Remarks ON THE TEACHING OF HYGIENE.*

BY

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ALL practitioners of medicine must of necessity be doctors or teachers as well as healers of the sick, and I can think of no subject more likely to arouse general interest than that chosen by the officers of the Public Health Section for discussion to-day. It was originally intended that three speakers should open the discussion—one dealing with the training of health workers, another with the teaching of hygiene to school children, and a third with public education in health. Unforeseen circumstances have unfortunately made it necessary for me to introduce to your notice all three aspects of the question. I shall endeavour to deal mainly with principles and leave the discussion of details to subsequent speakers.

THE TRAINING OF HEALTH WORKERS.

Of recent developments in connexion with post-graduate public health teaching I propose to say nothing; and I shall rather confine my remarks to the teaching of preventive medicine to medical students and to the training of certain members of the subordinate health services.

Medical Students.

Let me say first of all that there is no more important person in the ranks of health workers than the general practitioner of medicine. He can do much to make or to mar any effort put forward by the more specialized public health service, and if the greatest measure of success is to attend our work the general practitioner must understand our aims and must fit into each of our schemes. To enable him to do this he must be given a correct sense of proportion when a medical student. You will recollect that in the revised medical curriculum of the General Medical Council it is laid down that the subjects of hygiene and public health should be included in every course of professional study and examination, and that courses of instruction in these subjects should be taken concurrently with the later stages of clinical instruction. The Council further resolved that throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine. I am never quite clear in my mind as to where hygiene ends and public health begins, and, so far as medical students are concerned, I would rather refer to the whole subject as preventive medicine. Such a title makes a more definite appeal to the average medical student, and every effort to capture his interest is worth making. Great differences exist between the courses of instruction in preventive medicine given in the various medical schools, both in regard to the number of lectures (and, may I add, the payments made to the lecturers) and in regard to the subjects discussed. In certain schools, mainly in London, ten or a dozen lectures seem all that can be included in the curriculum, whereas in the provincial universities twenty, thirty, or even more lectures may be given. This is probably due to the fact that the provincial medical officer of health has usually a much greater influence on the policy of his local medical school than is possible in the case of his metropolitan confrere. Then it is the practice in certain schools to devote a considerable amount of time to lectures on general sanitation and to demonstrations on water purification, sewage disposal, sanitary appliances, and the like; in other schools but little attention is paid to this aspect of the question. Variety in the method of presentation of a subject is always to be commended, but preventive

medicine is so vast and so important a study that some discrimination must be exercised in the selection of the material to be presented to the medical student, more particularly in view of the already crowded state of the medical curriculum. It may or may not be the case that the various teachers act on the advice of the General Medical Council and endeavour to keep before the notice of the student the importance of the preventive aspects of medicine; in any event it is at least convenient that one lecturer should touch upon the various subjects of the curriculum and lay stress in each case on methods of prevention. Preventive medicine ranges over many fields and can have no recognized limits as have certain of the other subjects taught in our medical schools. To my way of thinking a lecturer in preventive medicine achieves his object if he succeeds in arousing the interest of his class and in giving them a definite preventive point of view. He cannot turn medical students into medical officers of health by forcing them to attend a short course of lectures, but he can see to it that every young man or woman starting in practice is aware not only of the principles of prevention, but also of his own function as a practitioner of prevention. The student must be shown the place of the practitioner in relation to the various schemes organized and maintained by local authorities all over the country, and he must be taught the important influence of environment upon health. If these matters are not placed clearly before him he will leave his medical school after acquiring knowledge in the dissecting room, the laboratory, the hospital ward, and the out-patient department, and he will think in terms of these, to his own and to the nation's future detriment.

A course of lectures on preventive medicine should be given in the final year of the medical curriculum and should deal, among other matters, with the triumphs and failures of prevention, with an outline of public health administration in this country, with the chief sources of statistical information and with the importance of correct certification and notification, with all the various organized schemes of prevention in existence and with the special measures available in connexion with the principal groups of diseases, with the importance of pure air, pure water, and pure food (this includes a good deal of personal hygiene), and with the evil effects of bad housing and insanitary conditions generally. Throughout the whole course the part the student himself will have to play and the ways in which difficulties may be avoided or overcome must be kept constantly before his notice. In my judgement lectures dealing with details of constructional work and with complicated processes of ventilation, water purification, sewage disposal, and similar problems only confuse the student and make him feel he is being forced to listen to something which is really the business of experts and which will have only an indirect bearing on his future practice; and I am not inclined to disagree with him. A course of lectures on the lines of Sir George Newman's *Outline of the Practice of Preventive Medicine* seems to me particularly well suited to medical students, and I always recommend that little book to them for their careful perusal.

It might be well if lecturers on preventive medicine could agree on a definite syllabus of instruction for use in our medical schools, and it would also be helpful if the printed requirements relating to hygiene of some of the examining bodies were to undergo revision in the near future.

Sanitary Inspectors.

To meet the wishes of the Minister of Health the bodies whose certificates were recognized by the Sanitary Officers Order, 1922, have been combined under the title of the Royal Sanitary Institute and Sanitary Inspectors' Examination Joint Board. The object of the Board, which commenced examining in 1926, is to provide a uniform system for the examination and certification of persons seeking appointment as sanitary inspectors in England and Wales. Before a candidate is accepted by the Board he must have passed one of a list of approved examinations, of which the matriculation examination of London University and the preliminary examination of the National Association of Local Government Officers are examples, or must produce evidence of having acquired such general and technical knowledge as may be approved by the Board. It was felt necessary, when the Board began its work, to raise the standard of general education for entrants to the inspectorate, and many interested persons feared that the insistence placed on general education might tend to produce candidates whose main training had been

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obtained in the clerical division of a public health department and to keep out candidates who had served their apprenticeship in one or other of the building trades. Nothing in my opinion would be more fatal to the standing of inspectors than such a state of affairs. The ability to draft a good report may be necessary, but the capacity to meet a builder on his own ground and to discuss technicalities with him in such a way as to make it evident that the inspector has himself been a craftsman is of still greater importance, and I am glad that the Board has interpreted this preliminary examination qualification in a broad-minded way.

The actual training demanded of candidates includes attendance at a six months' part-time course of lectures and demonstrations based on a comprehensive syllabus of subjects. The course must be held at one of the approved institutions, of which there are three in London, ten in the provinces, and one in Scotland. In addition, candidates must have undergone practical training in the duties of a sanitary inspector, as a rule, for a period of one year, some reduction in time being made in the case of men who have had at least three years' practical experience in one or other of the building crafts. The standards of training and examination are high, and the Board has become a body in which the public health service has complete confidence. A most necessary qualification for most sanitary inspectors is the certificate of "Inspector of meat and other foods" granted by the Royal Sanitary Institute. Candidates, who must, as a general rule, hold the certificate of sanitary inspector, must produce evidence of having attended for at least two months an approved course of lectures and demonstrations (there are two such courses in London and eight in the provinces) including training in meat inspection at a cattle market and slaughtering establishment recognized by the Institute. The examination is of high standard, and every candidate has to display a very considerable amount of practical knowledge before he can obtain the certificate.

Health Visitors.

During recent years the training of health visitors has been the subject of much discussion, and the conditions of entry to the service are now more or less standardized. All women appointed as health visitors for the first time after April 1st, 1928, must hold the Health Visitors' Certificate issued by the Royal Sanitary Institute with the approval of the Minister of Health.

The examination qualifying for this certificate is open (1) to nurses who have completed a three years' course of training either at a recognized general hospital or a recognized children's hospital, who have obtained the certificate of the Central Midwives Board and who have attended an approved whole-time course in public health work lasting for at least six months, and (2) to women, not being trained nurses, who have undergone an approved course of training in public health work for two years, together with six months' training in hospital, and who have obtained the certificate of the Central Midwives Board. It will be noticed that all new entrants to the service, whether trained nurses or not, must take a whole-time course of instruction. There are eleven institutions—five in London and six in the provinces—where such courses are obtainable, and in all cases arrangements are made for practical training at maternity and child welfare centres and similar places to accompany the more theoretical lectures. The examination for the certificate, which consists of three written papers and an oral examination, is of a searching character.

It may be of interest to contrast a similar course given in the Institute of Public Health of the University of Western Ontario. There the certificate of Public Health Nurse is granted, after examination, only to candidates who have taken a course consisting of lectures, demonstrations, clinics, laboratory work, and field work occupying one academic year of about nine hundred hours—thirty hours a week, from September to May inclusive. About one-half of the total number of hours is devoted to practical field work under instructors professionally engaged in public health work in the town of London, Ontario. Students may apparently spread the work over two or three years, and need not then attend full-time. The course is open only to trained nurses showing a satisfactory standard of general education.

Much argument has raged round the question as to whether or not only trained nurses should be accepted as candidates for the health visitors' examination. The bulk of opinion is in favour of such training, but the Minister of Health, in deference to the wishes of certain of the teaching institutions, has retained the two years' whole-time course for persons without nursing training. May I say that some of the best health visitors I have encountered possessed no extended nursing training, but they

were, of course, doing only maternity and child welfare work. It is probably just as well to retain both types of entrant to the service.

Some anxiety has been felt lest these new conditions should result in a dearth of health visitors. In my opinion the conditions are not a bit too exacting for persons entering the responsible office of health visitor, but it is certain that few women will be prepared to expend the money necessary to obtain whole-time courses of training so long as the salaries of health visitors remain at their present ridiculously low level. A service must be made attractive if a good type of entrant is to be got, and I can see no adequate reason why a local authority should not pay their health visitors as good salaries as are paid to the women teachers on the staffs of their public elementary schools. In a recent circular the Minister of Health has indicated to local authorities two ways in which intending health visitors may be helped to obtain their training. The first suggestion is that, in areas where an ordinary full-time course of training lasting six months has been provided, candidates, who undertake to serve as health visitors in these areas for at least six months after obtaining the health visitor's certificate, may receive from the local authority during their training an advance of salary, to be repaid in the course of the first six months' period of service as health visitor. The other suggestion deals with the employment of probationer health visitors. In this case the course of training must extend over not less than three academic terms, and may be arranged, for example, jointly by a local authority and a university. Probationers must be trained nurses holding the certificate of the Central Midwives Board. Such a scheme is, I understand, in force in the county of Durham, and is meeting with a considerable amount of success. It is interesting to note that a similar procedure has been suggested in the case of New South Wales. There the proposal was to appoint women as cadet nurses during their course of training, such cadets to sign a bond agreeing to serve as health visitors for two or three years after completing their course.

Midwives.

Most of us are aware that pupil midwives, other than trained nurses, have to undergo training for a period of one year before they are allowed to sit for the certificate of the Central Midwives Board. In the case of trained nurses the period of special training lasts for six months.

Pupils must be certified as "having examined and received instruction in the supervision of not less than twenty pregnant women," and it is suggested that attendance at ante-natal clinics affords excellent opportunities for instruction of this nature. It is now necessary that ten labours should be witnessed, that the first five cases personally delivered must be attended in an institution approved by the Central Midwives Board, and that of the remaining fifteen at least five must be attended in the patients' own homes. The object of this is to ensure that the pupil first learns the methods of surgical cleanliness under the easiest and best possible conditions, and afterwards extends her education by attending and nursing outdoor cases so that she may also learn how to apply hospital methods to the more difficult circumstances of the patients' homes and how to improvise and make the best of what she finds there. Such experience will indicate to her her relations with, and duties to, the local health authority, and the need for co-operation with private medical practitioners and voluntary and other agencies for the assistance of mothers and babies. The number of lectures a pupil has now to attend is thirty, and the minimal period over which they are spread is four months.

It must be remembered that in spite of the recent efforts of the Central Midwives Board our training courses are still much shorter, and perhaps less thorough, than those in operation in other European countries, notably Holland and Denmark.

Dame Janet Campbell's comments on the training of midwives contained in her last report, *The Protection of Motherhood*, 1927, are interesting, and might well be discussed by this section. She points out that no discrimination is made between the pupil who intends to practise midwifery and one who merely desires the additional qualification of the certificate of the Central Midwives Board. Thus a nurse who has no intention of practising may enter one of the best-equipped training schools while the woman who intends to practise, and therefore needs the widest experience possible, may be driven to a small

institution where the facilities are limited and the teaching is often not of the highest quality. It is of interest that only 22.7 per cent. of midwives on the roll in March, 1927, were in practice in 1926. Again, the amount of material for teaching purposes is becoming steadily less, and is likely to diminish still further in the future. These considerations have led Dame Janet Campbell to suggest:

1. That there should be two classes of midwifery certificates—(a) for the practising midwife whose training cannot be too good or too thorough, and (b) for the "obstetric nurse" who desires some knowledge of midwifery for work in hospital, in the public health service, and in private nursing, but who does not intend to practise as a midwife. (This class of certificate would be obtainable only by a trained nurse.)
2. That midwifery schools should be classified and that only those schools which can offer a full and complete training should be allowed to accept pupils for training as practising midwives.

The possibility of increasing the period of training to eighteen months or two years and of including within the period practice under supervision after the examination has been taken but before the certificate has been granted is also suggested.

All these ideas appear likely to give rise to considerable discussion.

Fever Nursing Certificate.

Those of us who have charge of modern, well-equipped isolation hospitals know that a very fair degree of nursing skill can be attained by women trained in such institutions. Much of the work is of an acute nature, most of the patients are young children, and the experience gained in the handling of infectious persons is a very valuable one. I regard some isolation hospital training as highly important in the case of the nursing staff of a public health department. You will recollect that the preliminary examination of the General Nursing Council is the same for all nurses, whether from general hospitals or from isolation hospitals.

In a complete training school for fever nurses this examination may be taken at the end of the first twelve months and the final examination at the end of two years. Many isolation hospitals are not regarded as having sufficient material to afford a complete training, and these, with the consent of the General Nursing Council, may become affiliated to complete training schools provided that the whole period of training is not less than two years and six months, of which not less than one year must be spent at the latter institution. The preliminary examination must be passed before the nurse enters the complete training school from an affiliated school. This arrangement is, I suppose, the best that can be made, but it operates a little harshly on the smaller hospital, for as soon as a probationer there begins to be really useful she is transferred to the larger institution. The erection of small isolation hospitals, though a measure to be deprecated, is not altogether avoidable, especially in rural areas, and the staffing of such places always presents a good deal of difficulty. The rules of the General Nursing Council provide for a four years' course of training for those nurses who, having spent two years at a complete training school for fever nurses, and having passed the final examination, proceed to a general training school. This means that training in a general hospital in such cases may be reduced by one year, but only in very few instances has such an arrangement been made.

It seems rather ridiculous that a woman who has passed the preliminary examination common to all nurses in training, as well as her final examination for fever nursing, should be compelled to enter a general hospital on the same basis as a woman who has had no previous hospital training whatever.

I fear I have occupied too much of the time allotted to me in discussing the training of health workers, but my excuse is twofold: first, this was the subject I was asked to deal with in the first instance, the other heads of discussion having since been thrust upon me; and in the second place no educational scheme can be successful without a nucleus of well-trained and intelligent officials. Health education must of necessity be guided by members of the medical profession and by the staffs of public health departments.

HEALTH EDUCATION IN SCHOOLS.

It is not necessary for me to remind an audience such as this that the training of a child in the formation of health habits must begin with its earliest days. I might almost say hours. The lack of any such training is seen only

too often in the infant departments of our elementary schools. That an improvement is gradually being effected is due largely to the efforts of our maternity and child welfare workers. When a child first goes to school at the age of five it is more easily influenced by the school environment than at any other period of its school life. For a moment the school becomes predominant and in many cases home becomes almost a factor of secondary importance. As the years pass the child is apt to be influenced more by what it sees and hears at home and in the streets; hence it is of the greatest importance that its health education should be commenced in its first school years and that the practice of hygiene should be made so far as possible a matter of habit. If the child is to be well taught the teacher must understand her subject and be able to present it to the class in an attractive manner. The proper person to give instruction in hygiene to school children is the class teacher, and not a special teacher. We want to prevent the child from getting the idea that hygiene is anything but an everyday routine, and to let the child think for one moment that its own teacher is unable to handle the subject would be fatal. I mention this because I have been told more than once that the most suitable person to teach children hygiene is the school medical officer. Now the inculcation of good habits and the teaching of hygiene are not the simplest of matters, and I venture to suggest that insufficient attention is paid to this subject in many of our training colleges. In these institutions lectures on hygiene should be given by specially qualified men and women, and no effort should be spared to make students appreciate the importance of the subject and the great results that may be achieved by its intelligent and unremitting practice in all schools.

All of us must welcome the prominence given to this aspect of health education by Sir George Newman during the past year or two, and we must regard as most timely the appearance of the Board of Education's *Handbook of Suggestions on Health Education* intended for the consideration of teachers and others concerned in the work of public elementary schools. In his introduction to the handbook, Sir George Newman lays stress on a number of highly important points. He emphasizes the fact that hygiene is so essential that it can never be merely a "subject" of instruction, but must enter into the total life and experience of the child. Indeed, the Board considers that the physical health and condition of the child are the basis upon which all mental education must necessarily be founded, and it regards the importance of hygiene and physical training, like that of moral training, as being so great that no one would propose their omission from the curriculum of any elementary school. Sir George Newman points out that there are three principal ways in which health may be both acquired and taught in youth: (a) by habit-training, (b) by learning the truths of biology, chemistry, and physics, and (c) by understanding the principles and practice of good living itself. In a young child under 10 or 11 years of age hygiene should be taught as a rule by habit-training. Daily health exercises should be carried out by such children, and five or ten minutes a day may very well be spent in this fashion. The methods adopted will vary with individual teachers, but such matters as the importance of cleanliness and of fresh air and the care of the teeth must be so drilled into the children that their practical application will become entirely a habit.

"It should be remembered that the health of a nation is in a large degree dependent upon the habits of the people, and what they need in order to live well is not abstruse knowledge but to practise the knowledge they possess already. Most people know a good deal about the value of cleanliness, fresh air, and simple food, but they do not always practise what they know. They have not in youth contracted the habit of doing so."

In the case of children over 11 years of age instruction may be given under the heading of "hygiene" or it may be included in the general science course or form part of nature study. The older girls will naturally get a good deal of instruction in hygiene in their domestic subjects course. In any event a definite amount of ground should be covered in each term and the work should be carefully planned out beforehand. That it can be done successfully

is seen by what has been carried out in my own borough since 1904. In that year a syllabus of instruction in hygiene was issued by the Education Committee—it was drawn up, may I say, by the present Chairman of Council of the British Medical Association—and since then, with few exceptions, has been followed conscientiously in all our elementary schools. The syllabus has required but little alteration in recent years to bring it completely up to date. The question of permitting teachers to give instruction on matters relating to sex came up for consideration in connexion with the revision of the syllabus last year, and it was felt that to authorize all teachers to give instruction of this nature would be a mistake. The difficulty was got over by issuing a printed letter, addressed to head teachers and accompanying the syllabus, authorizing them to deal with this aspect of hygiene as they thought necessary or desirable.

The kind of health education in schools most likely to be of permanent benefit is that undertaken by the teaching staff, aided on all possible occasions by the school medical service. The visits of the school medical officers and of the school nurses should be regarded as illustrating the lessons on hygiene and should be made as much a part of the school curriculum as possible. Assistance can often be given by the school medical service in the selection of suitable posters and pictures and in the compilation of booklets and pamphlets for distribution amongst the scholars. Special efforts such as are made during health weeks and in competitions of various sorts have their uses, but it is the daily routine that counts most in the long run.

PUBLIC EDUCATION IN HEALTH.

Attempts to instruct the public in matters affecting health are not of recent origin. They date at all events from the days when the Mosaic code, that wonderful syllabus of hygiene, was taught to the children of Israel. It was not, however, so far as I know, till the beginning of last century that active societies began to be formed in this country for the express purpose of educating the public. A "Health of Towns Association" was one of the first in the field, and in 1846 a "Health of London Association" was formed with the object of "instructing the people as to the evils which result from the present defective sewerage, drainage, ventilation, street cleansing, and supply of water; from interment in towns, and from other sources of injury to the public health; and of showing the beneficial influence which the removal of these evils would certainly exert on their physical and moral condition." Efforts in those days were directed mainly towards an enlightened public opinion among the middle classes, whereas modern propagandists make their appeal to all and sundry, regardless of class. After 1870 societies, institutes, and associations began to multiply to a very considerable extent, while the past twenty years have been the most prolific period of all. At the present time there are over fifty bodies engaged directly in this class of work.

As would be expected in this country, the foundations of a scheme of public education in health were laid by voluntary effort, and we owe a great debt of gratitude to the pioneers. The date of official entry into the field may be taken as 1911, when the National Health Insurance Act gave Insurance Committees power to arrange for the giving of lectures and the publication of information on questions relating to health. Later, local authorities were enabled to undertake educational work of a special nature under the Tuberculosis Regulations of 1912, the Venereal Diseases Regulations of 1916, and the Maternity and Child Welfare Regulations of 1918, and were given much wider powers (at any rate outside London) by the Public Health Act of 1925. It is thus obvious that an enormous amount of effort, both voluntary and official, is capable of being aroused.

To my way of thinking the most valuable kind of health education is that being undertaken day in day out in a well-conducted sanitary area where the staff is competent and reasonably sufficient. The visits paid and the advice given by intelligent and courteous sanitary inspectors,

health visitors, and school nurses, combined with well-administered schemes of maternity and child welfare work, school medical inspection and treatment, anti-tuberculosis work, and the like, are the finest means of teaching the public we possess. The medical officer of health who neglects perfecting these services and aims rather at more showy special measures is building upon sand. We must of course, make different appeals in different types of area, but a striving after the sensational is likely to do more harm than good. No one has a greater opportunity for the dissemination of health knowledge amongst the public than the general practitioner. Were he to regard himself as primarily a teacher much could be accomplished, and there is need for the public to be educated up to this ideal of medical practice. I am glad to see that the Industrial Health Education Society, one of the most recent, and certainly one of the most active, of our voluntary societies, has induced general practitioners all over the country to give lectures to groups of workpeople drawn from the various trades. The results have been most successful, and the annual report for 1927 states that

"the rapid growth of the society bears witness to the fact that the workers are very interested in matters of health, and are desirous of knowing how to prevent, or at least to mitigate, the sicknesses and diseases incidental to their occupations. In fact, the workers are realizing that health is an inheritance, and that though they can spend the interest in work and play, they must not break into the principal."

Now this business of health education—for it has almost become a business—is sorely in need of some organization, or at any rate of some co-ordination. This has been felt by no one more than the medical officer of health, and it is with a view to getting some sort of order out of the chaos that exists that the Central Council for Health Education has been formed. This council, which is composed of representatives of local authorities of all sorts and of medical officers of health, is intended to act as a sort of clearing-house and co-ordinating centre for all kinds of health propaganda. The council knows where the best material for any class of work connected with health education may be obtained, and upon what terms. It is compiling lists of approved lecturers, films, lantern slides, posters, pamphlets, and all the other paraphernalia of a health campaign. This information will be at the disposal of any medical officer of health who cares to ask for it, and the results will be a great saving of time and effort to the staffs of public health departments. Furthermore, the council will recommend only what it has seen and approved. The official journal, *Better Health*, is published monthly under the auspices of the central council, and already is making its influence felt throughout the country. The council has no intention of undertaking the production of propaganda material on its own account, and has no desire to enter into competition with existing societies; its aim is rather to assist these societies in their work and to suggest means whereby their activities may be made still more useful to the public. It is interesting to note that an agreement has been reached with the General Medical Council as to the publication of health articles in the daily press. It is now accepted that such articles should be submitted to the Chief Medical Officer of the Ministry of Health for his approval, and that approval will be forthcoming provided they are (a) for the public benefit, and (b) free from the taint of personal professional advertisement. Articles of this nature may be signed by the author, and may then be distributed through one of the press associations.

Insufficient use has been made of broadcasting as a means of health education, and I would commend to you for your consideration the suggestion made by the editor of *Public Health* in the May issue of that journal. It is pointed out that the present method of broadcasting once a month a health talk lasting fifteen minutes is quite unlikely to make an appeal to those most in need of such education. Our ends are likely to be better served by more frequent "four-minute broadcasts" on matters of special health interest at the particular moment. The suggestion appears to be full of promise.

May I say in conclusion that if our efforts are to be successful they must be continuous. It is no good having

one health week a year if we do little or nothing during the remaining fifty-one weeks. It is the constant driving home of the simple truths we all know that will do most good in the long run. Above all we must avoid, as Sir Thomas Horder has so well pointed out, the creation in the public mind of any idea that health is an extremely difficult thing to secure or that there are any such things as the "secrets of good health." "Health is a broad and well-paved road; Nature is both an excellent road maker and an excellent road mender. Not only does it require very little skill, and but a modicum of good fortune to keep to it; the wayfaring man must be a fool indeed if he errs therein."

THE THERAPEUTIC VALUE OF THE HEAVY METALS IN PULMONARY TUBERCULOSIS.*

BY

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THE heavy metals have a place amongst the many drugs that have been used in the treatment of pulmonary tuberculosis. Mercury and copper were both believed to cause fibrosis, and to lead to the healing of tubercle, but in practice it was found that they were of no value. A few years ago copper was much advocated, especially in Germany and Japan, in the treatment of tuberculosis, and very encouraging results were described at first. The intravenous injection of copper is frequently followed by a short febrile reaction, or even a rigor, which occasionally leads to improvement in the general condition of the patient. The same result is seen in shock produced by other means, such as serum, tuberculin, protein, colloidal gold, reaction to sun rays, etc. Chart 1 shows reactions following the subcutaneous injection of anti-tuberculosis serum in a febrile case of pulmonary tuberculosis.

CHART 1.

It will be seen that no reaction followed the injection of 10 c.c.m. of the serum, but the administration of 40 c.c.m. caused sharp reactions followed by a lowering of the temperature; later the patient had anaphylaxis and nearly died when 20 c.c.m. had been given; after this the temperature became settled, and she rapidly improved, being able to leave hospital and go to a sanatorium. A shock reaction may, of course, start an acute spread of the tuberculosis, which rapidly proves fatal, but improvement is so often seen to follow the initial shock that one is bound to doubt whether the treatment—be it gold or copper, serum or tuberculin—is acting by virtue of any specific action on tuberculosis. May it not be that the shock stimulates some defensive process in the body and thus leads to improvement? If this is the case it would seem immaterial which method is used to produce the shock, and up to a point I think this is so.

The metal which is most used at present in the treatment of pulmonary tuberculosis is gold, and the best preparation is a double thiosulphate of gold and sodium called "sanocrysin," which was made by Moellgaard. Chart 2 shows a febrile reaction after sanocrysin. The temperature later settled down to normal. In many cases, however, there is no apparent reaction, and yet the patient shows signs of improvement. While, therefore, some of the effects of sanocrysin (such as can be produced

by various other substances) are no doubt due to the shock, there appears to be some other factor besides this. The most notable change resulting from sanocrysin treatment is the diminution in the quantity of sputum and the disappearance of tubercle bacilli from the sputum; the chief indication, therefore, for using sanocrysin is when the sputum continues and contains tubercle bacilli. In the majority of cases I have chosen patients with chronic pulmonary tuberculosis where the disease is slowly progressing and tubercle bacilli are constantly present in the sputum. This type of case is very common in every sanatorium, and may be regarded as that which ultimately does badly, so that some additional method of treatment is much needed.

CHART 2.

Another type of case in which I have found sanocrysin of use is when collapse has been induced in one lung by artificial pneumothorax, and the disease begins to spread on the other side; in these cases it is sometimes possible to check this development and thus to secure the maintenance of the pneumothorax. In cases of acute pulmonary tuberculosis I have not found sanocrysin of great value, but if it is combined with pneumothorax I think the patient obtains the best chance. My practice is to induce collapse in the worst lung and to give sanocrysin in the hope of checking the spread of the disease in the other lung.

When sanocrysin was first introduced in 1923 there were many complications and cases of metal poisoning, but now it is usual to give smaller doses, and a serious complication is very rare. It is given by intravenous injection, and I start with a dose of 0.1 gram. If there is no reaction three days later I give 0.25 gram, and then at weekly intervals 0.5 gram, 0.75 gram, and 1 gram; I repeat this last dose three or four times at weekly intervals. If there is a reaction after one dose I wait until it has completely subsided, and then repeat the same dose if the reaction was a small one, or give a smaller dose in the case of a large reaction. In children, small women, or delicate, thin patients I do not give as large a dose as 1 gram, but stop when 0.5 or 0.75 is reached. It is very unusual to get any reaction under a dose of 0.75 gram, although in exceptional cases I have seen a reaction even after 0.1 gram. To avoid serious complications the injections should never be given at shorter intervals than one week (except after the initial small dose of 0.1 gram), and should not exceed 1 gram at a time. The complications that occurred in my series were:

1. Albuminuria was present in about half the cases, but was transient and mild; I did not have to stop the treatment on account of it in any case.
2. A metallic taste in the mouth was experienced occasionally, but only two in my first series of 60 patients had stomatitis.
3. Vomiting occurred directly after the injection in 20 per cent. of the cases, but passed off quickly, causing no ill effect.
4. A few patients complained of rheumatic pains in the joints, and I had to stop treatment in one instance owing to the severity of these symptoms.
5. A slight febrile reaction directly after the injection occurred in one-third of the patients, but this settled down in a few hours. A temperature rising to 101° F. or more—sometimes associated with a rigor—was not uncommon, and occurred in 13 of my first 60 cases, but settled down within forty-eight hours in every instance. A long febrile reaction lasting a week or more was noted in only 4 cases in this series.
6. An erythematous rash occurred in 11 of my first 60 cases, and in 3 of these it was severe. In the severe cases the rash went on to a desquamative dermatitis, and was by far the most serious complication noted in any of the series. At the same time, all these cases with severe skin reaction did very well as regards their pulmonary condition.
7. Sometimes a little sanocrysin is spilt round the vein and causes a swollen and painful arm. A 10 per cent. solution of sodium thiosulphate injected into the swelling will give great relief in these cases. For stomatitis or for

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