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### EDUCATIONAL REQUIREMENTS FOR TWENTIETH CENTURY PRACTICE

#### Who Should Determine Them and How They May Best Be Achieved The Annual Discourse\*

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"MUCH arises which has already perished and what is now honored is already declining." This aphorism was not penned as applying to the development of the science or the art of medicine, but it very well might have been.

It is, furthermore, a truism, "that few of the problems of human life have, even in details, any particular novelty."<sup>1</sup> We have recently been righteously indignant because certain institutions, licensed to grant degrees in medicine, have been guilty of exercising this right without reference to the qualifications of the applicants. It is on record<sup>2</sup> that this has been done in the case of one or more such institutions, in absentia, for a fee amounting to not more than the annual tuition in many of our Medical Schools, without regard to the previous general education of the candidate, his moral character or his professional attainments. The facts proving the accuracy of these statements were cited, under oath, by the Dean of the Medical School guilty of the offence.

In our own State we have had, for many years, to fight an uphill fight in order to obtain such security as we now enjoy from the improperly qualified practitioner and we are, *even now*, one of only three or four commonwealths where it is legally possible for practitioners of this class to settle, and are obliged to accept the humiliation imposed upon us by such a state of affairs with the best grace we may, because there are enough votes obtainable in our legislature to ensure the persistence of the present situation. In the latter part of the 18th century at two of the most renowned Universities of Europe viz: St. Andrews and Aberdeen, degrees in medicine were granted in absentia upon the recommendation of any two physicians who might be found agreeable to certify that the candidate was qualified to receive the degree of doctor of medicine. The abuse of this privilege became so flagrant that a group of Scottish physicians, headed by William Cullen, a name to

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conjure with in Scotland, tried to bring about a reform in the practice of those Universities. The authorities appealed to, before they would set in motion machinery necessary to bring about the desired reform, insisted upon securing the opinion of Adam Smith, the distinguished author of the Wealth of Nations, an economist by training and profession. He gave the matter considerable thought, so he says, and wrote a long letter, which appears in McCulloch's edition of the Wealth of Nations as an appendix, and which had the effect, apparently, of deferring for a long time the desirable reforms that were sought by the doctors. When the Carnegie Foundation sought to ascertain the best way to remedy the evils that were only too apparent in the medical educational program of this country, some twenty odd years ago, they entrusted the matter to an investigator who had a brother conspicuous for his scientific researches along medical lines but otherwise no better equipped than was Adam Smith to pass an opinion upon the best method of checking the abuses connected with the granting of degrees in his day. Just as it required a good many years to recover from the effect of Smith's advice in the 18th century so it will require some considerable time to recover our balance after following that of Flexner in the 20th. The conditions which demanded correction at both periods were similar. The advice given was diametrically opposed. Smith said no harm would come to the state from the irregular practitioners and opposed an investigation of the methods of the schools. Flexner, very properly pointing out defects in the system, set in motion corrective machinery which has been so drastic in its effect that it is difficult to keep it in control.

We, as physicians have witnessed extraordinary advances in the sciences at the foundation of our profession. Its art has progressed also but not to the same extent. At the same time in which this progress has been taking place our authority in the community in regard

to health matters has fallen off; respect for the Doctor as counsellor and confidant has notably declined as the family physician has been relegated to the background. Cults of various kinds have arisen and gained such following as to seriously compete with the physician in the pursuit of his calling. Social service, contract-practice and many other accessories of our complicated social and industrial life have tended to deprive the Doctor of much of his old time prestige. With a greater degree of general information in possession of the public there has not come a corresponding increase in intelligence, meaning by that an increased ability to make logical use of the greater information which books, newspapers, magazines and other agencies for the diffusion of knowledge have now supplied us. The behaviour of our Massachusetts legislators, for example, who some claim represent a fair cross section of the intelligence of our voting population, bears out this view. They were not sufficiently intelligent e. g., to act upon the vaccination question, justifying their rejection of the bill on the ground that they received more letters from those who were opposed to its enactment than from those in favor of it. If that is to be the method of deciding important questions, and our constitution compels us to have a law making body, it would almost seem that it would be better to send those who were known to be unfit for any sort of work to the State House leaving them to decide all proposed legislation on the basis of the epistolary activities of their constituents. I have been coming to the point where I believe that there is not enough of the right kind of "gray matter" in our General Court to intelligently grapple with the subject matter involved in many bills that come before it with a public health bearing. Some of those whose votes are invariably on the side of the opposition to public health matters have never progressed intellectually very far beyond the mental status of those who had faith in incantations, rubrics, talismans and all the mysticism of the Shaman or "Medicine Man" of ancient or prehistoric times. We are living in an age of science. The Humanities are being crowded to the wall. Research is the password in Industry, in the study of social and economic questions, in science and in education and the object of it all is to make life's tasks easier, living more comfortable and, if possible, more luxurious. To enjoy the benefits that Science has brought it is but natural that there should have been a trek of the population to urban centers. The census shows that about 47% of the inhabitants of the United States resided in rural communities at the time of the last enumeration. By rural communities were meant towns of twenty-five hundred or less. Decided as has been the tendency for the cities to build up at the expense of the coun-

try, the drift of medical graduates to urban communities has been infinitely greater; in one case as high as 95% of the recent graduates of one of our best schools settled in cities and 50% was the lowest percentage of any school studied. Those who have sought to account for the threatened impoverishment of rural communities by this drift of medical graduates into city life, if they are in the position of apologists for the threat, claim that it is either a social or an economic situation in the country that has lured present day graduates away from the country. It is probably true that fewer country bred boys feel that they can afford to spend either the time or the money that a medical education costs in these days as compared with the numbers who did so twenty-five years ago. It is reasonable to suppose that a larger proportion of them would have gone back to their home towns or at least to country practice than would those who were city born. The abandoned farms of New England however would perhaps tell a different story if they could relate what became of their former occupants. They went, many of them, to business success in the cities and larger towns and *never came back* unless after they had "made their pile" and returned to enjoy the quiet of a life, which earlier in their career, was intolerable. So it may not be that the city trained doctor, who came originally from the farm, would have done any differently than his city bred cousin has done when he has earned his medical diploma.

The lure of the city for modernly trained graduates of medical schools does not consist in the greater pecuniary rewards to be had. Except in the case of unusual opportunities for assisting some older practitioner it is very doubtful if the net result of the first few years practice is as great in the city as in the country, when the cost of living is taken into consideration. Social opportunity for the young practitioner whether in city or country can scarcely figure for there is no time for it. The real lure is the opportunity to get into special and restricted fields of practice with their greater freedom from confinement—and confinements—its hospital opportunities and laboratory facilities. These are the dominant factors entering into the determination of where a present day graduate in medicine will settle. The Army, Navy and Public Health officers assured Dr. Pusey, in answer to his questionnaire, that they could not obtain young physicians to man their services at any price the Government would pay. Medical work in the public service is general, affording little chance for specialization besides which it is restricted in the amount of clinical material available and the environment in which it must be carried on is frequently undesirable and subject to frequent change. The Government opportunities for research do not appeal to the young graduate as they might were there more

posts available in large centers. It would therefore seem that we must look somewhere else for an explanation of the scarcity of physicians to supply the twenty-five or more million inhabitants of this country living in rural surroundings, very many of whom are poorly supplied with medical service for the reason that recent graduates cannot be persuaded to go into the communities where these people live.

Two investigations of this problem have recently been carried out, the results in both being practically the same. In one thirty-four states and in the other thirty-six, replied. According to these replies in more than 90% of the States the older generation of doctors were not being replaced. In one investigation, four states and in the other five, asserted that the supply of doctors was adequate. According to still another study, made in New England, it was shown that the average age of country doctors varies from fifty-two to fifty-seven. This of itself indicates that young men are not coming in to country practice to any considerable extent. In the city of Boston the average age is forty-four.

Pusey<sup>8</sup> in a recent article shows by statistics obtained from 283 counties in 41 States that the average age is fifty-two and in these 283 counties there are only 398 physicians graduated in the last ten years. In 100 of these 283 (35%) no graduate of the last ten years has gone into practice. To put it in another way only 1.4% of the graduates of the last ten years have settled in these 283 counties. The truth is unescapable that if there is not a radical change brought about in some way these counties are going, in a very short time, to be seriously handicapped for doctors. Because the expectancy of life at fifty-two, of selected risks, as calculated by the life insurance companies, is only 19.4 years, service to the community on this basis can scarcely be greater than ten years. He analyses the situation in the Cleveland district and proves that the Ohio Medical Schools are not producing enough doctors to care for the replacement needs of their district and therefore cannot contribute to the needs in this respect of other states or even the balance of their own state.

The visiting committee of Harvard overseers, making a report upon their study of Harvard's Medical School in 1925 declare that "at least 200 graduates are yearly needed to replace the losses occurring in New England and that it does not appear that Harvard is furnishing its full share of the needed quota." In 1893 there were 160 schools and a population of 85 millions. Now we have only 44% of the producing schools with a population of 115 million and many of the best schools are limiting their numbers while some are doing far worse, they are restricting the numbers taken from any one district. The country boy suffers more in this sort of gerrymander than does the city boy and the

country doctor is best recruited from his own people. That from 80-90% of all the sick could be cared for by the general practitioner is a conclusion reached by the Council on Medical Education of the American Medical Association which would seem to show that the country must be over supplied with specialists, at any rate in urban populations. It has been argued that because there is one physician to every seven hundred and twenty-four inhabitants in the United States we are abundantly provided with doctors, but no account is taken in such a consideration for the distribution of these physicians. That they are disproportionately resident in cities has been shown by what has already been stated. Statistics are available to demonstrate that in certain parts of the country a great many confinements were unattended by physicians and that midwives were being employed in increasing numbers. Pusey sees in this situation an argument that may be invoked to force the country into state controlled medicine. He feels that the high cost of medical education is the crux of the situation. The day was when young practitioners were willing to set a low monetary value upon the time they could spare from their efforts to secure a practice in which to teach. Indeed they recognized that they could well afford to do so for in the effort so expended they were perfecting their own grasp of medical problems and such connections were an asset to them in the building of a practice. Such associations would be just as valuable today as they were thirty years ago and the schools could command valuable clinical teachers for an expenditure which would materially lessen the University budget. It is laboratory expense and the high cost of even minor clinical instructors which augments the great cost of the conduct of research and makes the budget of a medical school the highest of all University faculties. A few years ago I was endeavoring to plan the budget in a small department, the department of clinical medicine, whose resources were not limitless and was confronted with the fact that a clinical professor, who was desirable, could not be secured unless he were given nine or ten assistants with the rank of instructor each of whom would demand nine hundred or a thousand dollars. It would appear that that portion of the Aesculapian oath which pledges the physician to impart his knowledge to those who are to be his successors in the art of practice has little force in the twentieth century. For the purpose of visualizing the mounting costs of our medical schools note the statement of Dr. Bevan, the Chairman of the American Medical Association's Council on Medical Education, made in February of this year in his address before the council at Chicago. Briefly it may be stated that his estimate of the cost of a University Medical School, caring for classes of 150 each, including buildings, administration,

teaching and research, together with the funds which must be invested to support it, would run from twenty-five to forty millions of dollars. The cost to a University to educate a single doctor is, in some institutions, close to \$3000 per annum. At Harvard it cost approximately \$2000 per year or \$8000 to educate a medical student to the point of graduation. In the overseer's report from the 1925 committee of inspection of this medical school it was stated that the Harvard Medical School costs the community a million dollars annually for the conduct and maintenance of its plant exclusive of what goes into the adjacent Hospitals. Vanderbilt University medical students are educated at an annual cost of about \$2000. Society pays from \$5000 to \$10,000 to produce each of its doctors and the doctors themselves pay an equal amount in addition. Morrison<sup>4</sup> states that on the present basis a medical student might spend from \$12,000 to \$24,000 for his seven years medical training if he had to cash in for it. On this scale he says the student comes out socially and professionally unfit and the system that creates such a situation bespeaks business unfitness some where in its organization. His remedy is a three year curriculum for general practitioners.

From what has been said it can be readily seen that a medical graduate behaves not unlike any other individual who has his living to make. He considers what it has cost him to procure his education and tries to balance what he has, over against his investment of time and money and the possible opportunities to make the best use of an expensive equipment. Blame can hardly be laid at the door of the young doctor that he shows an unwillingness to go away from the cities. Witherspoon<sup>5</sup> feels that two crises face this country in respect to the supply of physicians: in the first place medical graduates won't go where they are needed and second, if they did they would not be prepared to meet the conditions they will find. He says the "medical education of today unfits men for practice at the bedside." The student is overworked: specialization is encouraged and correlation of the clinical and laboratory courses is needed. He seriously objects to the full time clinical teacher, maintaining there is no place for research in practice and points out that the full time teacher idea did not come from within the profession but was introduced by Flexner who never studied medicine.

Criticism of the curriculum of the modern school is not wanting. The Curriculum Committee of the Association of American Medical Colleges in their report to that Association state that there is a good deal of "forced feeding" in the medical schools and considerable intellectual indigestion results; furthermore students come to the last year of their course "intellectually fagged." Call<sup>6</sup> would institute a campaign to

enlighten the public as to their own responsibility in securing what they require from their medical attendants. Emerson summarises the situation by saying that "there are two men to be afraid of in practice viz: the man who judges practice by income and the man who considers every ward case as a laboratory animal." Wilbur<sup>7</sup> maintains that the medical profession has met the problem of medical education by "gorging the curriculum". He declares we have had to absorb the laboratory methods which during the past thirty years have been brought into being and have come to rely upon tests of fluids, secretions, etc., to the exclusion of the study of the patient himself. Medical education has become a pedagogical or University, rather than a professional, affair. We must, he says, continue to regard the human side and not too exclusively the laboratory or scientific side of medicine or we will not carry the public with us. Diagnosis is the great desideratum now, just as in the days of Polypharmacy it was thought there was a certain remedy for every disease. People will naturally turn to those who promise much and pseudo-science, will quite as naturally take precedence over true science in the minds of those who possess a large residuum of superstition, as so many people do. He subscribes to the feeling that the "new practitioner is not as good a doctor as the practitioner trained in the past." Lambert<sup>8</sup>, in a review of the progress of medicine since the year 1900 pauses to condemn "full time" clinical teaching. He believes that Medical Education will "recover from the experience and will not be injured by the experiment". As indicating certain defects which he has observed in modern "A" grade schools, he cites his own experience in holding examinations for 35 high grade students, graduated from ten high class medical schools. They were woefully ignorant of therapeutics and gave the impression that they had not been taught to use their five senses but would prefer to work with fifty-five instruments of more or less inaccurate precision. Undue stress is laid upon the laboratory and the study of symptomatology is neglected. He feels that those who taught these recent graduates seriously failed in interpreting the needs of their students. "They were forever hunting the snark and lecturing on the Ichthyosaurus while their pupils were unable to recognize the cimex lectuarius or a common cold." Sir George Makins has somewhere said "the habitual resort to special methods and the belief that complicated apparatus is necessary in the investigation of the ordinary problems of disease, is likely to do as much toward the destruction of the art of the practitioner as the methods of science can do to help it." "Instruction in medicine," Hippocrates<sup>9</sup> pointed out, "is like the culture of the products of the Earth. Our natural disposition is, as it were, the soil; the

tenets of our teachers are, as it were, the seeds; instruction in youth is like planting the seed in the ground at the proper season; diligent study is likened to the cultivation of the fields and it is time that imparts strength to all things and brings to maturity." Modern medical clinics call for a staff of specialists to interpret for the chief the tests he orders made. For the student this breeds a lack of dependence upon his own resources in reaching a diagnosis. McCarty<sup>10</sup> raises a question as to whether we have really advanced and made medicine more exact and practical. He enumerates a number of faults in his own medical experience, among which are (1) the fact that we take too long to train practitioners; (2) that our premedical teaching is not good; (3) that premedical courses are too full of unessentials; (4) that medical education is not uniform; (5) that we do not sharply distinguish between practice, research and teaching; (6) that students are too much hospitalized and do not come enough in contact with simple diseases, as they would in dispensary practice.

A satirical criticism of modern medical education appears in one of our journals<sup>11</sup> presented by a prominent medical man who prefers to write anonymously because he is criticising the school from which he was graduated twenty-nine years ago. He summarises his views as follows: "The graduated student in these days has his bag packed full of tricks; his mind is like the pocket of a boy's pants—so full of things, he can't find the bit of string he wants." Compare this with the account of the training of a student at the University of Glasgow<sup>12</sup> ninety years ago. He was prepared in Latin, Greek, arithmetic, French, bookkeeping, reading, writing and grammar. He entered the medical school in 1831 at the age of sixteen, and received the diploma of Master in Surgery in 1834, at the age of nineteen. He studied botany, chemistry, anatomy, surgery, *materia medica*, midwifery, practice of medicine and "institutions of medicine" and phrenology. After a short residence in Paris where he spent his time in study in the hospitals he devoted some months to taking courses in pathological anatomy and, in 1836 after examination, he took his final degree in medicine at twenty-one. The examination lasted a little less than two hours but he answered 180 questions and read three pages from the Latin of Gregory's *Conspectus* and wrote a short essay on diabetes.

Marriott<sup>13</sup>, who is Dean of the Washington University School of Medicine in St. Louis, remarks that the medical student of today is like the Strassbourg Goose—he is fed continuously and but little attention is paid to what is good for him or what he likes. He has no time to digest it or think about it and when he comes out he is competent for neither research nor practice. He commends the faculty adviser

scheme put in practice in some schools as having certain of the advantages of the old preceptorial methods. Courses in medical history he recommends and states his belief that students should be weaned from the thought that a patient is a guinea pig or a test tube. He closes by saying that "our duty (as teachers) has not been fully discharged when we have forced men through an inelastic curriculum in a factory-like manner. Flivvers and sewing machines may be made by such processes but not men."

Flexner<sup>14</sup>, returning to the attack, makes comparison of the state of medical education in America after twenty years of the activity of various reformatory efforts and concludes that though there is some reason to be gratified over progress in this country, still it is not what it seems and the really excellent in American Medical Education is exceptional. Though there is some grounds for encouragement there are none for complaisance.

Lorremus<sup>15</sup> regards the rigidity of the curriculum and the inflexibility of the rules of admission as a direct result of the enforcement of the regulations laid down to raise the standards of medical education. There are several good two year schools, i. e., schools having no facilities for carrying on the last two years, who are now confronted with closure because certain schools where their students go for their clinical years are putting clinical work back into the first semester of the second year.

Herringham<sup>16</sup> makes a plea for laying emphasis upon the subject of diagnosis. Though he recognizes the greatly widened field of observation made possible through laboratory methods he insists that even if the horizon may be broadened we do not see objects any more clearly and there is very great liability that the use of the senses and the older instruments of precision may be neglected.

Phillips<sup>17</sup> emphasizes the fact that the physician of the future must be taught more of the art of medicine and not less of its science, though he defines Art as the application of science to practice. He deprecates reduction in the size of classes in medical schools below fifty to the class and in the larger schools urges that greater numbers be taken. An undergraduate school should limit its efforts to the preparation of general practitioners and the training they supply must "smack less of the mechanical, less of the technique of the laboratory and more in the terms of the humanist." He thinks too little emphasis is laid today upon the spiritual and too much on the material. A medical student must be taught to think more in terms of life, health and humanity and less in terms of disease and death. He feels that "the maintenance of individual practice in the person of the general practitioner or family physician is of the utmost importance for the survival and continuance of the family home as the foundation

of the nation." A great deal of stress is laid in these days upon the importance of research in the medical curriculum. No one can deny, nor should he wish to deny, that discipline in the methods of the scientific approach to the solution of medical problems is desirable for all medical students. It is for that purpose, quite as much as for any specific knowledge or interest they may receive from the pursuit of such studies in themselves, that science courses are offered in the early part of the medical curriculum. If there were time, it doubtless might be well to set every medical student to the task of investigating some problem. Indeed this is done in several schools. In view of the fact that sufficient knowledge of what these principles are may be imparted along with the subject matter taught would seem to show that when the curriculum was already crowded to the limit some better use can be made of the time of the student who is not going into research as a life work.

J. E. Sweet<sup>18</sup> in an address before the Ohio State Medical Society said that the man with a real conception of what medical research is, is the man with the right balance between art and science and that it consists of two things, point of view and time to think. He maintained that all that was needed to restore the general practitioner to his own was a knowledge and belief, on his part, "that the art of medicine can be practiced even though the science of medicine is not available just around the corner."

Barker<sup>19</sup> in an address to a group of undergraduates of the University of Pennsylvania in April, 1925, commends the research those students had been doing during their undergraduate course, saying that it had been his experience that those who had had such training under his observation were making excellent teachers, research scholars and practitioners. This is of course probably true, certainly in respect to the two first mentioned, but they are by-products of medical education. General practitioners are, or should be, the main out-put and it was the institution, where he made the above observation, from which in one recent year 95% of its graduates went to the city for their field of labor. Sir James MacKenzie<sup>20</sup>, in his book on the Future of Medicine severely criticises American medical teaching on the ground of its laying too much emphasis upon laboratory investigations which are the essentials of most of the research work encouraged for the undergraduates. There is abundant opportunity for a practitioner to carry on *clinical* research all through his life and if he has been properly trained in his student days, he will do so in many cases, i. e., he will keep careful records, check up his clinical observations and provide himself with the material for valuable studies and, indeed, make real contributions to the ac-

tual practice of the art of medicine, as has so often been done.

The more that specialization is encouraged in the schools the more research will become a part of undergraduate teaching and the more certainly will the schools, whose chief end in life should be the preparation of young men for the problems of general practice, be deserving of the name recently applied to one of them; viz: the "university of applied biology." Such a term may scientifically describe the activities of a modern medical school faculty but its out-put would carry scant comfort to the homes of suffering humanity.

It would make too long a story to trace the curricular changes which have marked this period of 23 or 24 years during which medical education has been *dehumanized*. Suffice it to say that the matters which have been featured have been specialization, full time teaching, research, both as an educational feature in an undergraduate curriculum and as a criterion for the selection of teaching staffs for medical schools and their clinical laboratories,—the Hospitals. After all medical education has not comported itself very differently from general education during this period. In the latter field the call to prepare for vocational demands has taken precedence over the call to ground in the fundamentals of mental discipline, which alone constitutes the essence of a real education. The profession of Pedagogics has been created as a sort of "holding corporation" to justify and furnish a refuge for, those desirous of floating questionable educational experiments upon the public. We are turning out from these secondary schools, as a result of this policy, a body of graduates with perhaps a greater store of information than was possessed by graduates of twenty years ago but with no greater ability to make use of this knowledge, if as much, and with scarcely any incentive to culture in its broad sense. Culture, or an appetite for it, and capacity to apply one's mind to any problem constitutes an education whether it be for general or professional application and is what a graduate from a High School ought to possess. Instead of that a majority are ushered forth with a hodge-podge of uncorrelated information and a thirst for the "flesh pots of Egypt." With this preparation and a minimal two year premedical requirement for their professional studies, during which time they are fed upon the scientific discards from the medical curriculum, disgorged by the medical faculty, in order to make room for advanced work in these same laboratory courses, where research is to figure heavily, and the specialties that are multiplying both in number and in the time allotments which they exact from the curriculum committee,—this material presents itself at the doors of our medical schools. They have already had a smattering of science which they have been

obliged to take on faith from those who tell them it is essential to an understanding of what they are about to enter upon. The majority of them would like to see a glimmer of the practical application of what they have learned but no, they are inducted into two more years of the same or allied subjects before they really come in contact with a patient. Many of them feel toward the subject as a would be golfer feels toward the teacher who compels him to swing his club over a sand tee, for lesson after lesson, before he allows him to attempt to hit a ball. From the day he enters the medical school until he leaves, the time is fully occupied. If the schedule exhibits an unfilled space the Dean's office blushes for shame and many hours of the time of that official and a curriculum committee is spent in an endeavor to escape such a catastrophe. If the poor student had time to think what was happening perhaps he might be dissatisfied with his lot. It is barely possible that some such idea lurks in the back of the Dean's mind. Be that as it may the result is a plethoric programme which can not possibly be digested and if it were not for an internship, after graduation, many a student, feeling as one does after gormandizing at table, would do as the gourmand does—go to sleep or disgorge. The clinical year saves him and its content should have been served to him, mixed with his theory, far earlier in his course.

It would take too long to point out all of the many ways in which time might be saved in the conduct of courses in the medical schools. In brief, apart from the conduct of the school year on a tri-semester basis (four months to the semester), the principle upon which I am confident it could be accomplished, is the restoration of much of the subject matter taken away from medicine and surgery and allotted to special departments, not necessarily specialties, e. g., haematology and serology from internal medicine or pathology and proctology from surgery. Neurologists have wandered into strange fields lured by the speculation of those who, feeling they are dealing with the occult, regard as legitimate any digression that does not involve a rationalistic, anatomic and physiologic approach to their goal. For practical purposes much time would be saved and thinking clarified if the opposite councils should prevail. Material reduction in the time allotted to undergraduate teaching in throat, nose, ear, eye, orthopaedic surgery and other subjects also, would provide time for allotment to clinical work, preferably in dispensaries, in medicine and surgery, and also for free time to read and think.

The recent translation of Billroth's book on the Medical Sciences in the German Universities, written nearly fifty years ago, contains much that is as true today as when it was written, as Dr. Welch says in his introduction to

this translation. "Medical tradition," says Billroth<sup>21</sup>, "goes back to the Priests in the temples of Esculapius. Hippocrates clothed it in a scientific form for the Greeks, Galen for the Romans and Avicenna for the Arabs. In the middle ages the Universities elevated these forms to the dignity of dogmas, and these alone were taught at the Universities. Direct transmissions of experience from the practicing physician to the student were excluded from their curricula and not until the middle of the 18th century was it introduced among the medical faculties, at first at Leyden, and usually against the violent opposition of the graduate doctors." Billroth contended that a student could only develop the power to synthesize his observations of disease processes and disease products by observing a master in action. This can only be done effectively by bedside, clinical study. Too exclusive dispensary practice leads to superficiality of thought and hasty diagnosis, though valuable in its way. The so called "institutes of medicine" which we read of so often in accounts of the early schools for the teaching of medicine comprised what was known of the fundamental medical sciences and gave way in the later University developments to the Faculties of Natural Science.

Animal physiology from the time of Avicenna to that of Boorhåve was included in the subject matter of the "Institutes." This comprised anatomy, physiology, pathology and therapeutics. The addition of the sciences of chemistry and physics to the subject matter of the "Institutes," prior to the time of Billroth's activities, had added so much to what a medical student was obliged to know that the same problems presented themselves to his mind as confront us today. "How to provide the means to find enough teachers to keep pace with this enormous expansion of the fields of natural science and of medicine; and secondly how to provide the people with physicians when the study of medicine is so enormously expanded and made correspondingly expensive?" These were the questions which perplexed him in 1884. Much that it was thought necessary to teach then he recognized as obsolete and no longer need be a burden to the students' mind, consequently, he said, "the bulk of what, in a given era, a young physician must know increases very slowly after all and only in relation to the general cultural development of a people." He maintained that the State had a right to demand that the Schools should not increase the volume of knowledge beyond what a young man of average abilities could learn in five years. He urged that secondary education should be given as much attention as that devoted to the expansion of the Universities. Billroth felt that the natural sciences had about reached the limit of their expansion. Instead of that, as we know, they had only just entered

upon it. In order to enable the medical student to take full advantage of whatever real advances may, from time to time, be made and at the same time be saved from the danger of becoming a mere repository of scientific observations, the bulk of which have very little or no established, practical application to the art of medicine it would appear that a middle man, so to say, must be introduced between the researcher and the medical schools, whose duty it shall be to determine the values of the researchers' observations and when they have been shown to be bona fide contributions to medical knowledge, let them be handed on to the medical faculties with the stamp of practicability.

No one would doubt that the research department of a corporation, like the General Electric Company for example, would be asked to pass upon the value of any discovery or invention before they would venture to incorporate such a matter into the conduct of their business, however attractive the proposition might appear on the surface or however well recommended it might come. Certainly the reasons they would assign for such an attitude could be no more cogent in the case of an engineering problem than in the case of the diagnosis or treatment of a human being. In no other way can I see a solution of the predicament in which medical schools now find themselves. Such "middle men" are provided for in the Foundations, so liberally established by Rockefeller and Carnegie. The difficulty which has arisen has grown out of the fact that these Foundations have spent such large sums of money outside their own walls, to foster research within the medical schools, that now, to use a homely expression, the "tail wags the dog."

The pedagogic value of research as an undergraduate educational method to be employed in teaching medical students, has not as yet been demonstrated, whatever its graduate educational importance may be. We are groping for ways out of the many perplexing situations which modern conditions have provided and tinkering with the curriculum has, in recent years, been the method most frequently proposed. The latest suggestion comes from the Yale University Medical School<sup>22</sup> where a sort of cafeteria plan has been accepted. The University faculties will offer all the science courses that one may wish—in preparation for medical study and the student may pass along, selecting his courses to suit himself. It is thought that this will make for academic freedom for the faculty and provide a much needed flexibility in the medical curriculum. These various plans have so many objectives, apart from the main one of providing practical training for a practitioner, that the destiny of many may be forecast as the discard and we shall come down to a far simpler program, one which will conform rather more closely, I predict, to that of twen-

ty-five years ago than to any single one which has since been tried out.

Before passing on to a consideration of who shall determine the requirements of medical training it may be well to refer to one of the chief reasons that the medical profession should interest itself in this subject. The growing popularity of the cultists is not based upon the successes of their particular procedures in the treatment of pathological conditions but rather to the blind faith that a very considerable portion of humanity are constitutionally disposed to place in anyone who makes the more extravagant claims of what he is able to do. The high cost of being sick in this day when the doctor calls for all sorts of special examinations and consultations which have to be paid for outside his personal fee, often including a few days' stay in an institution where the studies which modern practice deem indispensable may be carried on, have driven many a heretofore perfectly satisfied patient into the hands of the cultists. He has no need for such examinations and tests; his education has cost him much less so his overhead is lower and as for consultations there is no necessity for the assumption that superior intelligence may reside in any other brain. For such an individual it is easy to promise far more than the conscience of an intelligent and well trained physician will permit him to promise. He knows that failure to make good will be forgotten, and therefore will not hurt, so he may be as extravagant as he pleases. The patient reasons that, economically, the cultist is his best buy for relatively the difference in the results may be very slight. Whoever, therefore, is responsible for introducing into practice the cost-raising features which lead to the diversion of patients to quacks and cultists, without contributing a commensurate practical advantage to the sufferer in a percentage of cases where such service is necessary (10-20%), can be credited with being the cause for the present situation in the practice of medicine. It would appear that the weight of evidence lays this at the doors of the medical schools and those regulative bodies to whose advice the school authorities have listened.

The nursing profession cannot escape some responsibility for the situation for it has virtually abandoned its former attitude toward its work and has become equally dehumanized and commercialized, adding its increment of excessive cost, out of all reason in comparison to the service rendered. The function of the nurse never contemplated anything more than intelligent coöperation with the physician and to that end a far less elaborate educational program than is now thought desirable, would suffice. The more elaborate the training the greater the demand for higher compensations and the greater the dissatisfaction with conditions in practice which deprive them of the facilities to

which they were accustomed in training school days.

Having tried to show, from various sources, what many believe *not* to be the educational requirements of twentieth century practice and having made a few suggestions, and cited those of others, as to the ways in which these requirements might be made more conformable to the needs of sick people, in this day and generation, we come to the question who shall determine what these requirements shall be? If the Medical Schools lay down the program it may fall athwart the State Board Regulations of certain states. If the State Societies try to regulate them, through Legislative channels, they are subject to the lobby of second rate schools and cultist societies who declare that the "Poor boy," (ostensibly meaning the financially poor boy but actually meaning, in the majority of cases, the boy who is poor in the qualities that go to make a good doctor,) will have nowhere to go to obtain a medical education, if even reasonably high standards prevail. The Council on Medical Education, the State Boards of Registration and the Association of American Medical Colleges have made the attempt with the result that "too many cooks have spoiled the broth." The real reason for the failure of the latter has been that their Councils were dominated by a sort of Educational Ponzi whose speculative instincts were allowed to run wild. This matter should be regulated within the profession itself. There is no body of men in a better position to know what the health needs of the public are nor should there be any who are more advantageously placed to put a true valuation upon the legitimate advances in medical science. They are the product of the schools, for they are all Alumni of some institution of learning. They should have ideas on the practicability of the courses of study provided by their Alma Mater. It will doubtless be pointed out that the Council on Medical Education of the American Medical Association and the Association of American Medical Colleges are virtually organizations of this character but the former, because of the help tendered by the Foundations, permitted their deliberations to be dominated by medical pedagogues and ultra-radical reformers while the latter, through the preponderance of the same influences which gained ascendancy in Faculty Councils, have lost touch with the "man in the street." The experience of certain large business corporations, whose management has gotten into the hands of a Directorate imbued with a kind of megalomania of high finance has been repeated. The salvation of such situations in the business world has only been achieved when the stockholders have organized a committee of their own, powerful enough to dominate. It seems to me the time has come when some such action as this is called

for in respect to the organization of medical education. The best interests of the Public, who buy our goods, are at stake. The best interests of the Profession who are really stockholders through their investment, evidenced by the Diplomas which they hold, are equally at stake and we should unify the power which common interests give us, to our mutual advantage.

The growing significance of the National Board of Medical Examiners may furnish us a rallying point, for, though maintaining a high standard of excellence for those who are honored with their certificates, they are avoiding the extremes which have been elsewhere demanded. The probable ultimate, general acceptance of their certificates in all states will doubtless eliminate local State Board activities, tending toward that uniformity of standard which is so desirable, and force upon Medical Schools a curricular modification which will also call for uniformity of content. Some time ago I made the suggestion before a joint meeting of the Middlesex and Essex District Societies that it might be well for the District Societies to have committees that should try to create local enthusiasm in the problems of medical education. I believe such committees could do a great deal of good for I am sure they would be able to exert an influence at the fountain heads of medical education which would be constructive as well as neutralize certain of the ill effects which grow out of a type of training which does not recognize, any more than does our present one, the practical needs of the public. We have all, as we look back over the years we have been out of the schools, seen many experiments tried in medical education which have passed from the boards entirely. Just now the distinguishing feature, which is being honored, viz: research, is manifesting symptoms of a decline. It is high time a contribution which shall be more permanent, be added, though it is probable that whatever it may be someone will discover it is only a re-incarnation.

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