable him to lift and carry. No matter how much the chain might be lengthened, the space over which he could move would be in no way extended. The added links would only serve to fasten him more securely to the spot. Medical literature is such an ever-lengthening chain. Hippocrates could arrange and join together all the existing links. Galen could lift and polish and use the whole of it. The schoolmen of the middle ages might count its links, and be somewhat acquainted with them all. But their attempt to carry the whole—the paralysis of original thought caused by trying to learn all that had been written by their predecessors—checked any further progress and prevented any important development in the healing art for centuries. Not until the profession ceased to attempt to carry the whole load of the dead past—not until the mastery of what other men had written ceased to be the ideal of medical education—not until men had turned from what their predecessors had observed of disease to look at it with their own eyes, like

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John Hunter, to learn from the body what none could teach in any language, living or dead—not until then did the renaissance of medicine occur.

Compare the products of the time when each scholar exhausted his strength in gaining an acquaintance with every treatise of medical literature, so that he was quite unable to add another fact or observation to the store, with the later period in which students acted on the belief that all was not yet discovered, and that new eyes would see new facts, new minds recognize new relations of cause and effect. Since the latter conception has prevailed the development of the medical sciences has gone on with increasing rapidity until medical literature is no longer represented by a single lengthening chain; but rather by a great number of chains, many of which are already too extended for any one mind to carry. Each department of medicine, each disease, each important medical theory, has a literature of its own that could not be fully mastered in a life-time. To know all that has been written about any one thing in medicine is impossible. To attempt to know it all is to give up one's life to a useless task, to the neglect of more important objects.

And yet, to know a great deal of what others have learned and accomplished is absolutely necessary to every one who aspires to a decent ability to practice medicine or surgery. The part that the most original and energetic student can observe and think out for himself is utterly insignificant compared with the whole mass of knowledge and the perfected technic that may be learned from others by the average member of our profession to-day. To have one's name associated with just one symptom, process, apparatus or theory that proves of permanent importance is to achieve exceptional fame. Leaving out of account all the learning of the past, how little can the most industrious worker, by a year of continuous, well-directed effort, contribute to the common fund of knowledge, compared with the total contributions during the year from the thousands of other workers who are daily dealing with similar questions in all parts of the world! How meager the results of the experience of any one in our profession compared with lessons that might be drawn from the experience of the whole! How trifling the new thoughts that anyone can contribute to the current literature of a year, compared with the sum-total of value which that literature contains!

I have not at hand any statistics of the annual additions to the medical literature of the world, but the College of Physicians of Philadelphia adds to its literature each year nearly 600 new books, of which 80 per cent. are first editions; and many of them are in two or more volumes. The number of American medical journals, according to the "American Medical Directory," is 259. The medical journals, published in other parts of the world, which achieve something beyond a local circulation, are more than 500. There are published each year probably more than 30,000 octavo pages referring to the subject of ophthalmology alone.

We have, then, the fact that the medical literature of the world, even the current medical literature of the day, quite apart from all of the past, is too vast to be mastered, or even superficially examined by the greatest possible individual effort. And we have the second fact that acquaintance with what the literature of the past contains is essential to the success of the physician or surgeon, while a similar acquaintance with the most recent achievements of his contemporaries is equally

necessary for the highest efficiency of anyone practicing the healing art.

WHAT CAN WE DO ABOUT IT?

It will help toward an answer to this question to get clearly in mind what cannot be done. Medical literature cannot be divided into separate departments, so small that the average human mind would be able fairly to master whichever one of them was chosen. The new therapy with vaccines will probably control some of the most persistent and rebellious diseases of the eye, ear and nasal cavities. The expert use of the ophthalmoscope reveals some of the most definite, instructive and the earliest symptoms of general vascular disease. Neither the ophthalmologist nor the internist can afford to be ignorant of what the other is doing. The interrelation of the different departments of medicine could be demonstrated from every medical book or paper published. The oculist who never reads papers on internal medicine, and the man who considers himself a general practitioner, and skips literature relating to the eye, both make a grave mistake that leads into a narrow specialism—the sort of specialism that has always been recognized to be wrong, fatal to general professional progress and individual development, and ending in blind and inefficient routine.

No, we cannot each select a certain line of work and confine our reading to a single group of journals and books, ignoring the greater part of general medical literature. Such a course would inevitably lessen intellectual energy, originality and activity, even in the chosen field of work. The in-and-in breeding of ideas is as certain to lead to degeneration and sterility as the too close breeding of stock. Our best thoughts, our most important glimpses of the truth, will come to nothing unless we can follow them across the lines that ordinarily limit our daily work, and feed them with appropriate nourishment drawn from other fields; unless we can extend our conceptions by observations made from other points of view; unless we can support our thought with facts familiar to other workers, but which have not fallen under our immediate notice. Our problem is not to be solved by the splitting up of medical literature into separate provinces, no matter how wisely these might be planned, or how carefully outlined.

The problem is rather to work out methods by which the student fairly familiar with some small part of medical literature can, with the least unnecessary expenditure of time and energy, follow his line of thought into any other region of medical literature, so that the surgeon confronted by a dangerous or persistent infection can most readily ascertain what is to be hoped from a serum or vaccine therapy; or, when compelled to choose a course of action with regard to deep-seated cerebral disease, can gather all the assistance possible from the special literature bearing on the diseases of the eye, ear and nose.

The accumulation of medical facts has been going on from the time of Hippocrates, and before him on the papyri of Egypt; in the manuscripts of China and India, and on the tablets of Assyria. It goes on in the mind of every practitioner of medicine as it does on every page of medical literature. The time has come when mere accumulation is no longer of the greatest importance, if, indeed, it may not be actually harmful. Arrangement, classification, systemization, the bringing of every accumulated fact in relation with some plan by which the student can most readily and directly reach

things he needs is to-day the extremely important problem confronting us.

The first step toward solving it is the establishment and maintenance of medical libraries. Books must be brought together before any intelligent plan for their effective arrangement and preparation for use can be put into operation. The modern library is everywhere and pre-eminently a cooperative concern. There are already in this country at least six and probably eight or ten medical libraries that have outstripped any private medical library that has ever been brought together. With the present rapid growth of medical literature it must be more and more true that the so-called private library is a partial, incomplete affair, a survival of the past in process of extinction. This fact is best appreciated by those who have most to do with medical literature.

I was a good deal surprised many years ago when Dr. S. Weir Mitchell said that he had just sent the last of his medical library to the College of Physicians of Philadelphia. But with wider acquaintance in medical literature, and a better understanding of the uses of books, I can see that it was the only reasonable thing to do. To have the books properly arranged and cared for, and especially to have, not only what had been his own, but what had belonged to a great many others made equally accessible, all of them in one place, and included in one arrangement, far more than compensated for the distance of a few blocks that the collection was removed from his office. The incompleteness of the private library, and the fact that when it runs above 1,000 volumes, it is scarcely ever kept in complete order, or is kept in order only at relatively great expense, the fact that it is a hundred times more difficult to consult ten separate collections than one in which all the available books are brought together, make the private library an extremely wasteful and inefficient instrument as compared with a library which represents cooperative effort.

We must not forget that a library is something more than and something very different from a mere collection of books. It consists of publications arranged with reference to some plan that makes them accessible. Ten thousand volumes without any intelligible arrangement would be worth very little more than so many tons of waste paper.

The private library, in so far as it is arranged at all, corresponds simply to the habits and development of its owner or caretaker. On that account it is of comparatively little use in other hands. Where father and son have been physicians, in every instance I have known, when the son came into possession of the father's library he promptly sold or gave away the great bulk of it, although it might be fairly supposed that the good it contained would have been more accessible to him than to other members of the profession. A medical library, to be an efficient instrument of the profession, must be thoroughly systematized on some general plan and cared for by a skilled attendant whose acquaintance with it constitutes the key required to unlock the treasures of medical literature.

The economy of cooperation in attempting to gain access to medical literature is enormous and obvious to anyone who gives the matter a moment's thought. Compare what can be done by individuals spending \$25 a year for medical journals, and ten of them combining to share the journals that can be purchased with the resulting sum when combination has eliminated useless duplication. The library bureaus charge \$5 a year for

the bibliography of a single subject. The *Index Medicus*, for a little more, furnishes the bibliography of thousands of subjects connected with medicine.

It may be admitted that medical literature has grown too vast to be mastered by the individual. It may be admitted that any effort to become acquainted with it or to use it will be far more effective, far more economically applied by cooperation with others seeking the same end. But it may be urged that comparatively few doctors are interested in books, and that, while it is proper for these to go ahead and establish libraries and to take care of them, others of the profession have very little interest in the matter. It is the prevalence of this error that more than anything else hinders the progress of medicine and keeps down the efficiency, and therefore the influence and income, of the medical profession.

It is true that comparatively few men have the taste for wide, close, persistent reading. It is true that a large proportion learn more from experience and contact with their fellows. But these latter are in an especial degree dependent on their associates for the stimulation and fruitfulness of their intellectual processes. One bookworm, grubbing continuously in the library, visionary, impractical, and unheard of in the community, may do more to keep up the standard of professional information and activity of thought among his associates than the dozen men who see the largest number of patients or possess the best professional incomes.

The man who attempts to practice medicine without drawing on the experience of the profession in the past and without contact with the professional thought of his contemporaries remains ignorant and degenerates into the lower type of charlatan. If the minds are few that willingly devote their chief energies to the study of medical literature, it is all the more important to the profession at large that they should be furnished with the opportunities to do under the best conditions, this work, which, although recompensed only by the pleasure it gives the worker, is yet essential to the welfare of the profession as a whole. If we cannot be learned ourselves, let us have the benefit of association with those who are widely read.

It seems reasonable to expect that those whose usefulness in the community and whose ability to earn an honest livelihood comes wholly through the application of knowledge transmitted through medical literature, should contribute to establish and sustain a medical library, even though they have no great appetite for reading, and prefer rather to profit by contact with others who keep more closely in touch with the movements in medical thought. When this responsibility is shirked even by some who pose as teachers and leaders in the profession, who decline to give for this purpose even a fraction of what they contribute for churches, politics or social clubs, is there not need for active consideration and discussion of the relation the medical profession should bear to the swiftly augmenting literature of medicine?

A medical library develops slowly, especially during its earlier years. Time will be required to perfect it. It cannot be started too soon, or urged forward with too much energy. But in spite of all we can do we shall have to wait long before its size and efficiency will be what we desire. And if such a library is to be to us all that it might, when we have secured it, there is need meanwhile to learn to handle to better advantage the portion of medical literature already within our reach. Certain well-established principles should be applied to the writ-

ing of articles and the editing of journals and the compiling of books. But this is too long a story to take up here. It is of more immediate interest to consider plans for the systematic study of current medical literature in a cooperative way. The council of the academy has decided to arrange to give a part of each of the meetings, during the coming winter, to the presentation and discussion of the recent literature of some department of medicine or some particular subject of general interest. It is to be hoped that this will stimulate reading, and thought about the best methods of reading; that it will develop the power of getting at the kernel, with the least hindrance from the chaff, which constitutes such a large proportion in the vast bulk of the present medical literature.

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