

movement, its sudden war-time development, and foreshadows its future possibilities. To those unacquainted with the subject this chapter will be interesting reading, as it tells of much good work done in a field of preventive medicine till recently neglected. We cannot help regretting that the writer recognises so little the essentially medical side of her subject. No one ever thinks of infant welfare apart from its medical aspect; but there is a tendency here to treat industrial welfare as something *sui generis* to which medical service is a minor appendage. This way danger lies; much in welfare is yet to be proved and tested; and, if appeal is not made to the medical scientist and to research, mistaken philanthropy may do much damage and harm. A priori deductions as to what ought to be beneficial without appeal to proof are to-day the rocks upon which this excellent ship may founder. The medical staff of the factory department wants strengthening, so that it can pay some attention to this most important side of public health. A staff of two medical inspectors to supervise the health conditions of some eight million workers would be ridiculous were it not a national reproach.

Industrial Poisoning.

The chapter written by Dr. T. M. Legge is devoted to industrial poisoning, the only branch—and that a small one—of industrial medicine he and his colleague are numerically strong enough to deal with. Lead poisoning, of which there were 1058 cases in 1900, only claimed 144 victims in 1918, and many of the cases were only of slight duration. This reduction seems fully to justify the statement that “on the practical side little more is to be learned as to how lead poisoning is caused, and it can be taken as axiomatic that all risk lies in inhalation of dust and fume. These removed or prevented there will be no lead poisoning.” The way in which “phossy jaw” (phosphorus poisoning) reappeared, after its extirpation following upon the Yellow Phosphorus Match Act, owing to the call for this poisonous substance for the manufacture of certain munitions of war, is described. Arsenical poisoning also, particularly due to arseniuretted hydrogen and to arsenic trichloride (for the purposes of chemical warfare), increased for the same reason, and the opportunity was seized of having pathological research carried out by Professor S. Delepine. Details of his findings are given which are of some importance, for they suggest that arseniuretted hydrogen when inhaled “produces changes in the cells of the liver and kidneys, and that the symptoms are in some measure due to these changes.” Hitherto the action of this gas has been regarded “as due to the action of the gas on the blood, which breaks down the red blood cells and is followed by failure, partial or complete, of the liver and kidneys to eliminate the debris.” This piece of research establishes the early links in the chain which, if continued, terminates, in some cases of arsenical poisoning, in toxic jaundice. An outbreak of poisoning from arseniuretted hydrogen in a submarine crew, fortunately with no fatalities, due to the presence of 0.2 per cent. of arsenic in an accumulator plate, disclosed a previously unsuspected danger. Such cases, however, are rare, and the mode of their occurrence is now well understood—viz., the generation of hydrogen in the presence of arsenic which, being only an impurity, perhaps in the iron of a shovel, may escape recognition.

Industrial Anthrax.

Industrial anthrax is dealt with at an almost undue length when the number of fatalities attributed to it (an average of 9.6 per annum for the past ten years) is kept in mind. We hope that even this small mortality may be abolished when the wholesale disinfection of possibly contaminated wool is established; and the process which has been evolved is applied also to horsehair. It consists in “agitation for 20 minutes in warm water containing soap solution and a little sodium carbonate, assisted by squeezing through rollers, subsequently treating the wool in a bath of warm water containing $2\frac{1}{2}$ per cent. formaldehyde, again squeezing through rollers, and finally drying in a current of hot air.”

Interest attaches to the remarks on cases of poisoning from fumes of petrol and of benzol, since these spirits are being so largely used by the general public for motor transport. Benzol causes “hæmorrhages from the mucous membrane of the gums and nose as an early symptom and one that can safely be used as a guide for the purpose of exclusion from

work”; and safety lies in free ventilation, or where possible in handling the spirit in the open air.

Epitheliomatous Warts.

The occurrence of warts which may become epitheliomatous is reported as continuing in the manufacture of briquettes, especially in South Wales, and in shale oil works in Scotland. Considering the attention devoted eight years ago to the need for regulations for the prevention of this disease, and the research then carried out, this is distinctly disappointing. We hope the subject will be reconsidered at an early date; the disease is not, it is true, widespread; but investigation into the exact origin of any form of malignant disease may result in throwing light on the greater mystery underlying the origin and steady increase of cancer in general. The part played by the products of vegetable distillation in giving rise to industrial dermatitis, warts, and epithelioma, not only among pitch and shale oil workers, but among chimney-sweeps and agriculturists who handle soot, among tobacco-smokers, and those who handle aniline, naphthylamine and their homologues, and benzidine, calls for organised investigation at the hands of the Medical Research Committee.

A STATE MEDICAL SERVICE.

BY J. NORMAN GLAISTER, M.R.C.S., L.R.C.P.

THE requirements of a satisfactory State Medical Service are: (1) That it shall satisfy the need of the industrial classes for efficient medical attendance at a price which they are economically able to pay; and (2) that it shall satisfy the need of medical men for honourable work at a wage sufficient for their maintenance. It is quite true that the public is not an infallible judge of its own needs, just as it must be admitted that the medical profession does not always know what is good for itself; but it is certain that any system which ignores the desires either of the public or of the doctors is foredoomed to failure, and it is probable that in both cases the desires of those concerned form the most reliable starting-point for the determination of their real needs.

Desires of the Worker and the Doctor.

The worker desires: 1. To be attended by a doctor whom he knows and trusts. 2. To be seen without delay. 3. To be seen, at his own option, either at a convenient consulting-room or in his own home. 4. Treatment embodied in some concrete form—a bottle of medicine, a dressing, an electrical or other application, a printed diet table. 5. The assurance that his doctor knows all that is practically necessary of his profession. 6. An air of complete self-confidence on the part of his doctor. 7. A right to the services of a recognised expert if he loses confidence in his doctor, or otherwise “gets the wind up.” 8. Some form of insurance, so that the incidence of a doctor's bill may not coincide with a period of financial depression resulting from illness. 9. A payment which seems to him reasonable.

The doctor desires: 1. Work which can be done quickly and efficiently without strain or friction—i.e., work objectively worth doing. 2. Work which demands the greatest effort of his best faculties—i.e., work subjectively worth doing. 3. Opportunities to better his position by effort. 4. Definite hours of duty, reasonable leisure and holidays, and time for study. 5. Bread-and-butter. 6. Housing accommodation for himself and his family. 7. Provision for his own old age and for the future of his dependents.

The Ideal Medical Service.

We may now attempt the construction of a theoretically ideal medical service in order to see how far it may be possible to reconcile the claims of such a service with the practical requirements above detailed.

It is obvious that the work with which we are concerned is essentially mental work, and that even in operative surgery manual dexterity is of quite secondary importance. It is equally obvious that no one mind can operate effectually over the whole field of modern medical practice, and that in any efficient medical service there must be specialisation of function and division of labour. The problem, in fact, becomes one of herd-psychology, and is concerned with the organisation of mental team-work. A scheme devised in

accordance with these principles will work out roughly as follows.

The Junior Medical Officer.

The M.O. will enter the service as soon as practicable after becoming qualified to practise, and his function will for some years be that of a general practitioner. I am not here concerned with the question of salary, but the initial salary would probably be *equivalent* to about £500 of money at its present value. The earning of this salary will be a frankly commercial transaction, the employee contracting in return for his salary to work for a definite number of hours, and to keep his work up to a minimum standard which will be defined as rigidly and accurately as possible. This standard will not be high, but will be designed to be easily attainable by any qualified man; if any M.O. fails to get through the minimum amount of work, or commits errors proved by the experience of others to be easily avoidable, his attention will be drawn to the routine devised to enable him to overcome his difficulties, and if he still remains inefficient he will be dismissed. In the arrangement of this part of his work no account will be taken of the stultifying effect of routine, beyond the limitation of this kind of work to a maximum of perhaps six hours a day; the considerations to be always kept in view in this department of work are that there are every day a number of patients with every-day diseases to which it is necessary to apply every-day treatment, that this is the first charge upon the time of the service, and that in order to find time for more advanced and interesting work machinery must be devised to deal with it quickly and efficiently.

It is for this utilitarian purpose that the State buys the services of the junior M.O., and it will be the business of the State to expend those services in the most effective and economical manner possible. This business of the purveying of standard medical attention to commonplace cases will be organised like any other efficiently-organised business with a view to the immediate and obvious requirements of the work to be done, and the M.O. will be expected to fit into his place as a cog in the machine.

But the M.O. is much more than a cog in the machine; he is also the owner of a vigorous and inquiring mind upon which the State must in great measure rely for the advancement of medical knowledge and for the conduct and direction of the medical service in the next decade; more important still, he is a citizen with needs—physical, mental, and moral—of his own, and he has human relationships with his patients and with others. The value of his work in these higher capacities cannot be measured by any standard which we possess, and the work cannot therefore be bought with money; any attempt so to buy it is foredoomed to chaos and failure.

It will be made clear to the newly appointed M.O. that he is expected to continue his medical education, and that time, laboratories, libraries, and expert advice are at his disposal for this purpose; but it will be made equally clear that the payment of his salary is dependent solely upon the practical efficiency of his routine work, and that so long as this is maintained his salary will continue to be paid. In the course of his higher education he will almost certainly take some part in research, which may prove to be of great value, and he will necessarily do practical work of some value in special clinics and laboratories; but he will be expected to carry the spirit of the great teaching hospitals to these labours and to ask for them no reward beyond the interest of the work itself and the knowledge that it is appreciated by his colleagues and his patients.

Somewhere about the age of 30 many of these general practitioners will become dissatisfied with their work. A man has developed an interest in some more specialised line of work, and grudges the hours devoted to the old familiar routine. Moreover, he has not of late found time to keep himself up to date in all the branches of his work, and realises that his work is becoming inferior in some respects to that of more recently qualified men. He accordingly applies for promotion to a higher grade, and if in his (voluntary) higher work he has shown a normal degree of aptitude he receives this as a matter of course.

Investigators, Operators, and Teachers.

In the higher grade there will be investigators, operators, and teachers. The teachers will be those who, while desiring a position of greater authority and responsibility, yet retain

an effective grasp of the whole of general practice, and feel no desire as yet to specialise along any of the routine paths laid down for the specialising officers of the service.

The line between investigators and operators will not correspond exactly with the conventional distinction between physicians and surgeons. The investigator will cultivate the careful mind; it will be his responsibility to see that no effort is spared to reach a correct diagnosis; a mind open to any suggestion, even though apparently irrelevant, a readiness to explore side-tracks and to admit that his own way may not be the best way, to revise his opinion even at the eleventh hour, and, in the absence of sufficient evidence, even to refuse to make a decision and to call for help—these are virtues in the investigator, vices in the operator. The operator, on the other hand, will cultivate a decisive mind. His will be the responsibility for vigorous and effective treatment, accurately applied at the proper time; confidence in his own ability to deal with the case, the courage of his convictions, an obstinate refusal to be delayed by interesting trivialities, or to be weakened by opposition, or to be troubled by doubts—these are all of the highest value to the operator, whether engaged in the application of surgical or of medical treatment.

The man who is to teach has now to qualify himself as a leader of the herd of general practitioners. His function now will be to keep himself informed of the most modern practice and the latest results of research in every department; becoming thus a connecting link between the different departments, he will often be able to help in research by bringing ideas lying loose in one department to the service of another, and as a "locum" of universal valency he will often be of the greatest assistance to smooth working, but his use in both these capacities will be quite incidental; his essential business will be to purvey to the general practitioners any information of which they may be in need, to revise the routine of general practice from time to time by the light of advancing knowledge, and in general to supervise and help the work of his department.

The investigator will be required to make himself proficient over the whole field of diagnosis; even if he has already acquired some reputation as an expert in a special department, it is entirely desirable that he should study the science of exact diagnosis in its broadest aspect. The routine work by which he earns his salary will now be the systematic establishment of an absolute and detailed diagnosis in every case sent to him (i.e., every case whose adequate diagnosis is not provided for in the routine of the "G.P." department); if there is room for doubt, or if a greater accuracy in detail than he can attain to is desirable, he will ask for the help of that member of his department or senior investigator best able to give it. He will continue as before to do unpaid work of a higher and probably more specialised character, and as this work is probably by now of a useful quality, and also has a more definite relation to his routine work, it will be sound business to decrease the number of hours of his routine work and to encourage him to spend more time over his special work.

The operator will also be at first one who applies treatment in general, and he will have to make himself reasonably proficient in all branches of treatment; but it is likely that it will be found desirable for him to limit the field of his practical activities at a quite early stage. In other respects his activities will be ordered on lines parallel to those of his investigating colleague. (In dealing with a difficult case the investigation will probably be nominally in the hands of one investigator, but he will call many of his colleagues into consultation and so share the responsibility with them; in the application of treatment the responsible operator will equip himself with any necessary special information, choose his assistants, and thenceforth assume unquestioned control of the case. This difference of method, like the earlier specialisation of the operator, will be a recognition of the contrast between the openness of mind necessary for safe diagnosis and the obstinate decisiveness which is so essential to effective treatment.)

The officers of this grade, who continue to make use of their opportunities of learning, will in due course again find themselves overtaken by the advance of knowledge. The investigator will realise that his absorption in one branch of diagnostic work has led to his neglect of another branch, and that some curtailment either of his routine work or of his special voluntary work is imperative; and he will

accordingly be promoted to a higher grade of more specialised routine work. The hours of compulsory routine work will be yet further reduced.

The Standard of Efficiency.

In this way he may continue to the top of the tree, each upward step being accompanied by a decrease of routine work and increased opportunity and encouragement for special scientific work. As the medical officer grows older he will become progressively less the paid craftsman of a department and more the honoured servant of the public; while the field of his professional activity grows more narrow, his work within that field will become more valuable and more far-reaching; in the highest grade of all he will do no routine work, but will busy himself with research or its application in the manner that seems to him most useful.

The general investigator or the general operator who has qualified for promotion will be allowed if he so desires, instead of narrowing his field, to become a teacher and supervisor and coördinator of his department, exactly as on the lower plane of general practice. He may remain permanently a teacher, he may at any time decide to follow one of the recognised special lines of his department, or he may strike out a new line of special work.

Remuneration throughout the medical service will be paid for the routine work; it will increase automatically with length of service and independently of promotion; and it will be paid so long as the medical officer continues to do his routine work satisfactorily, and no longer. There will probably be either a special "children allowance," or the free use of schools, playgrounds, rural centres, &c., for them. The man whose object is to make money may do so by working hard and earning early promotion, and so attaining a position where his short hours of routine work will enable him to devote time to private practice or other remunerative work. If in this way he sacrifices his professional efficiency he will be dismissed as inefficient; in any case, it is not likely that a man who substitutes private practice for advanced work will qualify for the highest posts in the service, but if any exceptional man is able to do both he need not be prevented from doing so. In general, the man who is keen about his work will make it his hobby as he grows older, and when he reaches the highest grade will draw his salary for such work as he cares to do; if he chooses to retire he can continue to draw his salary as a pension.

Conclusion.

I believe that such a service would attract many of our best men. It would provide the doctor with everything above noted as representing the wishes of the professional man in search of a career.

Most of the desires of the patients could also be met. Those patients who especially like to be seen by "their own doctor" would probably become attached to a man whose interest in his patients was more human than professional, and whose intention it was to remain for life a "G.P." Good organisation of clinics served by 12 or more medical officers would enable patients to be seen without delay either at the clinic or at their homes. Treatment in a concrete form—the "bottle of medicine" idea—could be provided well enough under such a system; but useful work might be done by occasional public lectures, which would teach the public to be more intelligent patients. The practical efficiency of the doctor would be increased, while the knowledge of his close association with an up-to-date service would enable him to wear more easily that cloak of infallibility which the patient values so highly. The services of experts would be easily available. Insurance could be provided as under the present Health Insurance Act, the worker paying nothing directly to the doctor; and the service, while more efficient, need cost no more than attendance under the existing system.

This scheme would require very considerable modification in order to render it workable in rural districts, but there is no reason why it should not be applied at once, on an experimental scale, in those densely populated areas where the need for medical care is most urgent.

LITERARY INTELLIGENCE.—The Cambridge University Press announce the forthcoming appearance of a book by Dr. S. Gurney-Dixon entitled "The Transmutation of Bacteria."

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Scottish Board of Health: Establishment of Consultative Councils.

A DRAFT of an Order in Council establishing consultative councils under the Scottish Board of Health Act will be laid before Parliament when it reassembles next week. In terms of the Act, before the Order can be made and come into operation the draft of the Order must lie before each House for 30 days on which the House is sitting. The Order has been in draft for some time past, but during the Parliamentary recess the necessary procedure for bringing it into operation could not be carried through. It is proposed under the Order to set up four consultative councils in Scotland to advise the Board on the following matters respectively: (1) medical and allied services; (2) National Health Insurance (Approved Societies' work); (3) local health administration and general health questions; and (4) Highlands and Islands. The members of the councils are to be appointed by the Board, and are to be persons having practical experience of the matters for the purposes of which the particular council is established, and due regard is to be had to any special interests (including those of local authorities and of labour) which may be involved. The membership of any council is not to exceed 20, and each council will include persons of both sexes. Provision is made for the council's appointing committees for special purposes and for the inclusion in such committees of persons who are not members of council. The Board may convene joint meetings of any of the councils or committees of the councils. The councils are to meet at such times as they may, subject to the approval of the Board, determine, but it is specially provided that each council must meet at least three times in each year. The functions of the councils are set forth in the draft Order, and include inter alia the consideration of and reporting upon questions which may from time to time be referred to them by the Board, including questions arising on draft Orders in Council, regulations, orders, &c., and questions involving considerations of important principle and scientific difficulty affecting or incidental to the health of the people. Subject to the provisions of the Order each council has power to regulate its own procedure.

The Royal College of Surgeons of Edinburgh.

At a meeting of the College held on Oct. 15th Dr. George Mackay was appointed President; Dr. R. McKenzie Johnston, Vice-President; and Mr. Alexander Miles, secretary and treasurer. Dr. George Mackay, the new President, was for many years ophthalmic surgeon to the Royal Infirmary, and University lecturer on ophthalmology. He is now consulting ophthalmic surgeon to the Royal Infirmary, and a representative of the Royal College of Surgeons on the board of management.

Scottish Universities: Opening of the Winter Session.

The principal feature of all the universities this winter is the great increase in the number of students attending, and the consequent straining to the utmost of available accommodation and material for teaching. All the universities alike have had to select from applicants for admission those whose claims deserved priority, preference in all cases being given to men who have been on service with the forces. Many of the junior applicants are having meantime to postpone commencing the study of medicine, and not a few are occupying the waiting period by taking classes in the faculties of arts or science. Much of the present pressure is occasioned by the fact that practically five years of "freshers" are seeking entrance simultaneously.

At Edinburgh on Oct. 14th, Sir Harold Stiles, the new professor of clinical surgery, gave his inaugural address on "Reminiscences of a Surgical Training." After referring to his own early education, he emphasised above all the importance to the surgeon of a thorough knowledge of anatomy, and the advantage to the student of the teaching of surgery from the anatomical standpoint. Now that text-books had reached such a standard of excellence he thought that much of the time spent in systematic lectures would be better devoted to practical demonstrations in ward and laboratory. Referring to the lessons of the war, Professor Stiles said that the chief was the value of team-work by younger men under