

Presented to
GER 5/27/15

200L DR
Institute of Hygiene
Files

INSTITUTE OF HYGIENE

Being a Report by Dr. William H. Welch
and Wickliffe Rose to the General
Education Board, submitted in 1915

At a conference * on training for public health service held at the offices of the General Education Board in New York on October 16, 1914, discussion seemed to develop substantial agreement on the following points: (1) that a fundamental need in the public health service in this country at the present time is of men adequately trained for the work; (2) that a distinct contribution toward meeting this need could be made by establishing at some convenient place a school of public health of high standard; (3) that such an institution, while maintaining its separate identity, should in the interest both of economy and of efficiency be closely affiliated with a university and its medical school; (4) that the nucleus of this school of public health should be an institute of hygiene.

Mr. Rose and Dr. Welch were asked to formulate a plan for such an institute of hygiene and in compliance with this request offer the following report, which is designed to set forth the scope and general character of organization of the institute and the service which it should render in training in hygiene, preventive medicine and public health and in the advancement of these subjects. If desired, the report can be supplemented by a detailed statement of organization, plan of building, budget and courses of instruction.

* Dr. A. C. Abbott, Dr. Herman M. Biggs, Dr. Simon Flexner, Mr. Jerome D. Greene, Dr. Victor G. Heiser, Dr. Edwin O. Jordan, Mr. Starr J. Murphy, Dr. Wm. H. Park, Dr. Wickliffe Rose, Dr. M. J. Rosenau, Dr. Theobald Smith, Dr. George C. Whipple, Dr. C.E.A. Winslow, Dr. Wm. H. Welch, Prof. D. D. Jackson, Dr. F. Cleveland, Dr. Wallace Buttrick, Dr. E. C. Sage and Dr. Abraham Flexner.

I. PUBLIC HEALTH AND HYGIENE IN ENGLAND AND IN GERMANY.

The origins of the modern public health movement and of the cultivation of hygiene as an independent science may be found especially in the passage of the Public Health Act in England in 1848 and in the establishment of the first hygienic institute by von Pettenkofer in Munich in 1865. The greatest stimulus to further development came from the discoveries relating to the causation and mode of spread of the infectious diseases and the consequent vastly increased power to control these diseases. It is instructive for the present purpose to note the different conceptions and directions of development in this field in the two countries. In Germany every university has its department or institute of hygiene, conducted by a professor and corps of assistants, where the subject is represented broadly in all its varied aspects, students are taught by lectures, laboratory courses and field work, and the science is advanced by research. In England on the other hand, the important hygienic laboratories are few and mostly governmental or independent. For training the emphasis is laid upon public health administration, in which respect Great Britain leads the world. Those desiring to qualify as medical officers of health must possess the diploma in public health, obtained by passing an examination after at least nine months of special preparation, most frequently under a qualified medical officer of health and in a hospital for infectious diseases. It seems obvious that lessons are to be learned from both the German and the English systems, and that the ideal plan will give due weight to both the scientific and the practical aspects of hygiene and public health.

II. THE SITUATION AND THE NEEDS IN AMERICA.

In this country we are woefully lacking both in laboratories of hygiene and in opportunities for training in public health work. Three or four medical schools have hygienic laboratories, but none is complete, and adequately equipped and supported. Still other schools attempt something in the way of instruction in this subject, but it is all inadequate and unsatisfactory.

The need for supplying these deficiencies is at present the most urgent one in medical education and in public health work, and is recognized on all sides. The cry comes loudest from public health officials, social workers and others interested in public health administration, national, state, municipal and rural, who realize the lack of trained leaders and trained workers in all grades of the service. Here with the rapidly growing appreciation of efficient public health organization new and promising careers of useful service are opening for those who are qualified by ability, character and training. Scarcely less important is it for medical students and physicians who engage in practice to be well grounded in the principles of hygiene and of preventive medicine. Furthermore the advancement of knowledge in this field, the cultivation of hygiene as a science, is one of the great needs of this country and should be a fundamental aim of an institute of hygiene.

III. VARIOUS CLASSES TO BE TRAINED.

The first and in many respects the most important class of persons who will seek to be trained in a school of public health are those who expect to devote their lives to health work in some of its branches. These will aim to become for the most part public health officials or to be engaged in some

capacity in public health service, but some may become teachers or be connected with institutions or find other opportunities for a career in the ever widening field of sanitation. It is of the first importance to consider and to supply the needs for the education of prospective public health officials.

Without attempting an exhaustive analysis, the following classification will suffice to indicate the various types of officers or experts required in public health administration:

1. Higher administrative officials, as commissioners of health and health officers in cities and districts, and division or bureau chiefs in the larger state and city departments of health.
2. Health officers in towns, villages and rural communities.
3. Higher technical officials or experts, as statisticians, sanitary engineers, chemists, bacteriologists, diagnosticians, epidemiologists, etc.
4. Inspectors of various kinds, as school, sanitary, food, factory, etc. inspectors.
5. Public health nurses.

With this class may be included those preparing to enter the Public Health Service of the Federal Government.

An institute or school of hygiene should furnish suitable training for all of these, and while courses adapted for special needs will be supplied, it does not seem desirable to conceive of such an institute as constituted primarily to provide training for higher or lower grades of the service so much as to furnish opportunities for a good general education in all branches of hygiene.

While it is hardly possible to overestimate the importance of providing opportunities for the training of those who are to become public health officials, the need here is at present so acute that there is some danger of overlooking the conception of hygiene as a science and art which is much broader than its applications to public health administration. Hygiene includes much more than state medicine. It is not necessary to consider here the distinction sometimes made, especially in this country, between hygiene and sanitation. In this report the term "hygiene" is used to include both, that is, the whole body of knowledge and its application relating to the preservation and improvement of health of individuals and of the community and to the prevention of disease.

With this broad conception it is obvious that the educational and scientific opportunities of an institute of hygiene should not be limited to the use of those who intend to become specialists in public health work and should cover a wider field than that of state medicine or sanitation.

It is of the utmost importance that education in the principles of hygiene should be available for students and graduates in medicine who are to engage in the practice of their profession. With the present crowded medical curriculum obligatory courses in hygiene for undergraduate students of medicine must necessarily be restricted, but with the tendency toward greater freedom of election of medical studies there is the need and opportunity to provide more extensive optional courses in hygiene. There is a wide field for the establishment of graduate courses in hygiene for physicians. Even in Great Britain, where the character of training is designed almost wholly for public health officials, many who intend to become medical practitioners secure the diploma in public health. The mission of the practising physician is in

many respects changing, and there can be no doubt that a year or more of graduate work in hygiene would be eagerly sought by many physicians and would greatly increase their capacity of useful service to their patients and to the community, if the proper opportunities for such work were provided.

Sanitary engineering has become a specialized profession, and the institute of hygiene should combine with the engineering school in supplying the requisite training.

The public health nurse, both as a part of the public health service and independently of such connection, is destined to play a role of increasing importance in the improvement of conditions of healthy living and working and in the control of infectious and industrial diseases in this country. The institute of hygiene should cooperate with schools and organizations for training nurses in meeting the need for a supply of trained public health nurses.

When one considers the many points of contact between the modern social welfare movement and the public health movement, and to what an extent social and economic factors enter into questions of public health it is clear that an institute of hygiene must take full cognizance of such factors and that students of social science should profit by certain opportunities in the institute, as well as students of hygiene by training in social science and social work.

An important class to be provided for in an institute of hygiene will be those engaged in special advanced work in some branch of the subject and in original investigations of hygienic problems. A main function of the institute should be the development of the spirit of investigation and the

advancement of knowledge, upon which intelligent public health administration and individual hygiene are absolutely dependent. It will be especially from this class of advanced workers and investigators and from the group of assistants in the institute that the teachers and the authorities and experts in hygiene will be recruited for service in different fields of activity and the standards of the profession of hygiene and of public health will be elevated.

IV. FIELD TO BE COVERED.

The field covered by the terms "hygiene," "sanitary science," "public health," "preventive medicine," is so broad and varied that it is hardly possible within a brief compass to indicate all of the subjects here included. Strictly speaking the territory embraces a group of sciences or the application of various underlying sciences. Unity is to be found rather in the end to be accomplished - the preservation and improvement of health - than in the means essential to this end. It is the focussing upon this definite purpose which gives coherence to the organized body of knowledge embraced under the designations "hygiene" and "sanitation," and makes important its study and cultivation as a professional pursuit.

Although the practitioner of medicine should have knowledge of hygiene and of the means of preventing disease and has abundant opportunity in the practice of his calling to apply this knowledge, and the public health worker, if he is to prevent disease, must have knowledge of the origin, mode of spread and diagnosis of disease, still it is becoming increasingly clear that public health work constitutes a distinct profession, and the wider recognition of this fact will be an important result of the creation of institutes or schools of hygiene.

The wide scope of the professional training required for the well equipped public health worker is sufficiently indicated by the mere enumeration of the more important subjects to which more or less attention must be given in an institute of hygiene, at least so far as their scientific groundwork in relation to sanitation is required. Such subjects are vital statistics; epidemiology or the causation, spread and prevention of transmissible diseases, including tuberculosis and the venereal diseases; diagnosis of infectious diseases; industrial hygiene; sanitary parasitology, including bacteriology and immunology; sanitary chemistry; sanitary engineering; hospital construction and administration; housing, ventilation, heating, lighting; disinfection; the hygiene of air, soil, water and climate; water supplies and sewage disposal; infant mortality and child hygiene; hygiene of schools; mental hygiene; heredity and eugenics; social hygiene; personal hygiene; diet and nutrition; rural, farm and dairy hygiene; milk supply; food and drug adulterations; nuisances; public health administration and organization, sanitary laws and codes; quarantine and immigration; tropical hygiene; relation of animal diseases to human diseases; public education in healthy living; social service work; sanitary surveys.

V. AGENCY REQUIRED TO PERFORM THIS FUNCTION.

The central, essential and main agency required to meet the needs which have been indicated is an institute of hygiene, housed in its own building, provided with the requisite laboratories and facilities and with its own staff of teachers giving their entire time to the work of teaching and investigating. Given such a central institute it is easy to add to the curriculum, when found necessary, certain courses which are now given, or could

readily be supplied by various existing departments of the medical school, the engineering school or other faculties of the university. The mere assembling of such courses does not constitute a school of hygiene. The great need of the country today in the promotion of public health is the establishment of well equipped and adequately supported institutes or laboratories of hygiene, where the science of hygiene in its various branches is fruitfully cultivated and advanced and opportunities are afforded for thorough training in both the science and the art. It would be a misfortune if this broader conception of the fundamental agency required for the advancement of hygienic knowledge and hygienic education should be obscured through efforts directed solely toward meeting in the readiest way existing emergencies in public health service.

1. Relation to a Medical School. The profession of the sanitarian or public health worker not being identical with that of the practitioner of medicine, the institute of hygiene, as the essential part of a school of hygiene, should have an independent existence and should not be regarded merely as a department of a medical school. But the medical school offers much which the institute of hygiene will require either as preliminary training or in course and which it will not care to duplicate. In the interest of economy and efficiency, therefore, the school of hygiene should be closely related to a medical school of high standard in such way that the facilities of each should be open to the students of both.

It is likewise important for study and training in preventive medicine that the institute should have access to the facilities of a good general teaching hospital, as well as to various special hospitals. The need of opportunities for observation and study of patients in an infectious disease hospital is of course obvious.

2. Connection with a University. To perform to best advantage its function, the institute should be a part of a University. The medical school has found such connection to be a practical necessity. The institute of hygiene would draw even more heavily upon certain schools or departments of the University, as those of engineering and of sociology. In addition to having at its disposal the facilities of the University, the institute would find the stimulating and sustaining scientific spirit and ideals of the University an indispensable asset.

3. Separate Identity. While intimately related to the University and its medical school, the institute of hygiene should be established on its own foundation, and should preserve and emphasize its own identity as a separate institution devoted exclusively to the science and the service of health; it should have its own building, and its own corps of instructors with adequate provision for teaching and research.

While it is not difficult to bring together on paper a group of courses selected from the several schools and departments of the University and by the addition of a few new courses make a presentable prospectus of a school of public health, this is not the conception of such a school or institute as we believe will best fulfil the functions of developing the science and art of hygiene and of training for this new profession. If the institute is to make itself felt as a constructive force it must have in it a group of scientific investigators and teachers whose absorbing interest is in developing the science of hygiene and applying it to the conservation of health.

While the concentration of work here advocated involves some duplication of equipment, this is not so large as might be supposed and, in view of the great advantages, does not constitute a serious objection. The institute

must have its own chemical laboratory; it would be inconvenient and unsatisfactory in the extreme to attempt to use chemical laboratories devoted mainly to other purposes for the many important studies in sanitary chemistry. The principal micro-biological laboratory of a medical school could without detriment be transferred to the institute of hygiene, although provision must exist for bacteriological work in the pathological laboratory, as well as in the hospital. Most of the other physical equipment of the institute would involve little duplication.

4. Organization and Departments. At least in the beginning there should be a director of the institute, who will also be the head of one of the main divisions. Eventually the heads of these divisions may constitute a group or faculty with coordinate powers in directing the policy and affairs of the institute.

It is possible to indicate only in outline and in a general way the principal departments or divisions of an institute of hygiene, as details of organization and division of work should be left to the staff of teachers whose interests and qualifications will vary with the individuals.

a. Chemical Division. The applications of chemistry to sanitary science and art are extremely important and varied, and already highly developed.

b. Biological Division. Here there would be a number of subdivisions, as bacteriology, protozoology, medical zoology.

c. Engineering or Physical Division. A part of this can best be provided for in the engineering school, but the institute should provide opportunities for the study of certain hygienic problems requiring the application of physical science.

d. Statistical Division. While the various questions connected with the collection and study of vital statistics constitute the most important subject in this field, there are other important applications of statistical science to hygiene.

e. Division of General Hygiene and Preventive Medicine. Under this broad heading may be included, epidemiology, industrial hygiene, the principles of public health administration and other subjects not embraced under the previous captions. The foregoing classification is not designed to be either final or exhaustive and is manifestly reduced to its simplest terms.

If qualified men can be found there should be three or four teachers of the rank of full professors, but in their absence it would be better to select even for some of the important divisions younger men of great promise with the grade of assistant professors or of associates. In addition to these probably at least eight or ten assistants at moderate salaries would be required.

As already stated, the institute once established on its own foundation will draw upon the medical school, the engineering school and other departments of the university for courses of instruction which it will not care to provide on its own grounds, and it will itself cooperate in furnishing instruction to students in other departments.

5. Field Work

Hygienic excursions to inspect water-filtration plants, sewage disposal systems, methods of heating and ventilation and for kindred purposes constitute a valuable part of practical sanitary training. The most important training in the field, however, will be provided by establishing working relations with state and municipal departments of health and with the United States

Public Health Service. This arrangement will provide for giving to the students practical experience in every department of public health work. The students may in this way become acquainted under favorable conditions with the methods of handling the health problems of the large city as well as those of the rural community. There will be opportunity for participating in the work of sanitary surveys. Cooperation with the federal Public Health Service will give good opportunity for experience in quarantine work and in sanitary and epidemiological work on a large scale. Such relations will be mutually helpful. The states and cities will reap the benefit of intelligent and scientifically trained workers who will enter the service as real workers in all fields of its activities. The institute and its students in turn will have the benefit of this practical experience.

6. Museum

An important feature of the institute will be a good hygienic museum, which will contain models, charts, preparations and other material which can be gradually brought together. This will serve not only for demonstrative teaching, but also for the education of the public. The influence and usefulness of the institute will be extended by popular lectures, conferences and extension courses.

7. Special Courses

The institute should provide for the needs of those already engaged in health work, who desire to pursue short courses or to do advanced work in special branches.

8. Requirements for Admission; Certificates and Degrees.

The details regarding the conditions for admission to the institute may be left to future consideration, but it should be stated that while the

majority of candidates for diplomas and degrees will doubtless be graduates in medicine, these distinctions should not be limited to physicians. The institute should be ready to receive and to reward with its diplomas and degrees all who come with a satisfactory preliminary education and pursue the required training, which need not be rigidly uniform for all matriculates. Even those who may not meet the requirements for matriculation and become candidates for the degree may find opportunity to pursue special courses of study. It has been abundantly demonstrated that the profession of public health work can be successfully followed by sanitarians whose principal training has been in sanitary engineering, sanitary chemistry and sanitary biology.

9. Influence of the Institute

The benefits to be expected from the establishment of such an institute as that proposed are not to be measured solely by the number of students trained within its walls. The institute can supply only a relatively small number of those who desire to enter upon public health service. The far-reaching influence of the institute should be felt in the advancement of the science and the improvement of the practice of public health, in establishing higher standards and better methods of professional education in this field, in stimulating the foundation of similar institutes in other parts of the country, in supplying teachers and in cooperating with schools of a simpler character designed for briefer technical training which should be established in each state in connection jointly with boards of health and medical schools.

(signed) William H. Welch

(signed) Wickliffe Rose