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MEDICINE AND SOCIOLOGY[1]

IT is a pleasure to have this opportunity to be with you at your commencement exercises. Rush has attracted many Wisconsin graduates medically inclined. Not only in the present graduating class but also among the members of your faculty I greet not a few Wisconsin men. Furthermore, the University of Chicago, with which Rush is officially affiliated, has a course in the premedical and medical sciences similar in ideals to the one we have at Wisconsin. In the premedical course at Chicago in addition to physics, chemistry, biology and a modern language some work is required in social science. Work of this kind is advised but not required at Wisconsin, but I am not sure but that it should be required there. There is ever greater need for sociology in medicine.

On the one hand, medical problems are at bottom social problems and are to be wisely solved only by those who have some knowledge of social science. On the other hand, the increasing complexity of the social organization brought about by the introduction of machinery and of rapid means of transportation of people, materials and news, the urbanization of the population and industrial concentration, have developed social problems which demand above all else the intelligence of men broadly trained in medicine. The triumphs of civilization are due to organization, to the subordination of individual whims to broad social aims. Its failings, on the other hand, are in large part due to the too constant appeal to selfish personal in-

[1] Address delivered at the commencement exercises of Rush Medical College, June, 1911.

terests as an inducement to social effort. Much that is weak and inefficient in the treatment of disease by physicians is due to a too narrow preliminary training, to a too restricted attitude, to a selfish, competitive, unprogressive individualism, archaic and out of place in modern highly organized society. Many of the worst evils of our present-day civilization, dirt, ill health, despondency, pauperism and crime, are in large part due to the failure on the part of the majority of those trained in medicine to act as leaders and public educators. Health of body and of mind should be recognized as of first importance to the community. "They have been so recognized, so far as they have been understood," says Havelock Ellis, "in every great period of civilization of which we have much knowledge, as Roman and Moorish ruins alone suffice to testify. That they are not so recognized to-day is the chief element of rottenness in our civilization. We postpone laying the foundations of our social structure in order to elaborate its pinnacles. We have not yet learned that a great civilization is ill built up on the bodies of men and women enfeebled and distorted by overwork, filth and disease" ("The Naturalization of Health," 1892).

The marvelous advance in industrial productivity characteristic of the past century is due, on the one hand, to the ideal of learning all that is possible about nature by observation and experiment, in a word to scientific research, and, on the other hand, to the organized application of this knowledge to human needs. It seems not improbable that during the coming century an equally earnest effort will be made to learn the truth about mankind, by observation and experiment, in order that the application of knowledge to human needs may be made more efficient. Medicine as a science occupies a unique position in that, on the one hand, it is closely bound up with the physical sciences on which industrial productivity depends, with physics, chemistry and biology, while, on the other hand, it deals directly with people in their social relations and is therefore intimately related to sociology. This latter relation has not been sufficiently recognized hitherto by either medical men or sociologists. With the application of a scientific sociology to the needs of mankind the importance of medical science will come more and more to the fore.

About fifty years ago a witty Englishman said that the ancients had tried to make of medicine a science and had failed, the moderns had made of it a trade and had succeeded. There is truth in the statement. The medicine of the ancients was rather an art than a science. Empirical practise was ahead of the theories used to explain the nature of disease and its treatment. Medicine is still too frequently looked at from the standpoint of a trade, but since the Englishman gave his cynical opinion medicine has progressed as a science more than in all the centuries before.

In the development of medicine four stages may be recognized, a demonic, a hygienic, a physiologic and an etiologic.

In demonic medicine disease is looked upon as an evil spirit which has taken possession of the body and which may be scared out by elaborate ceremonies usually accompanied by noise and supposedly fearful looking objects. This type of medicine is found in practically all savage tribes and wide-spread even in semi-civilized countries like China and India and is not unknown in a less crude form in modern America.

In hygienic medicine disease is looked upon as an abnormal functioning of the body which can in large part be over-

come by methods useful in keeping the body in healthful activity, by regulation of the diet, sleep, air, bathing, exercise and mental recreation. This type of medicine was brought to a high stage of development by the Greeks, among whom personal hygiene was practised to a degree of perfection which it has never elsewhere reached. To Hippocrates are ascribed the works in which the hygienic medicine of the Greeks is summarized. It has formed the basis of much of the best medical practise ever since. If, however, as some historians believe, the decline of Greece was due in large part to malaria, the Greeks in the end served to illustrate the inadequacy of merely hygienic medicine.

Physiologic medicine is based upon centuries of study of the structure and functions of the body in health and disease. It began among the Greeks soon after the time of Hippocrates and reached its highest development during the nineteenth century. It seeks to determine accurately just what structural or functional disturbances underlie the symptoms of a given disease, to what extent the disturbances are beneficial and to what extent detrimental, and what may be done to allay the detrimental and excite the beneficial disturbances. It has given rise to refined methods of diagnosis so that lesions of the heart, the lungs, the kidneys and other vital organs may be determined with considerable accuracy, and steps taken so far as possible to overcome these defects by use of drugs, operations or carefully regulated habits of living. It has shown that not all symptoms of disease are signs of an injured mechanism, but rather may frequently be signs of a vigorous healthy fight against invasion. Thus fevers are frequently, if not always, accompanied by the production of living cells or of chemical substances which attack invading disease germs. The fight may be lost and the mechanism may be permanently damaged, but on the other hand the fight may be won. That a fight won against a mild invader may enable the body to resist a stronger one was shown in the latter part of the eighteenth century by Jenner, who discovered that inoculation with cowpox will protect against smallpox. This great discovery of vaccination soon proved a blessing to mankind, but nearly a century passed before scientific knowledge and methods became sufficiently developed to give us the Pasteur treatment for rabies, the Behring serum treatment for diphtheria, and the opsonic therapy of Wright, all based upon the idea either of stimulating the normal power of the body to resist disease or of stimulating an animal to resist disease and then utilizing its resistance products by injecting them into the human body. These biological methods of treating infectious or contagious diseases are to be contrasted with the merely chemical methods of which until recently but two were known to be specific: mercury in syphilis, derived from the Arabian use of the drug in cutaneous affections, and quinine in malaria, derived in the eighteenth century from the use by natives of Peru of Peruvian bark to cure fevers. Recently the genius of Ehrlich has enabled him to add at least one new specific drug, another cure for syphilis, and to open a new field for work.

In another direction physiological research has shown that when an organ whose secretions are needed for normal activities is deficient its place may sometimes be taken by extracts from organs of the lower mammals. The use of thyroid extract in cretinism and myxœdema is one of the greatest gifts of physiology to medicine. Nothing is more astonishing than the development of a cretin, otherwise des-

tined to a dwarfish, toad-like existence, into a nearly or quite normal individual when fed on the extract of thyroid glands of the sheep.

Modern surgery is an outgrowth of physiological medicine, although many of its triumphs are due to asepsis, and this in turn is a product of the stage of medicine next to be considered, the etiologic.

Etiologic medicine seeks to determine the causes of disease and to deal directly with these. It is a direct outgrowth of physiologic medicine and has really been the aim of the foremost students of the physiology of disease. While the causes of some diseases have been fairly well understood for many years, etiologic medicine was first really placed on a firm basis by the genius of Pasteur and Koch about fifty years ago. In infectious and contagious diseases the specific organisms and their mode of transmission have been discovered in a large number of cases, and in others much has been learned even where the specific organism has not yet been discovered. Thus one species of mosquito is known to transmit malaria, another to transmit yellow fever. The malarial organism is known, that of yellow fever is not. Malaria can be fairly successfully treated with quinine. There is no specific for yellow fever. Both diseases can be abolished by getting rid of the mosquito. Typhoid fever, for which there is no specific, can be gotten rid of by guarding water and food supplies and for a time, at least, guarding the public against typhoid carriers, people who harbor the germ without themselves being sick. Such carriers, however, would probably not exist where the water and food supplies have been kept pure for years, except, of course, as they might come in from outside. Tuberculosis is a more difficult problem, but by guarding the air and food supply and by teaching consumptives how to keep themselves from infecting others great advances can be made toward getting rid of this disease.

Tuberculosis offers perhaps the best example of advance from the physiologic to the etiologic attitude toward disease. The history of recent advance in the study and treatment of tuberculosis has recently been well summarized by R. W. Phillip ("Progressive Medicine and the Outlook on Tuberculosis," *British Medical Journal,* 1909).

The remarkable advance in the medical sciences during the last half century has been due chiefly to the development of research laboratories in universities, in special research institutions and in the government service. In spite of relatively meager funds these institutions have provided instruments and inspiration for search for the truth; the work has been led by men of genius, and has been organized so as to promote cooperation without destroying initiative. For the most part these research laboratories have been connected with laboratories of medical schools, although in this country such connection has been unfortunately too rare. Where such a connection exists, as at Chicago and Rush, the investigator is stimulated by the youth about him while the younger men are inspired with ambition for that real power which comes from scientific knowledge.

In the application of medical science to human needs America has been much more backward than in the advance of medical science. This is due probably chiefly to the fact that a very few men can advance medical science enormously if they be of the caliber to discover essential truths and have the right environment. One or two research institutions or a government inclined to give even meager support to medical investigation makes possible the

work of a Walter Reed, who is primarily responsible for the proof of the conveyance of yellow fever by mosquitoes, or of a Ricketts, whose work on spotted fever and on typhus fever will, in spite of his untimely death, cause his name to be lastingly remembered. On the other hand, in order to have an affective application of medical science to human needs there must be a sufficient number of men well versed in the science to make it possible to educate the whole people to its practical value in the broadest sense. This, owing partly to the backwardness of so many of our medical schools, we have not had. In the Wisconsin legislature, a "progressive" legislature at that, bills relating to instruction in hygiene and to medical inspection in the public schools have failed to pass because a handful of christian scientists exerted more influence than a medical profession of three thousand. On the other hand, this same legislature has been quite liberal in providing for state and county institutions for the care of tuberculous patients, but here there has been public education largely led by laymen.

Demonic medicine to a large extent still holds sway. Among the christian scientists the evil spirit is known as "error," among the chiropractics and similar cults as "dislocated vertebræ," among the people, at large as something vaguely formulated but none the less something to be driven out by various kinds of patent medicines for which each year many millions of dollars are spent. The cures which these various forms of demonic medicine sometimes effect are ascribed by the scientific to the action of the stimulated imagination on the body. This has given rise to a new "psychotherapy" in which the effect of mind on body can be utilized scientifically. Psychotherapy, however, is to be looked upon as a branch of physiologic medicine. Demonic medicine has no longer a place in a truly civilized community.

Hygienic medicine, on the other hand, is a lasting gift from the Greeks to civilized mankind. Its basis is personal hygiene, the right use of exercise and rest of mind and body, diet, bathing, fresh air, sunshine, proper clothing and the like. It is primarily the medicine for the home and must depend largely on the intelligence and education of home-making women. In its more specialized aspects for the cure rather than the prevention of disease it is highly developed in our better sanitariums where regulated exercise, selected diet, hydrotherapy, electrotherapy and the like are carefully designed to restore a weakened individual to healthful strength of body, and in hospitals for the insane where the aim is to restore the mind. During the past fifty years in the hands of trained nurses it has transformed general hospitals throughout the world from places of excessive mortality into the safest places in the world in which to be sick. For years to come it appears that trained nurses are likely to be able best to carry its lessons into the schoolroom and the home as they already have into our hospitals, thanks largely to the genius of Florence Nightingale. Modern surgery owes its triumphs fully as much to the trained nurses in our hospitals as it does to anesthetics or asepsis. School nurses to look after the health of school children under the supervision of medical inspectors, and district nurses to carry the lessons of hygienic medicine into the homes where at present babies are so badly cared for that a fifth of them die in the first year and a third die before the age of five, are essential for the advance of health under the guidance of medical science. To the physician engaged in private

practise the nurse trained in hygienic medicine is indispensable.

The practitioner, although he must be able to apply or to direct others to apply appropriate hygienic measures, is himself primarily responsible for physiologic medicine, for the accurate diagnosis and medical and surgical treatment of the sick individual. He must be able to determine accurately the condition of the more important internal organs and be able to apply drugs or other treatment with due regard for these conditions. While many rough-and-ready methods of diagnosis may be used in the home or at the office, many of the more refined methods are here excluded by lack of time or equipment. Thus only too frequently a serious condition is overlooked at its inception and when discovered is so far advanced as to make a cure difficult or impossible. A large percentage of cases of tuberculosis are not recognized until well advanced, in spite of the recent agitation about the disease. This neglect to recognize tuberculosis early will be a standing disgrace to the profession so long as it exists.

Under present conditions of private practise crude, rough-and-ready methods of diagnosis are in many cases the best that can be utilized. A refined method poorly executed is worth far less than a rough method carefully and intelligently used by an experienced, keen-sighted, thoughtful man. But the public has a right to demand the more refined methods. Within a generation we have seen most of major surgery transformed from the home to the hospital. There the surgeons can depend not only on the nursing staff to provide better hygienic treatment than is possible in the home but he can also in a well-manned hospital depend on the internes to utilize many of the more refined and time-consuming methods of diagnosis. To these factors surgery owes no small part of its success.

In internal medicine the hospital is likewise becoming more and more utilized. Sanitariums with highly developed means for applying hygienic treatment have long been popular in the treatment of chronic troubles. Hospitals have not been sufficiently used for the diagnosis and treatment of disease in its inception and less severe aspects, but everything points to a rapid development in this direction. What is needed is more cooperation and less competition among the physicians in any given community. With better cooperation hospitals fitted for diagnosis and treatment could readily be established in sufficient numbers to give every physician a real hospital connection, except possibly in some very small towns. Each hospital should have a laboratory managed by one or more men skilled in the laboratory diagnosis of disease. There would then be no longer an excuse for mere rough-and-ready methods of diagnosis. Nor would it be necessary for the more scientifically inclined physician to maintain at great personal expense a private laboratory of his own. A greater amount of specialization on the part of the various physicians in a community would likewise greatly add to their efficiency, provided the specialization came on top of, not at the expense of, a broad medical training.

In sanitariums it is customary to make a general charge for room and treatment, special fees being made merely for surgical operations. The physician at the sanitarium, if not the owner thereof, is usually on a salary. At general hospitals the charge is usually for room and nursing, and other hospital care, the patient, if able to pay, paying the physician or surgeon caring for him directly for his treatment. The medical staff of the hospital seldom is

on a salary, although a small sum, in addition to room and board, may be paid the interne. At the Johns Hopkins Hospital, where some of the members of the staff have always had some salary as compensation for their care of the indigent, it has recently been proposed to put all of the members of the regular staff on a salary basis, on the understanding that they are not to engage in private practise. The private patients at the hospital would pay the hospital directly, and not the attending physician or surgeon, for their medical care. How widespread such a movement will become can not at present be predicted. In all probability, however, for many years to come the majority of physicians will depend for their support upon fees from patients rather than upon a salary from a hospital or other organization. The freer use of hospitals by no means precludes this.

On the other hand, it is quite apparent that the custom of the employment of physicians on a salary to give medical attendance to groups of people is growing throughout the civilized world. In public institutions for the care of the criminal, insane and defectives, as well as in the army and navy, this custom has long prevailed and in this country has received the general sanction of the medical profession. The employment of physicians by corporations to look after men in remote districts has also received general sanction. But the profession has not looked favorably on the employment by corporations of physicians to look after employees and their families in settled communities where there is an abundance of private practitioners. Nor has the profession looked with favor on the employment at a salary by lodges and other social organizations of physicians to look after members and their families. "Contract practise," as these forms of practise are called, has a bad name, in large part deserved, because too often a physician will contract to treat for a sum too small to make good service possible. When a fair salary is paid for first-class work no legitimate criticism can be made. Certainly there is nothing sacred about the prevalent system of small fees for visits, fees which resemble in some respects tips to a servant for personal service, except that the physician's fee is less often paid in cash. On the other hand, there is nothing especially to be commended in the custom of the specialist, Robin-Hood-like, to hold up the rich sick to pay for the sick poor. The public at large should pay for its necessary charity.

A physician should be paid for his time and his skill and be paid enough to make it possible for him to give good service and improve himself in his profession. But whether he is paid a salary or a fair amount for a definite service makes little difference. The evil to the medical profession of the medical insurance laws of Germany comes not from the fact that the state hires physicians to treat the insured, but from the fact that the state pays far too little for this service.

Much complaint is made of the large numbers who seek free treatment at dispensaries and hospitals in our larger cities, frequently a quarter or more of the population. It is doubtful if so large a part of the population are either paupers or dead beats. Many can not afford fancy fees and know of no way of getting the best treatment except to go to a dispensary or hospital where treatment is organized. Make it possible for the average man to get the benefits of organized treatment at a moderate charge and a large part of the so-called dispensary and hospital abuse will disappear.

There will doubtless always be some necessity for charity work. The com-

munity should pay the hospital and the physician for such as is really necessary. To what extent, beyond mere charity work, the public should pay for treatment of disease by physicians there is room for an honest difference of opinion. Some would have all medical treatment furnished free by the state, others would have none. Most of the profession, as pointed out above, approve of the state employing physicians in the army, the navy and in charitable and penal institutions. In public educational institutions the state is under special obligations to safeguard the health because of the compulsory features of our educational laws. While much can be done along the lines of sanitation and preventive medicine in the schools, much treatment must be given individual pupils if this work is to be effective. Where the law provides for medical supervision of the schools it usually provides that the family of the child shall be notified of the need of treatment and shall be expected to employ a physician for this purpose, except in charity cases where special provision is made. At present this is probably the most practical system, although only from twenty to eighty per cent. of children needing treatment actually get it. It is most efficient where there are school nurses to follow the children to their homes and explain matters to the parents.

The need of proper medical treatment during school life is illustrated by the son of a well-known physician. The boy was slow in the grades, and took five years to get through college. In some doubt the father allowed him to begin a course in medicine. Soon after he entered the medical school some one suggested he needed eye glasses, although he never had supposed he needed them. When these were obtained a new world was opened, continued study became possible and marked professional success followed. A pair of glasses in the primary school might have saved the boy some years in school and much chagrin.

In normal schools, colleges and universities an increasing amount of attention is being given to caring for the health of the students. This care takes several forms. Instruction in personal and public hygiene is now quite general and is required in a majority of colleges. Departments of physical training designed to promote physical health are also quite general. Committees to look after the sanitation of the grounds and buildings are common, but have not in most cases been given sufficient authority to do really efficient work. Classroom ventilation, for instance, is in general wretched. In several of the universities infirmaries are provided to take care of sick students and in others medical advisers or school physicians are engaged to advise or treat those who are ill. Sometimes a special fee is charged each student to provide funds to cover the cost of this medical service, at other times it is paid for out of general university funds and in some instances treatment is free for poor students while the well-to-do are supposed to pay for services received.

At Wisconsin we have a medical adviser with a staff of three assistant physicians, two nurses, a trained laboratory assistant and an office attendant. Careful medical examinations are made of all freshmen and of such upper classmen as require it. Regular daily office hours are held for consultation with students, office treatment is given and some visiting is done at rooming houses of students confined there by illness, although in severe or prolonged illness the student is expected to get his own physician when he can afford to pay. More treatment is given than was originally contemplated, but our experience in Madison has

demonstrated that mere advice counts for little unless it comes from one whose ability to do commands respect. The hygienic talks given to individual students by the medical adviser and his assistants are far more effective than any public lectures on hygiene could be, because the staff commands the respect of the students by its ability to diagnose and treat disease. This, I believe, will be found generally to be the case in all institutional medicine.

In the diagnosis and treatment of disease etiology plays an important part, but the great triumph of etiologic medicine lies in the possibilities for preventive and social medicine which it has opened up. In preventive medicine the state through education, legislation, inspection and regulation plays an essential part. Preventive medicine can only be made effective where the state employs highly trained men to look after sanitation and hygiene. Nearly all diseases at bottom are social and can be properly repressed only by social cooperation.

Indeed even the most individualistic diseases, congenital defects of various sorts, may be frequently traced either to bad or vicious surroundings of the parents or to a bad ancestral line on one or both sides. Eugenics, the new science which seeks to determine the laws necessary for propagation of an improving species, will have to be studied both by the family physician who is to be a wise councilor and by public health officers who aim to be good teachers and guides. Sociological medicine begins not only before birth, but even before conception. The life of young women must be made healthful, young men must be made to understand the lasting effects to the third and fourth generation of drink and the social vices.

At birth again sociologic medicine has its important part to play. When the clean hospital with its specialists comes to be substituted for the dirty midwife and the so frequently bungling general practitioner years of ill health and suffering will be saved the larger share of our married women and our blind asylums will become one fourth too large. Havelock Ellis estimates that in England in 1891 midwives were responsible for the deaths of three thousand women. They were doubtless responsible for the lifelong suffering of many more. It is estimated that about a fourth of the blindness in our blind asylums is due to lack of proper care of eyes at birth.

During infancy the death rate is frightful. While doubtless the fittest survive, they do not survive in the fittest way. An abundance of well-trained district nurses under careful medical supervision could do untold good in this field of sociologic medicine.

A fifth of the population are in the public schools. Here sociologic medicine has already made a good start. In most of the large cities moderately efficient medical supervision has already been established and in the smaller towns it is beginning. Massachusetts has a state law making it compulsory in the public schools to provide a medical adviser and several states have permissive laws. It is the duty of the medical inspector to see that children suffering from contagious diseases are excluded from the school during the infectious period, to examine for defects in the eyes, ears, nose, teeth and throat, to advise treatment when necessary, and in general to look after school hygiene and sanitation. As already twice pointed out, the school medical inspector has his efficiency greatly increased when school nurses are attached to his staff. It has been suggested, quite wisely, I think, that there be an abundance of school nurses who can not only follow the children to their homes and see that

they are cared for, but also act as district nurses to give advice concerning care of infants and general hygienic conditions. The greatest drawback to medical inspection has been lack of sufficient funds to employ enough specially trained men and women at full time to do the work thoroughly. Open-air schools for weak children and special schools for defectives are a natural outgrowth of medical supervision of school children. Chicago is to be congratulated on the splendid start she has made along these lines.

While we can depend on proper medical inspection in the schools and school and district nursing for a great improvement in personal hygiene and in the popular intelligence concerning medicine and hygiene, the care of the public health will depend in no small degree on efficient officers of public health. At the present time these are rare in the United States.

A vast amount of preventable disease exists for which there is no intelligent excuse. There should be practically no typhoid fever, but thousands die from it yearly. Smallpox should be rare, but in the middle west it is quite common. Most of the contagious diseases could be greatly reduced by more efficient boards of health. The milk supply, in most cities, especially those of moderate size, is far too little intelligently supervised. Fortunately, conditions are changing and within the present generation there should be such a demand for well-trained officers of public health that it will be difficult to keep up the supply. Our medical schools will recognize that the training of public health officers is a duty equally important with that of training practitioners of medicine. At Wisconsin, next year, we are to begin a course in public health and we hope within a short time to find a real demand for such a course. The splendid public health work done by our government in Cuba, the Canal Zone and Manila shows what Americans should soon be doing at home. We need a national health bureau and we need in each state and in each district and municipality in each state thoroughly competent health officers. You young men about to graduate must do your best to promote this movement.

Efficient sanitation depends above all else on public education. In tuberculosis splendid progress has already been made along these lines, but much more remains to be done in the general field. The medical profession should do far more than it has done to educate the public. Sanitary laws will be efficient in a democracy just in proportion to the general intelligence about hygienic matters, and no more.

Medical advance depends, on the one hand, on scientific research, on the other on public education along hygienic lines. Every citizen should be inspired with love of personal and public hygiene as were the Greeks. Every physician should be deeply grounded in physiologic medicine and provided with proper facilities for using it practically. Every officer of public health should know thoroughly the contributions of etiologic medicine. All efforts should be made to promote these most fundamental needs of society. While most of you who are graduating to-day will become private practitioners, most of you will be in a position directly or indirectly to promote scientific medicine, public education and public sanitation. You have had as students at Chicago University and at Rush splendid examples before you in your faculty. With such examples none of you can fail to play well your part in helping in the organization of society along more hygienic lines and in the reorganization of medical practise to better fit the needs of modern society.

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