

SCIENCE

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THE LANE MEDICAL LIBRARY OF
STANFORD UNIVERSITY¹

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WE have met to-day to mark a milestone in the history of Stanford University, on the one hand, and in the history of medical education, on the other. It is a milestone that we mark, not an epoch, for epoch-making events do not often appear more than once in a lifetime. But a milestone marks progress, even though after it is set up all shall go on as before.

Stanford University is now twenty-one years old. Its days were opened on a hopeful morning of October in California where all days are hopeful, just twenty-one years ago. It has come of age. It is old enough to be doing the work of a grown university.

And there is no work of the university more worthy or more needed than medical instruction and medical research, the training of men who shall help their fellows in all their bodily ills, on the basis of the best and fullest knowledge, while themselves adding day by day to the world's stock of wisdom. In these days medical research stands on the firing line of the advance of science. There is no branch of knowledge which is moving more rapidly and there is none which contributes equally to the aggregate of human welfare.

We dedicate to-day the home of the Lane Memorial Library of Stanford University to medical practise and medical research. It is the gift of the will of Mrs. Levi Cooper Lane. It begins its existence with a handsome building, adequate for its needs for years to come. When it must be extended we hope that the grateful people of San

¹1912, intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

¹Address by David Starr Jordan at the dedication, November 3, 1912.

Francisco will be here to see that all its needs are met.

It has already on this initial day a library of nearly 40,000 volumes, all relating to medical practise and medical research, a good number of books, as you will see when you compare it with other libraries devoted elsewhere to the same subject.

The importance to San Francisco of such a collection of medical books kept up-to-date by a steady inflow of the best journals and monographs is obvious. The library is the natural center for creative effort and hence for all research, since there is no loss of energy so needless as is the doing again that which has been well done before. All new work must be based upon knowledge that has gone before. The breath of life of all research is the joy of seeking for the unknown. Chance discoveries of great moment in medicine are no longer to be made at random. Piece by piece must new truths be found and correlated. Each investigator must rest his work upon that of others. He must stand on the shoulders of the past if he is to look into the future. To know what has gone before is only possible where accumulated records are at hand. In the library which we dedicate to-day is massed the product of thousands of minds, some great and far-seeing, some small but earnest, but all seeking after truth. The great function of such a library as this is to accumulate and classify and make ready of access the knowledge that the world has already gained and to keep abreast with the steady current of advancing medical science, choosing from it all that seems likely to be worth while. Such a function is a difficult and responsible one and one that will be performed in fuller and fuller measure by this library as it meets more and more with the support of the great state in which it is located. Indeed its interest should extend far beyond the con-

finer of any one city or state, for no such collection of medical books is to be found elsewhere on this continent west of the Mississippi nor along the shores of our great ocean so soon to be expanded by the Panama Canal; itself a product of human skill that has been made possible by the advance of the science of medicine.

The Stanford Medical Department with its medical building, including Lane Hall, its Lane Hospital and its Lane Library, are, as you have already heard from my colleague, Dr. Rixford, the gift of the eminent surgeon, Levi Cooper Lane and of the faculty of Cooper Medical College. Dr. Lane first established the Cooper Medical College, named by him for his uncle Dr. Elias Cooper. But as the future of medical instruction must lie with the universities, and as sound medical instruction must rest on university courses in physiology, chemistry, biology and physics, Dr. Lane made arrangements whereby the board of directors of Cooper Medical College were able to deed this property to Stanford University on the sole condition that the university should use the gift of money and buildings for medical instruction. The corporation of the Cooper Medical College has dissolved itself, patriotically turning over its good-will and all its properties, hopes and achievements to the larger institution, and Stanford University has loyally accepted the trust and is doing the best work it knows how to do in the line of the acceptance of these pledges.

The function of the privately endowed university, as the authorities of Stanford understand it, is to set standards in education and to uphold these standards. It must set standards in service to society as well as within its own classrooms.

In whatever way a school of medicine can help the people it is its duty to render aid. The hospital is the laboratory of clin-

ical medicine. This has become an axiom in modern medical instruction. But a further duty is incumbent on the university hospital of to-day. It should be so conducted and controlled as to serve as a model for all that is essential and worthy in the institutional care of the sick. Only in such a hospital with its numerous internes and assistants and its trained staff can satisfactory control be made of new methods of treatment and such treatments standardized for use of others. The elevation of nursing standards, the thoroughness of case study and care that inevitably follow the well-trained student into the hospital and ward are the great boon of a university hospital. All this involves an effort at the best in research, in training, and in character building.

The funds of a private institution are limited. It can call on no legislature for help if it has undertaken more than it can carry out. It must be sufficient unto itself. This means limitation. It can never cover the whole range of knowledge, nor the whole range of practical achievement. It can not make its campus coextensive with the state. It can not provide for multitudes of students, dependent on fees, unless it makes these fees so high as to be prohibitive to self-helping men and women. To this class belongs the vast majority of the students we in the west find worth while.

But the private institution has its own advantages. It has freedom of development. It is dependent on no outside influence for its direction. It can undertake what it deems best worth doing. It can insist on the highest standards. It is above all temptation to grant university titles or degrees to the products of four years of frivolity, dissipation and sham. Above all, it has the privilege as well as the duty of making its professional courses of such a character that

it can be sure that every graduate is really a university man. It is not claimed that the private university has any monopoly of high standards or of efficient practise. It claims only that no other type of institution has the right to loftier ideals. In proportion as it is true to its opportunity its aims should be the highest within its range of possibilities.

No institution can do better than its best. If it falls short of this, it has no adequate reason for being. And Stanford University means to justify herself. She is pledged to justify herself in the direction of medical instruction. And after all, in the multiplicity of medical schools instruction in medicine is nowhere overdone. The profession of physician is overcrowded because its men are undertrained. It is a very true expression that there is always "room at the top." In medicine as elsewhere in life the crowd is around the bottom of the ladder.

A young medical student in New York, it is said, committed suicide not long ago, leaving behind him his word: "I die because there is room for no more doctors." Room for no more doctors just now when in the history of the world it is most worth while to be a doctor! Now when the progress of the sciences and arts which deal with sickness and health have given the intelligent and honest doctor a power no one else has ever had before over the forces of sin and death!

Another medical student was asked how he dared to return to take so much time to prepare for a profession already so overcrowded. "I propose to practise medicine," he said, "those in the crowd must look out for themselves."

Frederick Denison Maurice once said: "Make your system of education such that a great man may be formed by it, and there

will be manhood in your little men of which you do not dream."

And to such a system of instruction in medicine, a system which may form great men if great men come within its reach, this beautiful library is dedicated. And all resources of Stanford University stand pledged to make this purpose good.

I said just now that medical research is now on the firing line of the advance of science. It has left behind it as outworn garments all medical theories, and all schools of medicine. The medical advance is the work of no school, the offspring of no preconceived theory.

One of my early students, on graduating in medicine, was asked to what school he belonged. His answer was "I have nothing to do with schools. I am trying to practise medicine." Just as soon as men seriously try to practise medicine, schools of medicine cease to exist. These belong to the metaphysics of the dark ages, when men, in default of science, tried to practise philosophy.

At the most or at the best, a school indicates merely a preference for one mode of therapeutics over another, or over all others, a matter of very minor importance as compared with knowing the nature of the ailment in question and of causes which brought it about. Accuracy of scientific knowledge is fatal to the prearranged theory of treatment of disease, the basis of any school of theoretical medicine. Accuracy of knowledge goes beyond symptoms or surface indications. It is with symptoms and symptoms only, in default of knowledge, that varying schools of medical therapeutics become possible. When we know the actual conditions which give rise to symptoms, all methods must rest on these conditions.

All art is based on science. Science is human experience tested and set in order.

Art is knowledge in action. An art which is not based on knowledge becomes a mystery or a trade. The practise of medicine through the ages has been one or the other or both. It is a trade when the physician apprentice follows his master about, learns his ways, his prescriptions and his professional dignity. It is a mystery when practise is based on some theory of therapeutics which goes outside of human experience for its justification.

Science is alike to all men who have grasped its data and its conclusions. Art will vary with the personality of the individuals who practise it. Sound medicine must rest on science. Whoever treats the ills of the human body successfully must know this body in health and in disease. He must know the range of its disorders, its abuses, its dislocations and its parasites. Those who try to heal without knowledge of the actual conditions with which they deal are of necessity impostors.

The limit of "medical freedom" is a very plain and natural one. Let the patient take whatever kind of treatment he may wish, but let no treatment be administered by persons who have no knowledge of the fundamental facts of medical science. If the requirement of technical knowledge is fatal to any school of therapeutics, it is time that that particular form of robbery should be done away with. Taking chances with the lives of others for the money there is in it is not a profession to be encouraged.

The basis of the varying schools of medicine lies not in science, but in the varying theories of symptoms. In the old days, when microorganisms were unknown, where physiology was elemental and pharmacology itself a form of metaphysics, it is not strange that symptoms engrossed the attention of the practitioner and that there

grew up widely differing theories in regard to their treatment.

It was natural in these days, that men should face symptoms with remedies calculated to remove or obscure them. This method, contemptuously designated as allopathy, "unlike treatment," as the drug and symptom were unlike, had in it the germ of better things, because it gave play for experiment and was not bound hand and foot by any predetermined notion.

It was a step forward from the idea of the dark ages, that each disease had some definite predestined remedy, that for each ailment, that is, a special group of symptoms, there was somewhere, somehow, some cure mysteriously provided in nature if we could only find it out.

As the plant world lies all about us, as most plants secrete or produce something with a definite odor or taste, balms, resins, aromatic oils, bitter alkaloids, strange substances useless for any purpose unless it be that of medication, it was natural that men should turn their attention to these substances. Some of these products or simples showed strange effectivenesses. Others did no harm and were therefore suspected of doing good. Quinine was thought to cure malaria by setting up a feverish condition like that arising from malaria itself. Digitalis controlled the action of the heart. Mandrake, senna, rhubarb kept the intestines open. The pink (*Spigelia*) was death to worms. Yerba buena, yerba santa, sage tea, catnip tea, tansy tea, sassafras tea, as well as tar, molasses and sulphur, were "good for the blood," especially in the spring, and the tonic effect of almost any bitter bark dissolved in alcohol was highly appreciated.

Out of this notion that a specific disease had a specific cure, naturally arose the form of quackery involved in the patent medicine. Its practical value lay in the

elimination of the doctor, or rather in postponing his arrival until near the end. It is very simple, by reading an advertisement in any easy-going newspaper, or by the perusal of an almanac, to pick out your own disease from the list of symptoms graphically set forth. Almost every one has felt headaches, twinges, blurrings, ringings, smartings, achings, givings and misgivings and these will indicate the necessary drug. If this drug be essentially whisky and water made sweet or bitter by some easy stain, or if some more virulent or effective poison is used, there is likely to be enough of apparent satisfaction or of change in symptoms to justify a written testimonial and another bottle of the drug.

Or if the basal constituent of the medicine be merely water, the effect of hope with the lack of visible harm is likely to lead to the same results. In either case, the self-medication is likely to produce no effect or an effect worse than nothing.

While much that is now sold in the drug stores represents merely a harmless or sometimes useful physician's prescription, the aggregate result of the patent medicine is the building up of gigantic systems of robbery, on the one hand, and a corresponding damage to public health, on the other.

The way out of the patent medicine domination lies in the better training of physicians, on the one hand, and the enlightenment of public opinion, on the other. No more effective agency exists for the forming of public opinion than an aggressive administration of the Bureau at Washington which deals with pure food and pure drugs. No single agency in this direction has counted for so much as the personal work of one man, who has spent his life in fighting frauds and poisons. But we must have a hundred Wileys in the public service where we now haven't one.

Among the host of specifics men naturally sought for some guiding rule, some informing spirit that would tell them beforehand and once for all how to match these diseases with the predestined healing agent.

Sometimes this was found in the looks of the plant. Its flowers or leaves or roots somehow simulated the disease it was found to cure. Thus the figwort was denominated *Scrophularia*, apparently for its scrofulous appearance. The liver-shaped leaves of *Hepatica*, the liverwort, showed clearly what was expected of it. And in the ignorance of what was really the matter and of what really happened after a remedy was absorbed, there were as many successes as failures, and the dark mysteries of the profession prevented any following up of either.

A more scientific application of the method of resemblances lay in the study of the effects produced by a drug in relation to the symptoms of the malady it was to cure. Like symptoms, like effects. Like cures like. If your patient is troubled with colic, give him a colic-producing drug. If with eczema give him something to make the skin smart. The same principle would hold for all diseases.

But with this went the saving clause of homœopathy or like treatment. Don't give too much, and give good nursing. As time, patience and good nursing are the best of drugs, this method has had a large vogue as well as a large effectiveness. If it is based on a sound study of the human body, its defects, its slips and its parasites, this method must merge into the real practise of medicine.

For knowing the distemper, its causes and its range, the method of treatment is a minor matter. The idea that a disease has a definite drug as its remedy, whether in large quantities or small, is a relic of the

middle ages. Drugs do not heal anything. Some are palliative, resting in the category of vaseline, cold cream or talcum powder, some kill parasites directly as quinine kills the animal organisms known as malaria. Sulphur is death to the itch, the visible cause of the distemper once thought almost incurable, and known as the "gall struck inwards." Others do evil as stimulants or counter-irritants, that good may come, helping on the one hand through the incidental damage on the other.

But the metaphysical relation of drug to symptom has no existence and has passed out of medical practise never to return.

With doubts of the efficiency of drugs as remedies came theories of therapeutics by which all drugs were discarded. Orthopathy in its day rejected them all, relying on the well-known disposition of nature to heal her wounds whenever she is let alone. Hydropathy set people to sweating under close envelopes of wet sheets, often, it is true, to their great advantage. I can remember when the wet sheet packing and the over soul were the test and signal of a progressive nature, much as to-day are the referendum and recall.

Mind-healing in various forms has always found its place. It is a notorious fact that when the symptoms of any disease are graphically set forth, the average reader finds most of these symptoms in himself. It is only a step to the conclusion that these symptoms are the cause of the disease. If you can create the impression that the symptoms do not exist you take away the disease. For disease and symptoms are alike the product of morbidity of mind. To have faith is to cure this morbidity. One of the leaders in this form of therapeutics says:

Sin, Sorrow and Sickness are all three illusions of the Sinful Soul. . . . They are but troubled

dreams of the darkened soul. . . . In afflictions of disease and dread and death one must say "This is a dream." Then it becomes a dream and we rise above it into an atmosphere of perfect serenity. . . . We need not deal with the body, for the body does not exist. It is dull, heavy and aching because it is the dead Residuum of Dream. When we forget it, it is no longer there. Treat a belief in sickness as you would sin, with sudden dismissal.

It is undoubtedly true that a serene spirit is a valuable agency in the recovery from disease. It is likewise true that suggestion has a mighty potency when it is rightly applied. It is a legitimate and recognized branch of therapeutics, which may be destined to have a wide application in the future treatment of disorders of the nervous system.

But it is likewise true that suggestion heals no broken bones, a spirit unperturbed gives no safeguard against poisoned mosquitoes and the power of the will and the imagination is potent chiefly against disorders of the imagination and the will.

The first and most important thing in any treatment is to find out what is the matter and then, if may be, to remove the cause from which the symptoms flow. No system of philosophy, no cult of religion, gives us any help as to matters of fact. It does not strengthen our knowledge of the demands of the body to deny the body's existence. The whole fabric of modern science, the whole fabric of modern civilization, is based on the conception of the reality of external things. The sanity of life is conditioned on our belief in realities, the mental state produced by contact with external things as distinct from illusions, those mental states arising from conditions within ourselves. This distinction is the foundation of safety in life. Our body through its nervous system is cognizant of realities. The defects in this nervous system may cloud our view with illusions.

The art of sound living is to discriminate between the two sets of impressions. To confuse reality and illusion is to confuse life and death. To show that perception and reason may sometimes be deceived is not to add reality to the figments of imagination. It does not advance science to doubt the things we know to be true in order to give proof to propositions we know to be false.

We may be therefore certain that progressive medicine will still believe in the reality of the human body and the rational veracity of the world of sense.

We may be sure that medical science does not grow in accordance with the theories of any school of medicine or of metaphysics. It is advanced by the study of things as they are, by the use of tools of precision on definite problems, by the microscope and scalpel, the test tube and reagent, by the culture of germs and the discovery of germ-killers. It grows by probing the actual causes of bodily disturbances and the actual removal of such causes.

It grows as all sciences have grown by the method of induction, by putting two and two together and verifying the apparent existence of four as a resultant.

And in the future of medicine, the mere removal of disease must play more and more a subordinate part. Most disease can be prevented. Above all therapeutics stands sanitation. It is possible to remove causes of disease long before any disease begins. It is possible to heal our patients before they are ever sick. Our knowledge in many fields is now adequate for this result. No one can be attacked by an infectious disease unless we have somehow or other permitted the infection.

In modern war, it now costs on the average about \$15,000 to kill a man. In the late Boer War, this expense ran up to nearly \$40,000. It is cheaper to save

men. It is cheaper to stop killing. In our own country, in the time of peace, when nothing but peace is possible among civilized nations we spend nearly a million dollars a day on matters concerned with past or future wars; \$850,000 a day, on future wars alone, that we may not be caught napping when the day of the impossible shall arrive.

A wiser and more civilized nation would give some part of this sum to the prevention or stamping out of the worst of infectious diseases. For if we are napping these are sure to come. The danger of the red plague, present everywhere, is infinitely greater than that of war with any part of Europe or of Asia. The terrible infliction of the unknown parasite which shows itself as infantile paralysis awaits the strong arm of the people to set it aside entirely. No infectious disease would long exist if we made adequate quarantine provision. Its germs, animal or plant, must be carried from man to man, or from animal to man, else the race of parasites would die out. Now that we know what our enemies are, it is possible for us to fight them. This I said in a review of Tyndall's work which I printed thirty-five years ago. Now that we know what our enemies are and now that we know that they can be fought successfully only by national and international cooperation, it is our duty thus to fight them. It shows a lack of national manliness to continue to bear these ills when a little energy with the knowledge we have is adequate to throw them all off.

I am still a young man, I am sure of that. As I said once before, when I hear the students speak of Old Jordan, I know that they mean the river of Palestine, or perchance in these days a forbidden brand of alcoholics. They do not mean me.

It is not so many years since I received the degree of doctor of medicine, and I

hasten to say that I have never practised medicine and never intended to, so that my failures in knowledge have never harmed any one, nor brought me a dollar of unearned increment.

But at that time in 1875, the words bacterium, bacillus, microbe were all unknown, all slumbering together in the Greek Lexicon. This lexicon gave no suspicion that *βακτηρίον* and *λογός* would come together to form a science, and that the one science most vitally related to human life. The world of science, and therefore the province of medicine knew nothing of invisible one-celled animals and plants, bacteria and protozoa, which flourish and run their courses in the life blood of living animals. The source of infection in disease was then called a virus and the growth of a virus was an extension of death. Carlyle had said that a fallen leaf must still have life in it else how could it rot. But neither the poet nor the prophet realized that this life which tore the fallen leaf to pieces was the life of a multifarious group of one-celled vegetation whose function it is to return all organic matter not still active back to the universe in its constituent elements. In those days malaria was an evil spirit or miasma, the product of bad air or may be of bad water. All plagues were of the same sort. No one suspected the mosquito, the fly, the flea, the louse, the bedbug or the woodtick of harboring any vices worse than those which their bite or their presence suggests.

There was no science of infectious diseases and therefore no art in curing or preventing them. The most that could be done was to let them run their course, allaying as may be some of their most annoying symptoms.

Antiseptics were only guesswork. We had not heard of carbolic acid, or barely

heard of it, and the coal-tar products with their varied possibilities of usefulness and mischief still lay in the fossil beds of the earth. Surgery was a matter of luck, a gamble, as the phrase is, still conducted, as has been said, "along the lines laid down by the early Egyptians." There had been no Lister to show the reason for clean knives, clean hands and clean air, and the battlefields of those days were a wild riot of the germs of gangrene and blood poisoning.

As surgery did not exist, we knew nothing of preventive surgery or the surgery of pathology.

As medicine dealt with symptoms, we knew nothing of pharmacology. These were the days before Michael Foster and physiology was still merely a series of deductions from the facts of elementary anatomy. The nature and structure of the body cell was very scantily known. Without knowing the germ cell, the physical basis of heredity, the science of heredity was unknown, and without accurate knowledge of heredity, the science of eugenics can have no existence or meaning.

At the present time, the facts and laws of pathology are to the trained physician as essential as the alphabet or the multiplication table to the rest of the world. But we poor practical doctors of our day had to get along without it. Science had not reached so far, and we had to be practical men because, perforce, we could not be scientific. Dr. Charles Sedgwick Minot has well pointed out the distinction. He says:

The only important difference between the practical doctor and the scientific doctor is that the patients of the practical doctor are more likely to die.

In healing men, as in other lines of industry, the first requisite is to know how. To know how is the essence of science.

The next stage of the scientific doctor is not merely to cure his patients, but to help

conduct the affairs of the community so that men and women will no longer come to him as patients to be cured.

Half the disease of the world comes from the infection of the crowd. Nine tenths of the infection of the crowd could be spared if the knowledge we have could work itself out in governmental action.

The governments of the world are about the poorest tools we know of for the achievement of good deeds. They are controlled by tradition, by prejudice, by the noise of the drum and fife. They are ruled by influence of caste and privilege. They are bigoted and wasteful and when they deal with the individual life they are likely to be careless and unjust.

But in dealing with the great plagues of the world, the black, the yellow, the red and all the poisonous array of health-breaking parasites, the government is the only tool we have. The individual is helpless, the community is all. The acts of the community can not rise much above its knowledge. All effective government is by public opinion. The people must learn the facts of pathology and of sanitation. There is no school of medicine which can honorably come between them and the truth.

And that the Lane Library of Stanford University, the Medical Department of Stanford University and the university itself, may do their part in the great work of bringing health to the people, and that they may cooperate with the sister schools and with all other good agencies to good ends, is the motive behind the functions of to-day.

ANTRITTSVORLESUNG^a

Eure Kaiserliche und Königliche Majestäten!
Hochansehnliche Versammlung!

DER erhabene Wunsch Eurer Majestät,

^a Am 31. Oktober in der neuen Aula der Universität zu Berlin gehalten.