gations planned to throw light on the different incidence of the disease in the two sexes might give a useful lead in such a study. Long-term studies of the natural history of the disease are already in progress and are likely to give information on the importance of certain occupational factors.

It is certain, however, that the problem is too difficult to be solved by a piecemeal approach. What is needed is a well-planned and co-ordinated attack by experts from various fields. Quite apart from humanitarian consideration, the economic loss resulting from this disease calls for immediate action.

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THE PLACE OF THE HOSPITAL IN A NATIONAL HEALTH SERVICE*

BY

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Administrative Areas

Our next problem in a combined service is the areas to be covered and the populations to be served. Many think that there are too few regional hospital boards and that the original conception of between 30 and 40 would have been better. This might have avoided the expensive administrative set-up of hospital management committees and also have avoided the friction which tends to develop between the boards and the management committees. There are, however, obvious advantages in linking hospital boards with teaching hospitals, though some may say that the disadvantages outweigh them. The location of the university medical schools, placed where they are for entirely different reasons than to be the nucleus of a national health service, certainly caused grave difficulty when the boundaries of the 14 regional boards were being settled. It is clear that if there were a combined service a much larger number of areas than 14 would be needed. There are 145 local health authorities and about the same number of executive councils. In any organization of a combined service, the hospital areas would have to coincide with those of local authorities, many of which would have to be associated with their neighbours for the purpose of making an adequate area for hospital planning—generally regarded as one

to serve at least one million people. This coincidence of boundaries of responsibility would in itself greatly facilitate co-operation between the hospital services and those of local government.

It is the dream of many to restore hospital provision to local government. With salaries and conditions of service for hospital staffs fixed centrally and specific regulations made concerning the method of appointment of consultants, the main objections to this are not nearly so strong as in the past, but, without ruling it out, I will not discuss it further, as it hinges on the relationship between the finances of central and local government and on a complete reform of the boundaries of local government areas, involving inevitably the disappearance of many of the smaller local authorities. The emotional reaction to any such proposal is infinitely greater even than that evoked when it is proposed to close a small hospital. Parliament is unlikely, in the foreseeable future, to tackle such a thorny and controversial subject.

My conclusion, therefore, on the questions of a combined service, and whether it should be administered by nominated or elected bodies, is that the practical difficulties of making any radical change, particularly at this stage, are insuperable, but it is not beyond the realm of realism to go back to the "Willink" proposals so far as the number of hospital boards is concerned, and this would ensure a much closer association with the other two branches of the service—the local authorities and the executive councils.

Why Does the State Charge Itself with the Cost of Hospitals?

In the meantime, it behoves us to look again at the administrative structure as it exists to-day and try to determine what is the proper function of a hospital in a national health service. In the first place, we must remind ourselves that Governments do not pour out vast sums of money because they are sorry for sick people. They do so because there is a national insurance scheme which pays out money to people who cannot work because of ill-health and to the dependants of those who die, and also because the Government needs for the well-being of the nation, in peace or in war, the productive capacity of all its nationals who are able to work.

The first National Health Insurance Scheme provided from 1913 a general-practitioner service for insured persons. It was for the dual purpose of providing treatment so as to get the insured persons off the funds and back to work again as soon as possible and also to provide responsible certifying officers for sickness and disablement benefit. Sir William Beveridge, as he then was, said in effect in his report of 1942 (Beveridge, 1942) that if his scheme, which provided larger benefits, was to be successful a comprehensive medical service available to all, free at the time the service was needed, was essential. The link, again, is with the payment of cash benefits.

The objectives of the Service are, primarily, to maintain the health of the community, to prevent disease, and to restore to good health as soon as possible all those who fall ill. That the Service also relieves suffering and prolongs the life of the aged is incidental, as, collectively, whatever their private feelings, Governments, as such, are not sentimental.

Prevention of Illness and Speedy Restoration to Good Health

The insistence on prevention of illness and a speedy restoration to good health of those who fall sick as a major responsibility of a national health service is no new idea of my own. It is the thread running through the recent book

*The second of the Croonian Lectures delivered before the Royal College of Physicians of London on July 9.

of Sir James Ross (1952). Even in the training of nurses the Working Party reporting in 1947 (Nurses, 1947) stressed the need for giving more attention during training to "modern ideas of social and preventive medicine." The British Medical Association (1930) in its proposals for a general medical service for the nation gave as the first of its fundamental principles "that a satisfactory system of medical service must be directed to the prevention of disease no less than to the relief of individual sufferers."

Owing, no doubt, to the inadequate attention paid in the past to the importance of preventive medicine in the training of the medical undergraduate, there is a tendency among many workers in the clinical field to take little or no interest in preventive medicine or, if they think about it at all, to leave it to "the public health people." I shall endeavour to show that it is the bounden duty of every doctor, particularly those working in a national health service, himself to participate in the practice of preventive medicine so far as it relates to his own patients, and that without the close co-operation of those whose major interest is curative medicine the preventive medicine specialists cannot do their job properly.

Hospitals and Preventive Medicine

There is a considerable body of support, particularly in the U.S.A., for hospitals taking a more active part in preventive work. Dr. Stanhope Bayne-Jones (1949) said "hospitals should become increasingly houses of prevention instead of houses of pity." He quotes the report of the Committee of the New York Academy of Medicine on "Medicine and the Changing Order," published in 1947, to the effect that "the whole perspective of hospital care should be enlarged to include preventive as well as curative care." He lists a number of special activities of a preventive nature which hospitals should provide. They include diagnostic and consultation clinics available to all, clinics for periodic health examinations, and child welfare and child development clinics. He also quotes Corwin, who wrote in 1946: "Hospitals and their out-patient departments are increasingly being looked upon as strategic centers for all health service activities."

The late Viscount Dawson wrote in an American book (Bachmeyer and Hartman, 1948) on hospitals: "For 25 years or more the idea has been spreading that the practice of medicine should be occupied not only with those disabled by sickness or accident but also, if not primarily, with the building up of health, and that for the extended purpose our medical services have become too haphazard and inco-ordinate in their arrangement. In other words, organization has not kept pace with ideas."

Writing in the same volume, Dr. James A. Hamilton, the then President of the American Hospital Association, says of his own country: "This disjointed conglomeration of health agencies is uneconomic, duplicating, and wasteful. The high quality of medical care cannot be maintained and the volume of health services cannot be adequately extended to the great mass of the people if such isolationism is allowed to continue in its present form"; and Dr. I. S. Falk, after pointing out that, with our present lack of knowledge, most sicknesses and most deaths cannot be controlled in the sense of preventing their occurrence, says: "These diseases which we cannot wholly prevent need early detection and accurate diagnosis and the patients need prompt and comprehensive care. . . . The principal import of these contentions is that medical care must be regarded as an integral part of a broad programme of public health."

Boudreau (1934) says: "It is in the out-patient department that the closest approach is made to incipient disease, and it is here that the somewhat arbitrary distinction between curative and preventive medicine loses its force." But he adds that "a hospital cannot function properly as an instrument of prevention unless its staff knows, lives, and breathes in an atmosphere of prevention," and "the hospital must be integrated with all the other health services of the community, which should fit together and be adapted and regu-

lated to each other like the wheels of a watch. . . . It must be fitted into the community; the community cannot be changed to suit the hospital."

Sir Arthur Newsholme (1932) says: "The history of hospitals is one first of care for the sick, then with advances in medicine and surgery, of increasing care, and lastly of prevention. The last stage now overlaps with the needed care and cure."

A more recent writer, Professor H. W. C. Vines (1952) says: "Apart from the curative treatment of the already ill, the acute hospital, as part of the local community, should now be developing a functional part in the prevention of disease as in the more distant future its activities may have to be considerable." At the recent International Hospital Congress he developed this theme and said: "The real future of the hospital service may well come to lie not in the wards but in the polyclinics, and it is these which must gradually become the major centres of practical preventive medicine."

Dr. Malcolm T. MacEachern (1935) lists the four primary functions of a hospital as: (1) care of the sick and injured; (2) education of physicians, nurses, and other personnel; (3) prevention of disease and promotion of health; and (4) advancement of research in scientific medicine. He adds, "In the out-patient department especially, there is an extensive field for the teaching of hygiene, an opportunity which should not be neglected. The hospital should take leadership in educating the public individually and *en masse*." Dr. Edwin Crosby puts number three rather differently when he says (International Hospital Federation, 1953) that one of the functions of a hospital is "to foster and promote the public health and preventive medicine programs of the community."

The Commission on Hospital Care in the U.S.A. (1947) reported that "general hospitals should co-ordinate their efforts with those of other community agents concerned with the prevention and treatment of disease, and, when conditions permit, the general hospital should serve as the focal point through which the health service of the community is integrated. . . . Hospitals should participate in community-wide educational programs, thereby assisting the public to obtain a full understanding of the importance and methods of obtaining a high level of health. . . . Hospitals and health departments should co-ordinate their efforts and integrate their functions. . . . There should be a close relationship between hospitals and public health departments so that the educational activities can include training in public health work. . . . However, the gap between curative and preventive medicine is constantly narrowing. It appears important for the physician to give more and more of his attention to preventive measures and to the maintenance of the health of his clients. . . . The public health department is the logical agency to direct such programs. . . . But, physicians, hospitals, and public health departments should pool their efforts by integrating the functions of preventive and curative medicine in order to serve more effectively the health needs of the whole population."

It is striking that these expressions of opinion come mainly from the U.S.A., where the provision of medical care is still regarded as a matter for the private individual and not, as here, a public responsibility.

Interest in the Subject

It is an indication of the great interest now being taken in this subject that, at the Eighth International Hospital Congress just held in London and attended by representatives of over forty nations and from whose transactions I have already quoted, the central theme was "preventive medicine as a major function of the hospital and its implications."

The above quotations may lead some to the thought that the hospital should become the centre of gravity of the preventive health services, and it is well, therefore, to note

some opinions to the contrary. For example, Dr. Van den Berg, a representative of the World Health Organization, said (International Hospital Federation, 1949): "Hospitals should concern themselves with the treatment of patients and it is difficult to combine this with the direction of preventive measures as a whole. . . . But, preventive and curative medicine are connected. . . . They blend in fact. . . . Much curative treatment is . . . a part of secondary prevention: that is to say, in which the object is not to prevent disease but to ensure that an existing disease is not aggravated and does not cause permanent illness or mental incapacity. . . . Hospitals play an important part in this extensive field of secondary prevention and, although, in my opinion, they cannot form the centre of the health organization on the one hand, on the other, they cannot lose their touch with it entirely." At the same congress Dr. Charles Maitland (England) said: "We must not regard hospitals as institutions that can be expanded indefinitely. We must ask, Why are people in hospitals and need they be there?"

Again, Miss Florence Nightingale (Cook, 1913) is recorded as saying "that hospitals are, at best, only a necessary evil: a necessity, as someone has said, in an intermediate stage of civilization. The secret of national health is to be found in the homes of the people."

Finally, Sir Andrew Davidson (1952) said: "My considered opinion is that the emphasis must be on the domiciliary health services through the co-operation of the family doctor and the health service of the local authority. The rising cost of hospital care—if nothing more—is forcing more attention to be paid to the preventive health services." Dr. G. E. Godber (International Hospital Federation, 1953) said: "It is not the specialized hospital services which should control the others, rather it is the needs of the others which should largely determine the form which hospital services should take." And, he added, "The medical officer of health, who is the most valuable co-ordinating influence in the whole health service, should be confident that in the hospital he has an ally, second only to the family doctor."

The above quotations, and they are but examples of many more, have been introduced to make it clear that during the past few years many people both here and in America have been thinking about the future of hospitals and the part they should play in promoting good health and preventing serious disease.

Hospital Costs

With the increase in scientific aids to diagnosis and advances in techniques of treatment, hospitals require more staff of all grades, and hospital maintenance costs, as already mentioned, are rising. Staff salaries tend to increase and hours of duty to decrease. In the U.S.A. and in Australia nurses now work 40 hours a week. In considering the place of the hospital in a national health service the question of the actual cost of the hospital section of the service and its relation to the total cost of the whole service become important. The last figures published for the whole service are for the financial year 1950-1 (Ministry of Health, 1952). I have rounded the figures to the nearest thousand.

	Thousands £	% of Total
Hospitals: capital ..	11,123	2.9
.. maintenance ..	213,483	55.0
General medical services ..	42,072	10.8
Pharmaceutical ..	34,810	9.0
Dental ..	40,337	10.4
Ophthalmic ..	19,572	5.0
Local health authority services (50% grant)	15,621	4.0
Other	11,261	2.9
	388,279	100

The actual costs for some of the services for 1951-2 are now available (Accounts, 1951-2). The expenditure on hospitals, on both capital and maintenance, is slightly lower than in the previous year. Pharmaceutical costs rose by

over £10,000,000; those on dentistry fell by nearly £9,000,000, and on ophthalmic services by nearly £11,000,000. Medical services cost the same, but the Danckwerts award of some £10,000,000 a year, apart from arrears, had not been implemented until after the financial year. In 1950-1 the local health authority services cost public funds double the figure given above, which is the cost to Government funds. The other half is found from the local rates. I am confident that argument will never cease on whether or not the allocation of the total budget is in the best interest of the community, and I do not propose to enter the lists, though many will, no doubt, soon be jousting before the Guillebaud Committee. But perhaps I might add the words of the cynic, "Extravagance is other people's expenditure."

Other Preventive Activities of Local Authorities

For the reasons set out earlier it is impossible to calculate an accurate figure showing the proportion of the total bill for the National Health Service which is devoted directly and entirely to the prevention of disease, but there is no doubt that it is small compared with the total cost of the Service. It must also be mentioned that many quite costly services provided by local authorities under the Public Health, Housing, and Education Acts are important contributions to preventive medicine and are not contained in the accounts of the National Health Service. These other services include sewerage and drainage, provision of healthy homes, pure water, collection and disposal of household refuse, open spaces and playing-fields, pure food, safe milk, prevention of atmospheric pollution, health education, the school health service, and the work of sanitary inspectors in connexion with the control of infectious diseases. Expansion of the services for promoting the health of factory, shop, and office workers would also not be a charge on the National Health Service, but would undoubtedly pay dividends in promoting community health. The effect on health of full employment and better national nutrition must also be mentioned.

Function of the Hospital

We are now in a position to examine more closely what hospitals do, what they ought to do, and their exact place in a national health service. I think it will be agreed that their primary function is to diagnose and treat the sick. But some provisos are needed even here. They should not usurp the position of the general medical practitioner. They should be consultative for him, and patients should not be asked, or even allowed to continue, to attend an out-patient department or be admitted for in-patient treatment if the treatment can be given at home by the family doctor and the home circumstances are suitable.

Training.—But hospitals have other important functions, including the training of doctors, nurses, midwives, and medical auxiliaries of all kinds. Teaching hospitals for medical students are in a special position with regard to the admission and retention of patients, as students must be taught the ailments, both common and serious, met with in general practice. Maybe the best way to do this is to include during the undergraduate training a short period of preceptorship with an approved general practitioner. This is probably better than admitting patients who need only general-practitioner care to teaching hospitals, but undoubtedly the range of patients dealt with in a teaching hospital in both the out-patient and in-patient departments must for these reasons be much wider than if the need for hospital, as distinct from family doctor, care were the only consideration. There is an increasing tendency both in this country and in the U.S.A. to devise better methods for preparing medical undergraduates for general practice.

Care of the Sick.—I have been considering up to now the acute general hospital, whose primary concern is, and always will be, the care of those who are seriously ill, though, as discussed earlier, it has important preventive functions. But the majority of the hospital beds in this country are not in acute general hospitals but in special hospitals of all types.

Planning Hospital Services

The regional hospital boards are the planning authorities for all types of hospital, except teaching hospitals, and general practitioners and public health officers, because of their special interest in, and knowledge of, the problems concerning those whose needs are best met in special hospitals, should be more closely associated than in the past with these planning functions. These classes of patient include not only those whose admission to hospital is needed because of their home conditions and not because they are in need of specialist care, but also the chronic sick, the "fever" case, the tuberculous, the long-stay cases in children, the mentally defective, and the mentally disordered, including the mental observation ward case, to mention only some examples. Only by associating at the planning stage those vitally concerned in the other two branches of the Service can full integration be achieved and the needs of all sick people met.

Integration with General Practice

With lessened house room, more women working in industry, and perhaps a greater reluctance of young people to care for their aged relatives at home, more accommodation is needed, so that general practitioners can admit patients to hospitals where they will continue to be under their own care; and some of these hospitals should be used for the instruction of medical students. Hospitals, too, have a responsibility for providing the means by which the knowledge of general practitioners can be kept up to date. There are various ways by which this may be done, and it involves not only close co-operation by reports sent to hospital with patients and the prompt dispatch from the hospital of notes on his discharge, but making the general practitioner feel that he is a welcome and essential member of the combined team of doctors, some working inside and some outside the hospital, engaged in caring for the sick of the district.

This leads to a regret that the former "district" hospital with direct responsibility for the sick of their defined district is disappearing, with the result that the patients who are less interesting from the purely medical point of view have more difficulty than in the past in obtaining a bed. It is all to the good that no meticulous inquiry about where he lives need now be made before a patient is admitted; but when patients, whose need of admission to a hospital is clear, are refused at their local hospital and that hospital takes no step to secure their admission elsewhere, the pendulum has swung too far.

Before 1948 the publicly maintained hospitals each had a definite district for which they were responsible, and if they could not themselves make a bed for an urgent case it was the duty of an officer of that hospital to find one himself in another public hospital. It is a disconcerting fact that in some 10 to 15% of the applications for beds made to the London Emergency Bed Service a bed cannot be found immediately, and the name must go on a waiting-list, sometimes for a considerable time, and occasionally the patient is dead before a bed can be offered. When a bed is offered it is sometimes miles away from the patient's home, involving extra ambulance costs, and cost and inconvenience to the patient's relatives. This type of waiting-list is apart from the waiting-lists to which we have become accustomed for "cold surgery" and for non-urgent medical cases to which the same objection cannot be taken, though complacency about this and taking the easy road that we cannot do anything about it unless we open or build more beds is to be deplored. One would ask what steps are taken to divert them to a hospital where the waiting list is shorter. Do we not, instead, take a pride in the length of our waiting-list as a tribute to our skill and popularity?

The hopes of those who maintain that the future of general practice lies in group practice from the health centres envisaged in the National Health Service Act and in the

report of the Medical Planning Commission sponsored by the British Medical Association (Medical Planning, 1942) are not being realized because so few centres are available. The idea is still in the experimental stage, and it would be of great value if two or three such centres were placed each within the curtilage of, or immediately adjoining, a general hospital. By this method, the prospect of bringing together hospital, general practitioner, and public health clinic services might really be achieved for that locality.

The Chronic Sick

Questions concerning the chronic sick and the aged and infirm loom large in any national health service. It was given close attention by the local authorities when they were responsible for the public hospitals. Fortunately, many leaders of the profession are now also becoming interested in the problem (British Medical Association, 1947, 1948). It is realized that much can be done to prevent deformities, to restore the bedfast to ambulation and, in some cases, to their homes. The day of the large hospital for the "chronics" has, I hope, passed. All general hospitals, including teaching hospitals, should use a proportion of their beds for the more chronic type of patient "for thorough examination, and whenever possible they should provide treatment with a view to the patient's return to a useful life." The last few words are a quotation from the Goodenough Report on Medical Education (Medical Schools, 1944). When further active treatment is likely to be unavailing there should be an adequate number of "half-way" houses or "rest homes."

Again, there should be a closer association between the homes for the aged, administered by the welfare departments, and the geriatric departments of the hospitals. The geriatrician who has worked hard to restore a patient to ambulation should continue to supervise that patient even after transfer to a home for the aged. This need not interfere with the responsibilities of the general practitioner on whose list the patient is.

The senile patient who is confused in mind presents a special problem. He should not be relegated, as a certified patient, to a mental hospital but dealt with, as recommended by the Ministry of Health in a recent circular (Ministry of Health, 1950), in accommodation specially provided for this type of patient. The basis is for the patient to be investigated in a short-stay psychiatric unit in a geriatric department. For many the subsequent destination will be a long-stay annexe. Some of these may be detached buildings in existing mental hospitals but with a distinctive name and a separate entrance. They would no longer be a part of the mental hospital proper, and procedure under the Lunacy and Mental Treatment Acts would be unnecessary.

Special Hospitals

The needs of special hospitals are apt to be overlooked in the more spectacular and in many ways more satisfying work of the acute general hospitals. Mental hospitals and institutions for the mentally defective form the largest number. Though these hospitals and institutions, because of their size, the need for extensive grounds, and the statutory requirements for safeguarding the liberty of the subject, must be separated physically from other hospitals and must be, for all purposes, under medical control, yet the isolation of their staffs from the stream of current medical thought, which was common a generation ago, must be removed. A satisfactory feature of the new scheme is that it brings mental and general hospitals, and their staffs, more closely together. The increasing extent to which the staffs of mental hospitals act as consulting psychiatrists to the in-patients of general hospitals and take psychiatric clinics there and, in return, the consulting staff of the linked hospital or hospitals visit the mental hospital to advise on special cases of physical ailments, is a welcome development.

The objective should be for the same team of psychiatrists to be responsible in the linked hospitals for (1) con-

sultative work in the general hospitals, including psychiatric clinics; (2) mental observation ward work; and (3) work in the mental hospital itself.

There is little to be said about institutions for the mentally defective. It is open to argument whether there should be classification by institutions or within institutions. In the very large service with which I was formerly associated it was found to be advisable to have separate institutions for the higher-grade defective, but this is not possible everywhere. As a result of the deplorable lack of institutional accommodation many defective children have to wait long periods for a bed, with devastating consequences on the other members of the family. Mental illness is a great burden on the community, and little progress has been made in devising means for preventing mental ill-health, dealing satisfactorily with the incipient case, or preventing relapse. When sound methods are found, their application will no doubt involve close co-operation with the local health authorities.

There are many sanatoria and hospitals for the tuberculous. Though the death rate from tuberculosis is happily now declining, these special institutions are likely to remain in use for many years as more and earlier cases are being discovered. There is also an increase in the length of treatment required for the established case. There is no doubt that, when the glad day comes that all the beds available are no longer needed for the tuberculous, good use will be made of the accommodation. It is important that each physician in charge of a chest clinic should have beds at his own disposal and not simply be an out-patients physician. These beds should be in local, or district hospitals.

The incidence of the acute infectious diseases has fallen spectacularly in recent years. We cannot, however, be certain that this will continue. The virulence of the streptococcus, which was low in the days of Sydenham, high at the end of the last century and the beginning of this, and low again now, may be enhanced, and, though modern therapeutics are now available, more beds may some day be needed for scarlet fever. Many more beds are required now for acute poliomyelitis than was the case before 1947, and no one knows what new communicable diseases may appear. But, at least for the moment, the beds in the large fever hospitals cannot be filled. The small independent fever hospital cannot be justified as a separate entity. The present trend is to use large fever hospitals for other purposes but to retain a small section in single-bedded cubicle wards for such acute communicable diseases as arise. If well managed, there is, with one exception, no reason to fear the spread of infection to other wards. The exception is smallpox, for which special provision is essential. The earmarked accommodation must always be ready to be opened and a well-vaccinated staff be on call.

With increased facilities for air-borne travel, Oriental smallpox of a virulent type is an ever-present menace. The greatest danger is the patient with the disease highly modified by previous vaccination and with an immunity which is just fading. It is not creditable to the hospital service that within the last three years eleven members of hospital staffs have died of smallpox (Glasgow, 1950; Parker, 1952). That such unfortunate events can be prevented is shown by the experience of the Metropolitan Asylums Board and the London County Council, which dealt with thousands of cases of this disease, sometimes in epidemics, sometimes in sporadic cases, without any of the hospital staff ever being infected. But disaster is averted only by constant vigilance.

A Statutory Duty

Looking at the infectious diseases problem as a whole, there is a statutory duty to notify such cases to the medical officer of health, and he must take such steps as are practicable to control the spread of these diseases. Clearly he cannot act without knowledge of the cases, and it is highly unsatisfactory that, in a sufficient number of cases to be alarming, individual hospitals fail to bring in the local medical officer of health when there is infectious disease

among patients or staff (Ministry of Health, 1953). As recommended by the Central Health Services Council and the Ministry of Health, the local medical officer of health should be a standing member of the committee, which every hospital is asked to set up, on cross-infection. Not only will this be of great value to the hospitals but it will ensure, by collaboration with the hospital staff, that his own knowledge of infectious conditions is kept up to date. This is specially important now that so many medical officers of health who were in charge of fever hospitals have been displaced.

Other special hospitals do not present the same problems of relationship to the other branches of the National Health Service, but there is the question of their relationship to the hospital service as a whole. In hospital centres, with many general hospitals, there is a place for the large special hospital—for example, for children, neurology, urology, eye diseases, ear, nose, and throat diseases, skin diseases, etc.—to which the specialists concerned from the units of the general hospitals are also attached. Such a hospital can be a centre for the training of specialists and a spearhead for research; apart from that, it is probably better not to have small special hospitals, but to have adequately staffed and equipped departments in the general hospitals, where all the laboratory and other resources are available and where consultants in all other specialties are to be found. If we could start *de novo* the ideal would be to have a large general teaching hospital with the various special hospitals grouped around it and with the "hotel-keeping" and business side under the same general administration.

Maternity

The provision of maternity beds presents a special problem. As explained previously, all three branches of the National Health Service are intimately concerned in maternity work. The trend is for women to prefer institutional to domiciliary confinement, and in one American city it is reported that 99% of the confinements occur in hospital and the other 1% in taxicabs. But in this country we are far from the stage when a bed in a maternity unit is available for every woman who would like to have her confinement there. If such beds were there, and used, the practice of the domiciliary midwife would disappear, and unless general practitioners were given access to a much higher proportion of maternity beds than at present there would be little midwifery for him to do.

A solution might be to reserve the beds in units or hospitals, staffed by specialists, for the abnormal case and for those normal cases required for the training of medical undergraduates and pupil midwives, and to deal with the other normal cases either at home where the domestic circumstances are suitable or in hospitals or homes where women could be attended by general-practitioner obstetricians or general practitioners of their choice. There would still be a place for the municipal clinic for intermediate antenatal supervision and for group instruction, including antenatal exercises.

The Clinic Doctor.—Speaking of clinics, the hospitals, so long as whole-time local health authority medical officers continue to take clinics, should make provision for antenatal clinic doctors to take some part in the work of the hospital so that their knowledge will be kept up to date. Similarly, the doctors who take infant welfare centres and work in the school health service should exchange duties with hospital staff to their mutual benefit. In several London hospitals, senior registrars from paediatric departments take infant welfare clinics while the clinic doctor attends at the hospital to do his work. Thus there is a real marriage of preventive and curative work.

Children's Long-stay Units

Another instance of the need for co-operation of the hospital service with other authorities occurs in the case of children whose stay in hospital is likely to be prolonged.

It is a great misfortune for a child to have a serious illness, but it is doubly unfortunate if, as a result of a long stay in a hospital, he is further handicapped by loss of education. It is therefore most important that arrangements be made with the appropriate education authority for teachers to be provided for all children whose convalescence, or even treatment, is likely to be prolonged. A similar problem exists in the adolescent or young adult who is preparing for an examination. Correspondence courses can often be arranged. For others, diversional or occupational therapy is increasingly supplied and should be encouraged.

Pathology and Radiology

There is little to be said about pathological and radiological aids to diagnosis. It is, however, interesting to recall that these were the great lacks when the L.C.C. took over the municipal hospitals in 1930; and I understand that the same was noticed when hospitals throughout the country, and in the small voluntary as well as the municipal, were used during the war as part of the Emergency Hospital Service.

For the smaller hospitals it is probably better to cover their laboratory needs by including them in a group with a group pathologist in charge and having on his staff experts in the subgroups—morbid anatomy and histology, haematology, bacteriology, and biochemistry—rather than expecting one man to cope with all the requirements. But the importance of close association between the clinician and the pathologist cannot be overstressed. If staff and money were available there should be an all-rounder primarily responsible for each small hospital with experts from a group or reference laboratory available.

Radiodiagnosis is not yet so highly departmentalized as pathology now that radiotherapy has separated from radiodiagnosis. The question has arisen whether or not radiodiagnosis should be provided in health centres for group practice, and general agreement has been reached that, provided there is a hospital with good radiodiagnostic facilities reasonably near, there is no need to provide it actually in the health centre.

These two departments, laboratory and x-ray, concern intimately another branch of the National Health Service—namely, the general-practitioner service. They are essential to his work. An increasing number of hospitals now allow direct access of general practitioners to these departments without requiring their patients to attend the out-patient department and be examined by one of their consulting staff. The fears that the departments would be flooded out and unnecessary examinations called for have in most cases proved to be unfounded.

Special Units

In a national hospital service, as distinct from a number of independent hospitals, special units are needed. Examples are plastic surgery, neurosurgery, thoracic (including cardiac) surgery, and radiotherapy. Here, again, it is necessary to break down isolationism and induce the staffs of the hospitals in the "gathering ground" to send their patients. This is often a slow educative process and can be done best by demonstrations at the special units and by staff visits to the outlying hospitals.

A Hospital Service

And this, perhaps, is the place to emphasize what I regard as my main theme in these lectures, which is that we are now supposed to have a hospital service. It has collective responsibility for providing a casualty service, an out-patient service, and an in-patient service for *all* who need them. As a unit in that service each hospital has a responsibility to all who apply to it, provided that, apart from emergencies and casualties, they are sent by their general practitioners. It is not compatible with that responsibility to decline a patient and to take no further interest in him. If, for any good reason, a hospital is unable to provide for his particu-

lar needs, it should be regarded as a duty of the hospital, to which he applies or more generally to which his doctor applies on his behalf, and which represents to the applicant the National Hospital Service as a whole, to take trouble to ensure that his needs are met within the hospital service of which they are a part, and not to leave it to "somebody else"—the general practitioner, the patient himself, the M.O.H., or the Emergency Bed Service—to find a place where his needs can be met. *Per contra*, local patriotism and the belief that one's own hospital is the best in the country are grand things, but they should not run, as they have been known to do, to the extent of declining to send a patient, however "interesting" and however much he would like to stay, to another hospital where there is a special unit for such cases. This is another aspect of the "service" conception.

Then there is the relationship of the hospital service as a whole and of its individual units to the other two branches of the Service. From what has been said before, I hope that it will be agreed that there would be many advantages if all three branches were under the same administration and if the areas and populations covered by all three were the same, but there is no immediate prospect of this. Moreover, it would involve two-tier administration and control: one covering the whole area for large-scale planning and probably for financial control, and the others with suitable readily accessible local headquarters for day-by-day administration. As the day for this is in my opinion far distant, it is a challenge to those working in the Service to try to overcome the weaknesses inherent in the present administrative structure.

The committee of the Central Health Services Council, already referred to, struggled for months with this problem of the proper integration of the three components of the Service, but had to be content with general advice about the formation at local level of committees representative of the three branches. A primary duty of any administration is to consider, like the doctor prescribing a new and potent drug, the side-effects of any action about to be taken. This Service is new and potent, and many of its side-effects were not realized at the time the dose was prescribed. There are, in fact, few hospital activities which do not affect at least one of the other two branches: often they repercuss on both. Obvious examples are the opening of maternity beds or the provision of a geriatric unit, of a convalescent home or a child-guidance clinic or more beds for the mentally defective. So the first essential is free trade in information and the giving of advance information to others likely to be concerned before definitive action is taken. And this applies not only to the hospital side but to the other two as well. Formal meetings are, however, not essential for this type of co-operation. It can be done quite well on the telephone, between the three or four people concerned, and they, in turn, can consult with those in their own administration who ought to be told and would have useful advice to give. In only a small proportion of the matters under consideration will a formal meeting and discussion be needed.

One handicap to this method of ensuring smooth working is the size of the areas covered by the regional boards and, in consequence, the large number of local authorities and executive councils covered, wholly or partly, by most of them. At hospital management committee level the difficulties are not so great except in the cases of hospitals and sanatoria taking patients from a large number of separate health authorities, but even there they could be overcome.

Research

Before I close there are three other matters I would like to mention. The first is research. When I had responsibility for a hospital service I attached great importance to this, and appointed two committees—one on the general hospital and the other on the mental hospital side but with cross-representation—to encourage research in every possible way, to give advice to those who sought it, and to provide

statistical help and equipment. The members were appointed by their colleagues, and among other things were able to collate the experience of different hospitals and compare the results of different methods of treatment of the same condition. It is to be hoped that, as time goes on, a similar type of organization will develop in the present hospital system. Now that the public purse has assumed responsibility for medical treatment, the State and everyone who contributes to its upkeep has an interest in reducing the size of the bill. This means that more and more attention must be given to the reasons why people need hospital treatment. This necessitates a real interest in the matter and the making of observations which can be pieced together.

Cholera was looked upon as an "act of God," and would probably have remained as such until the germ theory was enunciated but for the famous observations Dr. John Snow made a hundred years ago. His implication of the Golden Square pump and his deduction that cholera was spread by drinking contaminated water was the direct result of careful observation, and saved thousands of lives. The keeping and collation of adequate records is essential if isolated "observations" are to bear fruit. Also, it is important to know which diseases make the greatest calls on hospital services. It will be found in the case of many such diseases that we do not know, within present knowledge, how to reduce their incidence or even to catch the patients in the early stages of the disease, when, presumably, the prospect of shorter and more successful treatment is better.

Investigations of community health in different localities in the hope that the differences will point to the aetiological factors involved is possible in a national health service, and the opportunity should not be neglected. It involves close co-operation between clinicians, statisticians, and public health workers.

Rehabilitation and Convalescence

The two remaining points have much in common. They are the importance of rehabilitation and aftercare and of medico-social work.

The days are gone when a hospital ceased its interest in a patient when he was discharged and when the physician or surgeon who sought information about the health of his patients two or three years after discharge and published it was regarded as unusually enterprising. As mentioned earlier, the State is not concerned primarily with hospitals in their humanitarian aspects but because they are the machinery by which members of the State can be restored to working capacity and so reduce the cost to the State of supporting them in hospital or at home as non-working members of the community.

Rehabilitation or reablement schemes are therefore being developed, and training in new employments when this is needed. Here, also, is yet another illustration of the need for a hospital to co-ordinate its work with that of another body—in this case the Ministry of Labour.

The question of convalescent homes and of recuperative holidays needs to be re-examined. At present, convalescent homes, of which there are not enough, are the responsibility of the regional hospital boards and no charge is made to the patient. Recuperative holidays are provided by the local health authorities, who are required by law to make a charge. In practice, there is little difference in the clinical condition of those recommended. If the doctor, either hospital or general practitioner, thinks that a convalescent case will be admitted earlier through the local authority, he recommends a "recuperative holiday" unless active medical supervision and nursing care are essential. This artificial distinction should be eliminated and either hospitals or local authorities be charged with the duty of providing for both categories. A definite link, preferably under the same management, should be forged between specific hospitals and specific convalescent homes so that there may be close contact between the two staffs. Further, it should be made easier for general practitioners to get their patients away for convalescence.

Medico-Social Work

Lastly, there is the important question of medico-social work. Hospital almoners, as already mentioned, do excellent work. There is also a wide range of medico-social work done by health visitors and almoners of the local health authorities. By statute, local authorities are responsible for the provision of "aftercare" and for home nursing, and have the power, which most authorities exercise, to provide a home-help service. Through their various powers and duties, particularly in the maternity and child welfare and school health services, the local authorities possess a great store of information about economic and domestic conditions which can be placed freely and gladly at the disposal of hospital almoners. When hospital staffs and general practitioners really know the nature of the assistance which can be given by health visitors they find it invaluable and use it increasingly. The almoning and health-visiting staffs are complementary to each other, and great good can result from their acting as a team.

Summary

It is impossible to divide medicine into two compartments, preventive and curative. The interlocking is far too great.

The hospital is an essential part of a national health service, not only for the diagnosis, cure, and relief of illness, but for the prevention of illness. But the hospital is not the centre of gravity of the service any more than the general-practitioner service or the public health service is the centre of gravity.

The other two branches are equally essential, and any of the three will make a more effective contribution to the health of the nation if they work together as closely as possible, centrally, regionally, and locally; avoid any tendency to competition, rivalry, or isolationism; and listen sympathetically to suggestions, requests, or even criticisms which come from workers in the other branches.

There is only one National Health Service, not three independent components of it. It should, as a service, be founded on the basic need of preventing ill-health and reducing the number of people for whom in-patient care is essential. The ideal would be to administer the Service through one, and only one, local body, nominated or elected or a mixture of both, but the difficulties appear to be insuperable without a change in the boundaries of local government.

The individual hospitals must remember that they are part of a national *hospital service* with a collective responsibility for the institutional care of the sick.

The acute general hospitals are only part of the hospital service. The various special hospitals, including the mental hospitals, far outnumber in beds the acute general hospitals. The special hospitals perform functions which are absolutely essential to the welfare of the community and must receive their due share of money, staff, and prestige. The provision of hospital beds where general practitioners can attend their own patients must not be neglected.

Hospitals are primarily for the diagnosis and treatment of the sick, and for many illnesses they only can provide the necessary service. Their rising costs are a matter of grave concern. It is more important than ever before to ensure that they are used to the best advantage, that they play their part in the preventive services, and supply the "needs" of the other two branches of the Service.

The out-patient consultative departments, or polyclinics as they may be called, will probably play an increasing part in the development of the Health Service.

The hospitals, particularly those with attached medical schools and research institutions, are the spearheads of research, but a plea is made for associating with certain types of research the local medical officer of health, who is anxious to know the amount and nature of the sickness among the community which he serves. By observing "associations," as did Dr. John Snow, the causes, now unknown to us, of many diseases may be revealed.

Hospitals are the training-grounds for doctors, nurses, and medical auxiliaries. Though the training of doctors is a responsibility of the universities, and not of the National Health Service, the training given in hospitals should emphasize, by the work going on there, the interdependence of the three branches of the Service and how they work together.

I am most grateful to the College for giving me this opportunity of expressing my views on a subject which I regard as of paramount importance to the future of the National Health Service, a service which, if it does what is expected of it, will make a substantial contribution to the happiness and prosperity of the nation. I am grateful, also, to my listeners for giving me so much of their time; and to the many, too numerous to mention individually, who have helped me with advice and suggestions. I must, however, specially thank Mr. C. C. Barnard, Librarian of the London School of Hygiene, for invaluable help in looking out references.

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RELATIONSHIP OF ALIMENTARY LIPAEMIA TO BLOOD COAGULABILITY

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It has been clearly shown that a factor of lipid nature is essential for the normal process of blood coagulation, although its precise character has not been finally determined (Macfarlane *et al.*, 1941). This finding led us to undertake experiments designed to discover whether the coagulability of blood is altered during the lipaemia which follows the ingestion of fat. The work is conveniently divided into two parts: (1) the influence of alimentary lipaemia on prothrombin times ("accelerated clotting times"); and (2) the effect of such lipaemia on the coagulability of blood estimated in silicone-coated tubes.

1. Influence on Accelerated Clotting Time

The technique adopted was the usual one-stage method of determining the prothrombin time (Fullerton, 1940). For a reason which is referred to later, Russell-viper venom ("stypven") was used as the thromboplastin in the test. The observations may be divided into three groups.

(a) In a group of eight patients taking the ordinary ward diet, blood was removed at intervals after meals and the accelerated clotting times were determined. The fat content of these meals varied from 12 to 30 g. The accelerated clotting times showed no significant variation throughout the day.

(b) A group of five patients were given a breakfast containing 65 g. of fat (bacon, eggs, bread, and butter). The results are shown in Table I. It is seen that in each case a significantly shorter time was found at the height of the lipaemia, with an average reduction of 4.9 seconds.

TABLE I.—Accelerated Clotting Times after Fat Intake of 65 g.

Case	Fasting* (Seconds)	Time† (Hours)	Shortest Reading‡ (Seconds)	Difference§ (Seconds)
1	22.5	3	15.4	7.1
2	23.7	3½	19.7	4.0
3	23.0	2½	19.8	3.2
4	25.1	3	20.2	4.9
5	25.8	3	20.6	5.2
Means	24.0		19.1	4.9

TABLE II.—Accelerated Clotting Times After Fat Intake of 85 g.

Case	Fasting* (Seconds)	Time† (Hours)	Shortest Reading‡ (Seconds)	Difference§ (Seconds)
1	24.5	5	10.9	13.6
2	22.3	4½	13.4	8.9
3	23.0	3	12.8	10.2
4	24.3	2½	17.5	6.8
5	22.3	3½	14.8	7.5
6	24.7	3½	13.1	11.6
Means	23.5		13.7	9.8

* Accelerated clotting times with the patients fasting.

† Time interval at which the shortest accelerated clotting time was reached during the lipaemia.

‡ Actual reading obtained.

§ Differences between the fasting and the shortest times.