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THE PLACE OF PUBLIC HEALTH IN A UNIVERSITY

PUBLIC health is distinctly a member of the younger generation in the academic sisterhood. It was only in 1901 that the committee on teaching of hygiene and granting of diplomas of doctor of public health, of the American Public Health Association, made its first report, with W. T. Sedgwick as chairman and Wyatt Johnston, of Montreal, as secretary;[1] and in the preceding academic year (1898–1900) Johnston had offered the first course for the diploma in public health at McGill. It is true that long before this time Sedgwick at the Massachusetts Institute of Technology had begun to turn out men who were to lead in the upbuilding of sanitary science on this continent[2] but they were given degrees as biologists or engineers—not special degrees in public health.

It is only during the past fifteen years that the development of facilities for higher education in the field of public health has become an active and a general one. In 1904 Toronto followed McGill in establishing a course for the diploma of public health. In 1906 the University of Pennsylvania, for the first time in the United States, offered courses leading to special degrees and certificates in public health, but no such degree was actually awarded there until 1912. The Harvard Medical School has apparently the honor of conferring the first degree of doctor of public health in 1911.[3] In this same year the name of Sedgwick's department was changed from "biology" to "biology and public health." In September, 1913, the Harvard-Technology School for Health Officers, which had so brilliant and significant a career, was opened. In 1918 Yale granted its first certificate of public health. In 1920 the School of Hygiene was established at Johns Hopkins and two years later a similar institution was set up at Harvard. By 1924, the committee on standardization of public health training of the American Public Health Association could list nineteen colleges and universities as giving a total of ninety-eight advanced degrees in public health.

It is natural that the question of the proper place of public health in the scheme of university organization should still remain in large measure an open

[1] Papers and Reports, American Public Health Association, Buffalo meeting, 1901. Vol. XXVII, p. 87.

[2] Such pioneers as Allen Hazen and E. O. Jordan graduated in 1888; G. C. Whipple in 1899; G. N. Calkins and G. W. Fuller in 1890.

[3] Rosenau, M. J., Bulletin 126, U. S. Public Health Service, 1922.

one. In particular, there is a broad difference in policy between universities like Harvard and Johns Hopkins which are developing public health in separate and independent schools, cognate with the schools of medicine and law, and those other institutions which are working out their public health programs in more intimate correlation with medical schools and graduate schools.

There are very obvious advantages in the first plan where financial resources can be found to carry it out on an adequate scale. Particularly in the earlier stages of development along a new educational line, it is desirable that the way should be blazed by institutions which are dedicated to a particular purpose and untrammeled by any other considerations than their primary one; and a certain number of independently organized institutes of hygiene in the German sense will always form an essential part of our national educational scheme. On the other hand, there are also certain distinct and essential advantages in the alternative plan of developing public health work in intimate contact with medical and graduate departments. The purpose of the present articles is to outline, very briefly, some of these advantages, as they have become manifest in the first ten years of the development of public health at Yale.

The Anna M. R. Lauder Department of Public Health was constituted in 1915 as one of the eight fundamental divisions of the Yale School of Medicine (anatomy, physiology and physiological chemistry, bacteriology and pathology, pharmacology, medicine, surgery, pediatrics, obstetrics and gynecology and public health—to which is to be added psychiatry during the coming year). It has, however, its independent endowment of $500,000, given to the university for this specific purpose, in memory of the late Mrs. George Lauder, whose name the department bears. Its first primary function, the development of public health as a medical school discipline, is thus carried on from inside the school and on the basis of a full recognition of public health as an essential element in the training of every physician. The second function of the department, the development of advanced courses for the post-graduate training of specialists in the field of public health, is carried out through the machinery of the Yale Graduate School, in which bacteriology, pathology and public health are united to form one of the twenty-seven departments which make up its organization.

There are of course two aspects of the relation between a department of public health on the one hand and the rest of the university on the other. We may properly ask what the department gets from the rest of the university organization and, next, what it gives in return.

The first question is very easy to answer. It gets the two things which any educational enterprise needs, teachers and students. Where a school of public health is set up as a separate entity it must have—if we may judge by what has happened in institutions of this type—its own independent departments of bacteriology, of chemistry, of parasitology, of physiology, sometimes even of sanitary engineering, duplicating those of the medical school or of other university schools. At Yale we use our specific public health endowment for teaching the principles of public health, public health administration and vital statistics, with the natural subdivisions of these subjects. For all the other disciplines which form an essential part of public health training we turn to the existing university departments in these respective fields. The faculty of the Anna M. R. Lauder Department of Public Health is a small one as it appears on the budgets of the university, but the actual teaching staff includes Winternitz in pathology, Rettger in sanitary bacteriology, Smith in immunology, Mendel in physiological chemistry, Harrison and his staff in zoology, Suttie in sanitary engineering, Gesell in child hygiene, Blake in medicine, Park in pediatrics. We secure a type of teaching in these various fields that only a heavily endowed school of public health could, by itself, attain, and we believe that there is a certain real advantage in the fact that the various sciences ancillary to public health are taught by men who are interested in them primarily as fundamental disciplines rather than in their application to the administrative health field. The applications and the practical administrative viewpoint, it is our own task to give; and this is by no means difficult if the principles and the spirit of the basic sciences have once been effectively instilled.

The close interrelation with other departments of the university helps the work in public health in another very substantial way by the opportunity which it offers for contacts with desirable potential students. It is an obvious fact to all who are familiar with the public health movement of this country as a whole that the condition which is holding us back at every turn is lack of personnel. The general public has awakened to the importance of the public health program. Official agencies and voluntary foundations in the public health field are ready to spend money, ready to call men and women to opportunities of useful and stimulating and well-remunerated service; but the men and women are not here. Above all, we need young graduates in medicine to enter the field of public health. Our public health schools are crowded with Czechs and South Americans; they have a fair supply of non-medical candidates ready to specialize along laboratory lines; they have too many physicians

of forty and over who are turning to public health after retiring from the army or navy or after failing in private practice. None of our schools of public health has the quota which it deserves of young able medical graduates, looking from the first toward public health administration as a life career. That it is a life career which might to advantage absorb 5 per cent. of our young graduates in medicine and give them a living better than the average in private practice, I am quite convinced; but it is only in the medical school that the new meanings of public health and the tempting opportunities which it provides can be brought to the attention of the men our states and cities so much need. For this reason, among others, I believe that an intimate contact between a public health department and the medical school is a matter of first-rate importance. We can already see at Yale the beginning of a new attitude and are already enlisting a few young medical men of high grade for the profession of preventive medicine.

The main argument for constituting the work in public health as an integral department of a medical school is not, however, that the medical school may serve as a recruiting ground for medical officers of health. The vital question here is, not what the medical school does for the department of public health but what the department of public health means to the medical school. For the past twenty years medical orators have revelled in the elaboration of the theme of preventive medicine; and it is indeed a fact that the progress of science and of social organization demands a fundamental realignment in the entire attitude of the physician toward his patient and toward the community. It is quite certain that the doctor of the future must be a family adviser on hygiene and sanitation quite as much as an ameliorative agent in respect to evils already largely consummated. It is very probable, too, that a large proportion of the doctors of the future will not only be doing a new kind of work but doing it in a new way, as parts of an organized community health service. Yet, in face of these profound tendencies, which can only be guided wisely by the intelligent and unselfish leadership of the medical profession, the bulk of that profession stands unconscious of what is going on. The primary cause for this situation lies in the medical school; and we at Yale have taken as one of the cornerstones of the special contribution we are seeking to make to medical education the development of the idea of preventive medicine, not as a form of words but as a vital conception in the student's mind.

Such an objective can not in any adequate measure be attained by the unaided efforts of the department of hygiene. It is a task for the whole faculty and at Yale we have a group of relatively young men on our staff who are one and all animated with this modern spirit, so that the student imbibes the preventive viewpoint in every course which he takes, from pathology to pediatrics. We are planning to correlate and focus all this instruction by an interdepartmental committee on preventive medicine; and a course in principles of public health given in the first half of the fourth year summarizes the main problems which are involved. We have ninety hours for this course, forty-five for lectures, fifteen for discussion and thirty for field work and, while the course includes such facts about water supply and waste disposal and ventilation as the average physician needs to know, its chief aim is to review the relations to the community of all that the student has learned in his three years and to show him the part that he, as a physician, must be prepared to play in the campaigns against infant mortality, tuberculosis and venereal disease and in the development of standards of personal hygiene in the home and in the factory. The attitude of our medical students has fundamentally changed during the past five years. This change is due to a new attitude on the part of the whole faculty of the school; but such a program can best be organized with a department of public health which is an integral part of the medical school as its coordinating center. It is of some interest to note that two recent graduates of the Yale School of Medicine, with no special public health training other than that received in their medical course, have become full-time city health officers and are filling their positions with remarkable success considering their lack of specific preparation.

We may turn next, and more briefly, to the service which a department of public health may render to the graduate school of which it forms a part, so far as the training of specialists in the public health field is concerned. In the years 1917–1918 and 1918–1919 the certificate of public health was conferred at Yale by joint cooperation between the medical school and the scientific school. Since 1919, the granting of advanced degrees in this field has been a part of the work of the department of bacteriology, pathology and public health of the graduate school. The public health subdivision of this department between 1918 and 1925 has presented eighteen candidates for the C. P. H., ten for the Ph.D. and four for the Dr.P.H. The certificate in public health—equivalent to the M.S. degree—is a one-year course, open to college graduates or to students who have completed the first two years of work in an approved medical school. It involves basic courses in principles of public health, public health administration, public health bacteriology, immunology, elements of

sanitary engineering and vital statistics, with elective work and a thesis. Our students have specialized as a rule either along bacteriological or statistical or sociological or administrative lines and in each one of these fields the cooperation of the other departments of the university has proved of incalculable value. We have made a special effort to fill the very real need for both men and women who can combine training in public health with training in sociology and economics to serve as directors of anti-tuberculosis societies and other voluntary agencies where the medical degree is by no means necessary for success; and bacteriologists with only the bachelor's degree and the C. P. H. have proved well qualified for good positions in state and city laboratories and universities. Two such men now hold positions as assistant professors in institutions of high standing.

Our Ph.D. students are in the main specializing either in bacteriology or statistics and are preparing for directorships of state and city laboratories or for university teaching positions. The combination of public health and home economics is, I believe, one that is likely to prove a peculiarly valuable one for women desiring to pursue a professorial career in the future.

For official administrative health work the C. P. H. (with appropriate specialization in health administration) may be taken by a medical graduate; but the doctorate in public health is the degree specially designed for this end. It is normally a two years' course, open only to graduates in medicine, with a rather full curriculum and special provision for practical field work with the Connecticut State Department of Health, the New Haven City Department of Health or some similar agency. If desired the candidate for this degree may specialize in industrial hygiene or in school hygiene, in both of which fields the opportunities offered through other departments of the university are of inestimable value.

The medical school and the graduate school are obviously the closest points of contact for a department of public health; but they are by no means the only points at which such a department touches the life of the university. The public health staff offers a course which forms a vital part of the program of the Yale School of Nursing and it is hoped in the near future to develop in the graduate department of bacteriology, pathology and public health a special program leading to the M.S. degree designed particularly for holders of the degree of bachelor of nursing, a program which will depend on the university departments of social science and education for a considerable portion of its work.

In Yale College the public health staff cooperates with the director of university health in giving a brief elective course on personal and public hygiene, the community aspects of which are of real value for students who may later enter public life. In one city in Connecticut the local health department has been reorganized by a mayor who became interested in the subject through taking this course a few years before. Students from the scientific school occasionally take our courses in industrial hygiene; and a number of very good men from the school of religion have taken the principles of public health as a part of their preparation for community service. Finally, the department of public health has been constantly and closely affiliated with the department of university health and the professor of public health is the chairman of the board which directs the general policies of health supervision of the student body.

It seems, from our experience at Yale, that public health has a real place as one of the fundamental disciplines in a university program. Organized in intimate contact with medical school and graduate school a department of public health may, with a modest endowment, offer graduate courses leading to the advanced degrees which qualify for professional service in this field. It may at the same time serve what is perhaps an even more essential service by becoming a permeating and controlling influence in the training of practitioners of medicine, on whose intelligent cooperation the progress of the public health movement so markedly depends. It may touch such widely separated schools as those of nursing, of religion, of social science, of education, of engineering, with glimpses of a field of human activity which is coming to play a significant part in every phase of modern social life.

C.-E. A. WINSLOW

YALE SCHOOL OF MEDICINE

DATE OF CHANNEL TRENCHING (ARROYO CUTTING) IN THE ARID SOUTHWEST[1]

INTRODUCTION

NEARLY all streams in southwestern United States flow between vertical banks of alluvium that vary in height from ten to as much as one hundred feet. Although subject to great floods, these streams no longer overflow their banks, nor build up their adjacent flood-plains. Floods merely deepen and widen the channels (arroyos) which continually grow headward into the undissected valley floors of headwater valleys and tributaries. The details of this process of dissection (channel trenching) have been elabo-

[1] Published by permission of the director of the United States Geological Survey.