

CHANGING CONCEPTS IN PUBLIC HEALTH



Chapter I

THE GROWTH OF PUBLIC HEALTH

The teaching of hygiene and preventive and social medicine finds its origin mainly in the second half of the eighteenth century, when it developed out of the European concept of State medicine. The beginnings of a national system of public health arose in Denmark as early as 1740, with the incorporation of the *collegium medicum*. A few years later a national health council was set up in Sweden. Practical health services began to spread throughout the countries of central Europe in the middle of the eighteenth century.

In the year 1786, Johann Peter Frank, who had occupied chairs of clinical medicine in the Universities of Göttingen, Prussia, and Pavia, Italy, was appointed director of public health in Austrian Lombardy. Frank had published, some years earlier, the first three volumes of a remarkable work on medical police¹ and had earned a wide reputation as a pioneer in preventive medicine. He was probably the first who, as a teacher, urged investigations into the causes of disease in the homes of the people; and he impressed upon his students and his masters that the principal barriers in the way of health were poverty and ignorance. He was thus the true founder of social medicine.

Let the rulers, if they can, keep away from their borders the deadly threat of contagious diseases. Let them appoint all over the provinces men distinguished in medicine and surgery. Let them build hospitals and administer them better. Let them pass regulations for the inspection of chemists' shops and apply any other measures they like for the people's health. But, if they overlook one thing only, the need to remove or make more tolerable the richest source of disease, the *extreme poverty of the people*, then hardly any benefits will accrue from public health legislation. [Trans.]²

Frank's influence on both the teaching and the practice of preventive medicine was very great indeed, and university departments accepting his views sprang up from one end of Europe to the other. It is true that many of the positive measures which he advocated in his colossal work had to wait for generations before they took shape, and that progress in the practice of public health was slow and erratic; nevertheless, the idea of prevention

¹ FRANK, J. P. (1777-78) *System einer vollständigen medicinischen Polizei*, Mannheim

² FRANK, J. P. (1790) *The people's misery: mother of diseases* (An address delivered in 1790). Translated from the Latin, with an introduction, by SIGERIST, H. E. (1941) *Bull. Hist. Med.*, 9, 81

had secured a permanent place in medicine; and the concept of public responsibility for health steadily gained ground. Treatises on public health began to be written, and a great deal of persuasive thinking was applied to legislation. In a number of universities, especially in central Europe, the idea of "medical police" began to take root; and the requirements of actual practice led to an irregular but growing demand for teaching facilities.

In the United Kingdom the influence of Frank had a considerable part in the creation of the first Chair in public health. Andrew Duncan of Edinburgh, who from 1795 had given weekly lectures on a voluntary basis on medical jurisprudence, devoted part of his course to the subject of public health. His interest in preventive medicine led him to advocate the establishment of a university Chair, and the first professorship was created in 1807. No doubt many influences combined to stimulate Duncan's enthusiasm. The growth of humane ideas at home and the development of Frank's teaching abroad, including the steady progress of the German schools, were part of his knowledge as a tutor and reviewer. Perhaps the main points worthy of record are the eloquent plea which Duncan made to the Patrons of the University of Edinburgh and the acknowledgement of his debt to Frank. In referring to the teaching of public health, he says:

Of incomparably greater consequence, and more widely extended influence, is the second division of this subject; it regards not merely the welfare of individuals, but the prosperity and security of nations. It is perhaps the most important branch of general police; for its influence is not confined to those whom accidental circumstances bring within its sphere, but extends over the whole population of the State.

Many of its principles have long been acknowledged and considered as necessary consequences of medical and political truths; and some few of them have acquired the authority of laws. But it was reserved for the philosophic Frank to collect the whole into one vast and beneficent system, and to separate it from Juridical Medicine.³

The definition of public health in Duncan's document is perhaps a little clumsy, but it covers the ground very well: "the application of the principles deduced from the different branches of medical knowledge for the promotion, preservation, and restoration of general health".

Another important influence was a report published in 1790 by a committee of the Société royale de Médecine in Paris, entitled "Nouveau Plan de Constitution pour la Médecine en France". This committee recommended as one of five principal subjects in the medical curriculum "the choice of the means most conducive to the preservation of the body in a state of health". The committee also contemplated the appointment of a professor of hygiene and urged that instruction should be developed in this subject. In 1794, university Chairs of hygiene were established in the *écoles de santé* of Paris and Strasbourg.

³ DUNCAN, A. (1798) *Memorial to the Patrons of Edinburgh University* (University Library, Edinburgh)

The end of the eighteenth century saw a gradual extension of what might be called the official and legal recognition of public health. Boards of health—sometimes with limited functions of disease prevention—were created in France, Great Britain, and the United States of America (notably in Baltimore in 1798 and in Boston a year later). The Danish public health service came into being in 1803, and legislative measures against infectious disease made considerable progress. Finland, Norway, and Sweden completed their schemes to establish systems of municipal and provincial health officers.

The eighteenth century offered special reasons for the development of teaching in preventive medicine, with its remarkable record of clinical studies on diseases which offered scope for preventive measures, notably scurvy, plague, industrial diseases, and some of the common infections. At the close of the century came the most direct opportunity, in vaccination against smallpox, for the use of preventive measures on a world-wide scale.

In the second place, the pioneer work of social reformers in the late eighteenth century laid sure foundations for prevention by exposing so many abuses and defects, especially in public institutions such as prisons and hospitals. The work of men like John Howard in his dedicated inquiries in many parts of Europe set a standard for scientific social investigation and factual reporting.

Investigations and discoveries in the social life of a country have only a limited value and at most a temporary success, unless they are used as a basis for teaching. In public health the evolution of systematic teaching—of medical students and others—followed the disclosures of facts with halting gait. In England, for example, H. W. Rumsey,⁴ as late as 1856, lamented the fact that there was no full-time professor of hygiene in any university in the United Kingdom.

At the beginning of the nineteenth century a number of teachers were giving lectures on hygiene privately in Great Britain, and some treatises on the subject were published. In other European countries increasing attention was being paid to the "police" aspect of public health, and legislative measures for the regulation of conduct and practice were becoming consolidated in the form of State medicine. It is not surprising, therefore, that an early association was created between public health and medical jurisprudence: they were two aspects of State regulation.

In many areas the promotion of both teaching and practice in public health received an increasingly strong impetus from the middle of the nineteenth century onwards. On the side of practice the malign influence of a succession of cholera epidemics was no doubt more effective than a decade of preaching, and one public health act after another was inscribed

⁴ RUMSEY, H. W. (1856) *Essays on state medicine*, London

on the statute books of European countries. On the teaching side the British General Medical Council, which had been created in 1858, drew attention some ten years later to the need for a qualification in public health.

The developments in public health teaching in the latter half of the nineteenth century were greatly influenced throughout Europe by the remarkable progress in the basic sciences, especially physiology and bacteriology. As it happened, the German schools of science were in the ascendant at the time; and it was therefore natural that the new teaching of preventive medicine should look to these stern disciplines to form the foundation of its structure. The mind of scientists at that time was directed intensely towards the study of infectious disease with a view to prevention. The great discoveries of Pasteur and Koch led the way to an astonishing renaissance in scientific medicine.

One of the most outstanding figures in the practice of public health was Max von Pettenkofer, who was responsible more than anyone else in his time for the transition from laboratory research to practical study in the field and so to the teaching of public health as a vocation. Pettenkofer began his career by a series of remarkable contributions in chemistry under the influence of von Liebig; he is especially well known for his epidemiological studies on cholera, but from our point of view his incursion into the field of public health practice is of the utmost importance.

At that time [the beginning of the second half of the nineteenth century] public health in Germany [as indeed in many parts of Europe] consisted mostly of a number of health regulations and ordinances which were applied and enforced by special departments of the police authorities. These regulations were based on traditions, on empirical knowledge. Their scientific foundation was very scanty. Fresh air is better than vitiated air. But at what point must air be considered vitiated? How can the degree of its purity be measured? When is water pure? Overcrowding of dwelling-houses is obviously not conducive to health. At what point is a house so crowded that the authorities must step in? In other words, how much space does an individual require in order to maintain his health? Rich people buy all the food they want in any combination and quality they please. But the poor who can buy only a minimum, what food should they buy preferably? Or the soldiers and inmates of prisons and asylums who have no choice but are given their food—what should be given to them so as to keep them in good health? ⁵

Professor H. E. Sigerist, in the introduction to his translation of Pettenkofer's *The value of health to a city*, thus pointed out that all these and many other questions of the kind had been answered empirically, or on the basis of out-of-date theory; but everything suggested that the answers were not correct. Pettenkofer set out to find scientific answers to these questions and applied all his varied knowledge to these practical subjects.

In Pettenkofer's hands, probably for the first time, hygiene became an experimental science founded on physiology. In 1847, Pettenkofer was

⁵ SIGERIST, H. E. (1941) in the introduction to his translation of *The value of health to a city; two lectures delivered in 1873 by Max Von Pettenkofer*, Baltimore, pp. 4-5

appointed professor of medical chemistry at the University of Munich; while he occupied this Chair he gave courses in hygiene. In 1855 he was provided with laboratories in the new physiological institute at Munich; and ten years later he became the first professor of hygiene at the University of Munich. His department was the first institute of hygiene in Europe. The Munich institute served as a model for similar institutions in Germany and indeed throughout the whole world. It was an active research centre, and Pettenkofer and his students undertook a great variety of field investigations.

Pettenkofer devoted great attention to social and psychological factors in public health; he was well aware of the environmental factors which made for the good life and did not confine himself to the narrower aspects of hygiene. Much of his teaching showed that there was no magic formula for improving the health of the people, and he rendered a great service in opening up the channels of experimental medicine based on bacteriology. In fact he drew a splendid picture of the modern public health programme: a careful survey of existing conditions; intelligent planning based on scientific investigations; and, above all, patient and continuous pressure on public opinion.

It is worth noting at this point that most of the early teachers of hygiene were primarily interested in chemistry or were physicians with special training in chemistry and physiology. In the 1850's there was a good deal of discussion in Europe as to whether public health should be regarded as a subject in its own right or as ancillary to chemistry, physiology, pathology, or—at a later stage—bacteriology. It was apparent then, as it is now, that preventive medicine is not a speciality but rather, as Sigerist has pointed out, the synthesis of medical experience applied to a definite end, the prevention of illness. Hygiene and public health in their development used the tools of other sciences, such as mathematics, chemistry, physiology, and bacteriology; and they helped in a large measure to build up practical applications of these sciences, notably in medical statistics. Nevertheless, the prevention of illness and the promotion of health were steadily becoming teaching subjects in their own right, independent of the basic sciences.

By a curious and, in some ways, unfortunate combination of circumstances, hygiene first became an appendix to forensic medicine. The result was that in France, and to some extent in the United Kingdom and other countries, the teaching of hygiene took a byway into the realm of State medicine. This led awkwardly to an over-emphasis on the "police" aspect and a relative neglect of the practical scientific applications which had been so ably put forward by Pettenkofer.

In Germany and a considerable area of central Europe a change took place which affected the development of preventive medicine for many years because it caught the imagination of scientists with all the glamour of a

new dawn. In 1885 Robert Koch was appointed professor of hygiene and director of the institute of hygiene of the University of Berlin. Koch was nearly a generation younger than Pettenkofer, and his fame had been founded on his magnificent discoveries in bacteriology. Men of Koch's generation laid all their gifts on the altar of bacteriology; and its offerings, great as they were, drew away strength from equally important services in public health. For almost fifty years following 1885 Germany and its scientific schools of bacteriology filled the Chairs of hygiene throughout the world, or so influenced their holders that student and physician alike received a one-sided account of the meaning of public health. In this way preventive medicine suffered from a narrowing of its aims and practices and from delay in the use of scientific data for everyday problems on such matters as bad housing, overcrowding, and lack of ventilation.

Much had been accomplished before the end of the nineteenth century in the field of preventive medicine itself. The cause of elementary sanitation had won a great victory in the 1870's in England, where effective legislation had operated from the great Public Health Act of 1875. At least a decade before the close of the century a broad advance had also been made in the direction of personal health; the value of the individual and the family and the importance of the child to the community had become recognized as a matter of national importance.

The progress of the social investigations in the last quarter of the century was both scientific and practical. On the scientific side investigations into social conditions were being made on an increasingly large scale throughout Europe, and surveys into the life and work of the people were extensively organized. On the more practical side pioneers like Octavia Hill were winning support because they aimed not only at improving housing conditions, but also at the education of the tenant in citizenship and good management. Throughout Europe there were social enterprises which showed the urgent need for social reform by legislation. Many of these were linked closely with women's work; indeed, it was one of the features of the last quarter of the nineteenth century that women were coming more and more into the spheres of local government and social reform.

The rise of public health as a career for physicians coincided with two phenomena which greatly influenced the teaching programme, i.e., the "age of environmental hygiene", in which so much stress was laid on environmental factors in the etiology of disease, and the emergence of bacteriology and biochemistry as basic sciences.

From the arrangements for post-graduate teaching in public health in France, Italy, and certain other European countries, it is clear that public health as a post-graduate training was widely recognized as being vocational. A good illustration of this is afforded by the separation of post-graduate from undergraduate teaching of hygiene in the United

Kingdom, which began in the second half of the nineteenth century and achieved State recognition under the Medical Act of 1886. This Act provided for a registrable diploma in public health, and for the regulation of both teaching courses and examinations by the General Medical Council. The first diploma was instituted in 1871, in Dublin; and, during the next few years, other universities and licensing bodies followed suit. The separation of post-graduate from undergraduate teaching was further emphasized by an Act of 1888 (Local Government Act, 1888), which made the diploma in public health an indispensable qualification for a medical officer of health of a county or district having 50 000 or more inhabitants; and subsequent legislation paid tribute to the value of the post-graduate diploma by accepting it as an essential qualification in nearly the whole field of public health.

Edinburgh has the distinction of being the first university in the United Kingdom to institute a whole-time Chair of public health, in 1898. But other European countries had gained a lead in both professorships of hygiene and the endowment of institutes for teaching and research. The institution of a training course, whether it led to a diploma or not, arose in most countries in response to a specific public need. In some countries, as in France, part of the training became an accepted responsibility of government, reserved for candidates already selected for the public service. In other countries post-graduate courses were offered as a matter of choice to physicians who were either in the public health service already or who wished to take up a whole-time or part-time appointment therein.

It is well known that teaching tends to lag far behind practice; and it is therefore no cause for surprise that "the age of personal health", which became an outstanding feature of the first quarter of the twentieth century, was but feebly represented in teaching. The great movements for social welfare, and the acceptance of maternal and child health as a goal of endeavour in preventive medicine, elicited little response from the post-graduate schools of instruction. Indeed, there are not a few institutions in Europe today in which post-graduate instruction in public health is largely confined to the natural sciences and the highly technical subjects associated with environmental control. Yet as early as 1915 a far-sighted report on post-graduate schools and institutions appeared in which recommendations such as the following were put forward:

Because of the many points of contact between the modern social welfare movement and the public health movement, and to what 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.⁶

⁶ WELCH, W. H. & ROSE, W. (1915) *The institute of hygiene* (Unpublished report presented to the General Education Board, 27 May 1915, and to the Rockefeller Foundation, 12 January 1916)

In spite of these progressive ideas, the teaching of public health in Europe and, for the most part, in the United States, kept within the fixed channels of environmental techniques and laboratory exercises for another generation. Gradual changes were in fact introduced, including some teaching and practical experience in school health, and maternity and infant welfare. But there was no widespread revolution of ideas until the Second World War. This was all the more remarkable in certain European countries like Germany and Great Britain because considerable progress in the social aspects of medicine had been made, such as health insurance in Germany in 1883 and in Great Britain in 1911.

The movements of the late nineteenth and early twentieth centuries represented the advance of what we should now call "the personal health services". The pioneer infant-feeding clinics in France, the school medical services in England, and the increasing medical and social care of the disabled in the northern countries are important examples. The 1914-18 war brought grave hazards to health, and the affected countries set up schemes for the rehabilitation of battle casualties and for the control of tuberculosis. In the inter-war period problems of mental stress came to the fore.

The establishment of the League of Nations, with its headquarters in Geneva, gave a further impetus to preventive measures and gradually exerted its influence on teaching at the post-graduate level. Another great stimulus to the development of post-graduate teaching during the inter-war period was the enlightened action of the Rockefeller Foundation in establishing institutes of public health. These served as a focus for both teaching and practice in European countries, and they still shed a steady light in many places that have become shadowed.

The developments referred to above constituted a great extension in the personal health services, particularly in the inter-war period. The practice of public health was revolutionized within a generation. In the course of time these changes exercised a profound effect upon post-graduate teaching which devoted more and more time in its curriculum to the problems of personal and community health. In the domain of teaching, however, there has been a further development of more recent growth, viz., social medicine in its modern form as a subject in the undergraduate curriculum. In this context social medicine has quite different objectives, and is still in the process of evolution as an academic discipline. In this sense it is still almost too young to have a history; but an account of its evolution from earlier forms of undergraduate instruction, as well as of the influence of undergraduate upon post-graduate teaching, is given in chapters 3-9 of this study.

EFFECTS ON TRAINING OF THE NEWER CONCEPTS OF PUBLIC HEALTH PRACTICE

At the end of the Second World War a number of European countries which had suffered physical damage or the distresses of enemy occupation turned to the process of reconstruction with a determination to improve their existing public services and to develop new services. This resolution was effective in the field of public health, and indeed a great deal of work was obvious and urgent. Houses had to be built, streets and roadways restored and paved, water supplies and drainage services brought into use. One of the immediate difficulties in undertaking the immense task of reconstruction was to create a body of sufficiently trained health officers, e.g., physicians, engineers, nurses, and sanitarians, to undertake the work as a skilled team. Each State very properly set to work with the provision of training courses, both theoretical and practical, to meet its immediate needs. In the course of a few years, however, it became evident that more permanent methods of training in schools and institutes would have to be established, and that practical instruction would have to be organized under specially selected teachers.

It became clear also that, if training were to be undertaken on a considerable scale, it would be necessary to give official recognition and status to the health officers who qualified themselves, as well as adequate remuneration and the enjoyment of an honourable profession. Candidates of good quality are not attracted to a profession unless certain simple conditions of status are recognized by the government and the people. This statement applies especially to professions such as medicine, engineering, and nursing, for which a long, arduous course of training is required for the basic qualification. Indeed, it is frequently said that in medicine and nursing the basic qualifying course is too long, overcrowded with merely factual knowledge, and loaded with elementary teaching in specialities such as surgery or public health, which the student would learn far more effectively as a post-graduate.¹

¹ See page 48.

However that may be, many authorities felt, after seven years or so of restoration, that the time had come for a review of the principles and methods of training in hygiene, preventive medicine, and social medicine. For this reason the Regional Office for Europe of the World Health Organization arranged two conferences on education and training in these subjects. The first, which was held in Nancy, France, in December 1952, dealt with undergraduate training (this will be considered in the next section of this monograph). The second conference, held at Göteborg, Sweden, in July 1953, was devoted to post-graduate training in hygiene and public health. During this latter conference there was no question of trying to achieve uniformity of subject-matter, or of making recommendations for detailed teaching programmes. The aim of the conference, which was attended by 22 professors of hygiene and public health and other experts from countries in the European region, was to discuss the changing features of present-day practice in public health and their effects on teaching. Part III of the present study, while focusing attention on the conference, has the wider object of reviewing post-graduate teaching and public health practice as applied in general terms to the European community.

A few general points, to be elaborated in due course, may be noted by way of introduction. In the first place there is a tendency towards the appointment of whole-time health officers, including physicians, at least in the larger and more populous towns and in a supervisory capacity over regions or large areas in more scattered communities. This tendency follows naturally on the improvement of transport facilities, and on a wider interpretation of the functions of a health officer and his staff.

The appointment of an increasing number of full-time health officers has been especially notable in the Scandinavian countries, and this has naturally led to active consideration of instituting more comprehensive courses of post-graduate training. Until recently, courses of about three months' duration had been regarded as adequate for all but a few selected men, and may still be sufficient for part-time officers. For full-time officers, however, the general view now is that a post-graduate course of a year's duration is essential.

A second point is the type of authority controlling the health service. In Europe variations are found between close central control and, as in Italy, the remuneration of divisional health officers by the State, and devolution in which small local authorities are responsible for the appointment of officers and for carrying out the services. So far as teaching is concerned, it is not perhaps of great moment whether the service is centralized or not, except in one respect: the scheme which has developed in France includes a special practical course devised for a corps of health officers previously recruited by the central authority. This tendency towards training courses within an established service may increase.

A third point of importance in post-graduate training is the nature and extent of the duties which the health officer is expected to undertake. In one country, for example, the health physician has clinical functions in respect of poor persons; in another, he has similar duties in relation to hospitals for infectious diseases. There are still areas in which the health officer has to undertake bacteriological work in a personal capacity, and even the duties of public analyst. In most cases, however, the trend is towards duties concerned with administration, housing, and other environmental functions and the wide fields of social welfare. There is thus a need—probably not yet fully realized—for the post-graduate training of medical officers of health to develop more strongly on the administrative and social side.

The Status of the Health Officer

The teaching of undergraduate students in hygiene and preventive and social medicine has aroused a great deal of interest and discussion during the years since the end of the Second World War, but the corresponding position of post-graduate training in public health has received relatively little attention, except from institutes and associations directly connected with the subject. One reason for this is that in many countries the undergraduate course in preventive medicine is still built almost exclusively around public health practice in the field. A second reason, operative especially in the United Kingdom, is that in the recent organization of the National Health Service the teaching and practice of public health have been taken for granted by the Government and the public. The Inter-Departmental Committee on Medical Schools,² for example, which reported in 1944, divided its report into two sections: the larger part is concerned with undergraduate medical education (161 pages); the second part deals with post-graduate medical education and research (28 pages), with three paragraphs devoted to public health. The committee is reserved in its attitude towards this branch of post-graduate teaching and limits itself almost wholly to one or two general observations to the effect that the standard applied to medical specialists in public health work should be comparable to that applied to specialist physicians and surgeons, and that the prescribed period of post-graduate training and experience should be approximately of the same length.

These observations raise a number of questions of importance to European countries in general. The expression "specialist" has no doubt many different meanings. In a broad sense, the first observation signifies that the person concerned has taken the registrable qualification in medicine and has thereafter acquired by study and practical experience a recognized

² Great Britain, Inter-Departmental Committee on Medical Schools (1944) *Report*, London

standing among his fellows, in one branch of the profession. Special qualifications are commonly marked by the attainment of some diploma, or the membership of a college or institute. One must therefore inquire whether the course leading to a diploma in public health or its equivalent could be regarded as on the same footing as a higher qualification in surgery, obstetrics, or other specialized branches of medicine. To find an answer to this one must look at the effect of the qualification. In surgery, for example, a higher qualification represents to the public that its holder is personally skilled in undertaking major operative procedures and has both theoretical and practical experience in his profession. Similar considerations apply to other specialized branches of medicine, and to such important faculties as anaesthesiology and radiology.

In public health the position is different—at least in most countries. The diploma is recognized as the portal of entry to a career in preventive medicine; specialist recognition could be gained only by a long period of subsequent experience in the field. In France the special course devised for officers already recruited for the national health service virtually offers the grade of a speciality to a limited number of full-time officers; but no similar recognition within the public health service is granted in such terms elsewhere, except to some degree in Spain. In any case this selective system, valuable as it is for those who are chosen, is an artificial limitation of the specialist status. The doctorate in public health in certain schools in the United States, and a number of higher qualifications in various universities in Europe, do not of themselves confer any consultant status. It may well be that, with the continuing development of public health as a vocation, a further qualification based on experience of not less than five years together with some important personal contribution to knowledge will afford specialist or consultant recognition; but the main object of our present consideration is the establishment of a qualification of entry to a great vocation.

In the second paragraph of the section of its report dealing with post-graduate specialization in public health, the Inter-Departmental Committee on Medical Schools goes on to remark:

Intending public health officers should add to their general clinical experience by holding appointments as senior house-officers in general or special hospitals and by spending some time in general practice. The course of instruction for the post-graduate diploma must be properly planned, and conducted only at institutions that have staff and facilities of university standard. The examination for the diploma should be conducted by the universities providing the training. The final stages of the post-graduate training and experience of the future health officer will presumably consist of service as a member of the staff of a recognized public health department.³

This statement is unexceptionable so long as it is borne in mind that the financial rewards of a career in the public health service would not

³ *Ibid.*, p. 219

justify an unduly long period of training at a low salary or none. The public health service is pre-eminently suitable for what is known as "in-service" training, during which the candidate earns a salary as an assistant while he learns his job as a practical health officer. Indeed, it is by means of in-service training that a true sense of team-work can best be acquired.

In spite of what has just been said, one must be on guard against the too facile acceptance of a merely technical training under salary—"train while you work"—as a substitute for an academic discipline. The true post-graduate course in public health is a university discipline, and all field-work, whether paid or not, should be under the strict authority and supervision of the teaching institution.

Part-time and Full-time Service

In a number of European countries many medical men in general practice still hold part-time public health appointments. Throughout many areas, and especially in rural districts, it is the destiny of many doctors who enter general practice without special qualifications to become health officers. As district medical officers they will have a statutory responsibility for environmental hygiene, to which have been added in recent years certain aspects of preventive medicine in the sphere of personal health. It is therefore clear that undergraduate schools must play their part in ensuring that their students are equipped to deal with the personal and social aspects of preventive medicine. It is not appropriate, however, to train students in the technical details of public health work during their undergraduate course. Sir George Newman⁴ has made the point that the ordinary medical student does not require a course of study comparable to that prescribed for the diploma in public health. He is not a "diminutive" medical officer of health. This caveat has also been stressed by the late Professor G. Fischer in Sweden. When a physician has to act on a part-time basis as a health officer—generally in areas with a scattered population—his special training would be best achieved by comparatively short post-graduate courses rather than by extending undergraduate teaching.

During the past decade there has been a growing tendency to enlarge the areas of public health administration in most countries and to appoint as health officers men who hold a diploma in sanitary science and who are debarred by the terms of their appointment from engaging in private practice. Part III of this study must, therefore, be mainly concerned with the training of whole-time officers; but reference will also be made later on to the organization of refresher courses for part-time health officers.

⁴ NEWMAN, Sir George (1918) *Some notes on medical education in England* (Memorandum addressed to the President of the Board of Education), London, pp. 100-101

The changing scene of public health practice during the nineteenth and early twentieth centuries has been considered historically. One further matter is especially relevant in this introduction. In time past the health officer had to be a scientist rather than an administrator. He had very little administrative work to do, as most of his functions were advisory and there were few statutes to operate. Most of his work was concerned with duties which are carried out almost entirely by the specialist today. The science of bacteriology, for example, was a simple subject half a century ago, and many health officers were required to undertake personally the laboratory diagnosis of such infectious diseases as diphtheria and the typhoid fevers. It was therefore necessary in the diploma course to concentrate rather intensively on bacteriology. The same, although to a lesser degree, applied to public health chemistry. This concentration on the laboratory aspects of preventive medicine was enhanced by association with the great German schools, which were in the full flush of their activity during the last quarter of the nineteenth century.

In the course of the past two generations a steady change has been taking place in the practice of public health. On the negative side, the enlarging sciences of bacteriology and biochemistry have passed into the realm of the specialist and have earned the reward of research in its application to life. On the positive side, many "personal health" functions have been added to the work of the health officer, and with them a mass of administrative duties. Furthermore, in most countries the social and industrial aspects of preventive medicine have come increasingly into prominence. It is the duty of the health officer to interpret all these changing concepts to the people. One of the objects of this study is to evaluate the teaching of public health to post-graduate students and to relate it closely to the actual duties of the health officer. It is of the utmost importance that teaching should not lag behind practice, but anticipate the needs of the coming generation of students and of the community which they will serve.
