Report of the

MINISTRY OF HEALTH

FOR THE YEAR

1959

PART II

ON THE STATE OF THE PUBLIC HEALTH

Being the Annual Report of the Chief Medical Officer

Presented to Parliament by the Minister of Health
by Command of Her Majesty

November, 1960

LONDON
HER MAJESTY'S STATIONERY OFFICE
PRICE 13*s.* 0*d.* NET

Cmnd. 1207

CONTENTS

Page

Page

REPORT OF THE CHIEF MEDICAL OFFICER ON THE STATE OF THE PUBLIC HEALTH

FOR THE YEAR ENDED 31st DECEMBER, 1959

INTRODUCTION

To the Right Honourable J. Enoch Powell, M.B.E., M.P.,
Minister of Health.

Sir,

I have the honour to submit my report on the State of the Public Health in England and Wales during 1959. It constitutes part II of the Report of the Ministry of Health for that year and is the 36th in its own particular series, which commenced in 1919.

Last year's report was largely concerned with the development of the National Health Service during the decennium ending on the 4th July, 1958, and with describing the changes and trends in the national health which had become manifest during that period.

Both the Service and the national health are still the subject of change and capable of further development and improvement. Their progress will require that continuing study and evaluation of results, which are amongst the purposes of reports such as this.

Historically, this Report and its predecessors, both in the present and earlier series, have been characterised by the introduction at an early stage of some meteorological commentary on the bygone year. This adherence to the Hippocratic tradition of describing the epidemic events of the year against the background of a so-called " constitution " which took into account all the outstanding weather conditions is easy to follow in respect of 1959. The Director General of the Meteorological Office epitomized the year's experience as " a record breaking year with a long and brilliant summer ". It was in fact a generally warm year, with temperatures above the average for every month except January, which was cold. The country enjoyed a superb summer, beginning in May and ending in early October, and without parallel since 1911. Rain fell seldom; from May to October the total general rainfall in England and Wales was the lowest of any comparable period since before 1870, and probably since 1750. But it was the abundance of sunshine which gave the year its memorable quality.

VITAL STATISTICS

The principal vital statistics of the year are reviewed briefly in Chapter 1. The estimated home population of England and Wales has risen by some 277,000 over the 1958 figure and is now 45,386,000. It is interesting to see that the inward balance of migration at 48,000 is 34,000 more than that recorded for the previous year. There is no doubt that the social conditions of modern

Britain are proving attractive to many overseas members of the Commonwealth, appreciable numbers of whom are now to be found in different parts of England and Wales.

The aging of the population continues and, in consequence, the proportion of those outside the normal working age range is increasing. A remedy for this, which is in fact being practised, is to keep at work all persons who are physically and mentally fit even if they have exceeded the normal retiring age of 65.

The expectation of life at birth has scarcely changed since 1954 and it looks as though the psalmist's estimate of three score years and ten is going to keep fairly near actuality for a number of years to come.

The birth rate continues to rise but the rate of increase is appreciably slackening. The death rate at 11·6 per 1,000 population is only slightly lower than in 1958. In the absence of any really serious and widespread epidemic of a fatal character it is unlikely that the death rate will fluctuate more than fractionally from year to year. Nevertheless, within this figure, which is that for the population as a whole, there are appreciable differences in the rates of various age groups. Above 25 years of age the death rates fell in all ages and sex groups as compared with 1958. Below 25 years of age the general trend was upwards. The increase in the male death rate between 15 and 24 years of age was almost entirely due to the increase in the number of deaths in accidents involving motor vehicles. It cannot be emphasized too frequently that 41 per cent. of all deaths of males in this age group are caused by road traffic accidents.

The general pattern of principal causes of death shows that the trend away from communicable diseases towards the degenerative and neoplastic conditions continues. Deaths from all forms of tuberculosis continue to fall and there was no death attributed to diphtheria. Deaths assigned to syphilis fell below one thousand for the first time. On the other hand, deaths from cancer of the lung continue to increase in numbers, and coronary disease took a greater toll of life than in 1958.

Maternal mortality continues its descending trend. It is striking to realize that out of more than three-quarters of a million total births only 243 women died from the effects of pregnancy and child bearing. This gives a maternal mortality rate of 0·32 per 1,000 total births compared with 0·35 in 1958. Many factors have contributed to the reduction which has taken place in maternal mortality since 1939 when the rate was 2·57. Amongst them the scrutiny of the confidential reports on individual cases has played an important part. The careful study of such data and the conclusions based thereon have drawn attention to deficiencies in practice and organization and have enabled remedial measures to be put in hand.

Another record was attained by the infant mortality rate of 22·2 per 1,000 live births. But the rate itself is scarcely a reason for any complacency as it is considerably higher than that of a number of foreign and Commonwealth countries. There is still room for improvement here.

Should women with family responsibilities go out to work? This is a question which is raised from time to time but still remains unanswered. The morbidity statistics from general practice quoted on page 33 indicate that the full-time working woman with family responsibilities consults her doctor more often than do those without family responsibilities. The consultation rates for housewives lie somewhere between the other two. This is the most that can be safely deduced from those statistics because many considerations are involved and the final conclusion may depend upon the way in which one set of circumstances affects another. The subject is by no means a simple one and it is probable that the question can be answered only in each individual case and that to seek an answer of general application is to demand the impossible.

GENERAL EPIDEMIOLOGY

Diphtheria

From the epidemiological standpoint the year was a relatively quiet one, but the experience of infectious disease in a population of more than 45 million persons cannot fail to have some features of interest. First to be commented upon amongst the important infectious diseases is diphtheria. Twenty years ago, in 1939, 47,341 cases of this disease were recorded with 2,130 deaths.

1959 will be noteworthy as being the first year in which there has been no death ascribed to diphtheria in England and Wales since separate identification of the disease as a cause of death was instituted in 1859. Gratification at this satisfactory state of affairs is not, however, unalloyed. The number of notified cases of diphtheria has again shown a rise, revealing that " we have scotched the snake, not killed it " and that it is still capable of inflicting damage on susceptible members of the community.

The general position regarding immunization against diphtheria cannot be regarded as being entirely satisfactory. The immunization index for children under 5 years of age is still low and the importance of giving a reinforcing dose of diphtheria prophylactic to children about to enter school is still as great as ever. Epidemiologically school age is a very important one for a child since it sees him translated from the sheltered environment of the family circle into one where sooner or later he is likely to meet most of the ills of childhood. He accordingly may suffer unnecessarily unless suitably protected by the immunization procedures now available. The fact that there is evidence that the carrier rate of diphtheria in the country is low should not engender the feeling that all is well and that immunization can now be dispensed with. Outbreaks such as that described on page 77 show that such complacency is completely unjustified.

Scarlet Fever

Notifications amounted to nearly 48,000 and were substantially higher than in any year since 1953 but there was only one death. This disease, in common with certain others, has shown a steady diminution in fatality over the past 20 years, for in 1939 it caused 181 deaths. More efficient drugs for the treatment of streptococcal infection may well have played their part in this improvement.

Outbreaks of other forms of streptococcal infection, apart from scarlet fever, are among the hazards of children of school age. It is interesting to note that in a school in the Midlands one such outbreak was associated with the occurrence of several cases of acute rheumatism.

Measles

The large number of cases, namely 539,524, which occurred in 1959 gave rise to 98 deaths. Since 1956 the case fatality rate has remained almost steady at 0·02 per cent. of notified cases. Two-thirds of the deaths occurred in children under 5 years of age. Mortality is related to the age at which infection occurs; it has been observed for many years that measles is most fatal in the very young.

The fatality of measles is due substantially to the complications which supervene upon the original infection. Encephalitis, which is not amenable to any specific treatment, now accounts for over one-fifth of the deaths ascribed to measles.

Whooping cough

Whooping cough is still on the decline. The number of notified cases at 33,252 is fewer than in 1958 while the deaths totalled 25. The fatality ratio of 0·08 per 100 notified cases remains the same as in 1958.

It is difficult to account for the remarkable fall in fatality revealed by the statistics of the past 20 years for in 1940 the fatality ratio was 1·26 and there were 678 deaths. Apart from the fact that those things have occurred we have no evidence to explain why it should be so.

Influenza

Influenza was an important cause of illness and death during the first quarter of the year. The mortality was greatest in those aged 65 years and over, which age group accounted for more than 70 per cent. of the total number of deaths ascribed to this disease. In addition to the deaths ascribed to influenza there were appreciable increases in the number of deaths ascribed to bronchitis and pneumonia in some of which influenza was probably a causative factor. Our knowledge of influenza incidence and of the spread of the disease in epidemic form throughout the country is greatly helped by the information given in the weekly new sickness claims on the Ministry of Pensions and National Insurance. They are a particularly reliable index of the movement of the disease.

Although production of influenza virus vaccines against existing strains of virus was on an adequate scale there is one difficulty which manufacturers must always take into account. This is the possibility of the occurrence in epidemic form of a new variant of virus against which existing vaccines may be relatively ineffective. How often such an occurrence may be expected to take place is unknown but past experience is such as to give some assurance that it does not happen very often. Happily it did not arise in 1959.

Meningococcal Infection

The number of cases reported was 746 compared with 836 in 1958. The difference reflects the steady decrease in incidence since notification as a separate entity started in 1950. The number of deaths was 159 compared to 145 in 1958.

The incidence of the disease is still greatest in young children on whom also the brunt of the mortality falls. One way to improve the situation would be to have appropriate treatment applied at the earliest possible stage of the infection.

Poliomyelitis

At 2·3 cases per 100,000 population poliomyelitis reached the lowest rate of incidence since 1946.

The increasing precision of virological diagnosis and the growing knowledge of other viruses in circulation in the population has resulted in the isolation of

Coxsackie viruses on numerous occasions in 1959 from patients with meningitic illnesses which, in certain instances, included paralytic features. In earlier years, some of these patients would probably have been considered as suffering from poliomyelitis as would a rather smaller number of similar cases associated with the presence of E.C.H.O. viruses and adenoviruses. As all these viruses appear to be capable in certain circumstances of producing a syndrome resembling the accepted clinical picture of poliomyelitis there are good grounds for continuing the meticulous investigation of every suspected case that arises.

There are two interesting features of the outbreak of poliomyelitis in Southampton during 1958–59; one, the way in which the presence of the disease stimulated the demand for immunization and the other, the suggestion that the chance of paralysis is progressively lessened according to the number of immunizing injections received by the patients. This last suggestion obtains confirmation from the statistics given on page 83 in the general discussion of vaccination against poliomyelitis.

Vaccination against Poliomyelitis

The story of the national campaign of vaccination against poliomyelitis is again a record of magnificent achievements by the local health authorities. To some extent their task was simplified by the fact that supply difficulties had been largely overcome and manufacturers were able to provide a steady flow of vaccine, and where a sudden rise in demand threatened a shortage enough vaccine was imported from Canada and the United States of America to tide over the emergency. Nevertheless the achievement was of the first magnitude and of the greatest importance, for investigation continues to demonstrate the safety and efficacy of the vaccine in current use. There is little doubt that a substantial protection is conferred by the course of vaccination now recommended.

Acute Encephalitis

This disease may appear as a sequel to certain infectious diseases or alternatively as a clinical syndrome, the aetiology of which so far lacks precise definition. In each category 140 cases were notified in 1959. While deaths in the former are not separately recorded, the number among the latter was 108 and the highest mortality was in children.

An outbreak of an encephalitic disease resembling benign myalgic encephalomyelitis recorded in 1958 occurred in Newcastle. Again the disease seemed to bear most heavily on young women living an institutional life. Fortunately most of the cases cleared up without leaving any serious after effects. The cause is still unknown.

Enteric Fevers

Notifications of *typhoid fever* at 123 were fewer than in 1958 and there were no major outbreaks. But no less than one-third of the patients contracted the disease while abroad. In this connection the official memorandum " Notice to Travellers " which advises on vaccination against the enteric fevers assumes a special importance.

Although figures reported for *paratyphoid fever* showed an increase of nearly 90 per cent. compared to 1958, they were well below the average for recent years. Most of the cases were sporadic but a few outbreaks of moderate proportions occurred.

Bacteriologically, the salmonellae which cause these fevers form a homogeneous group but the incidence of enteric fever caused by *Salm. typhi* and *Salm. paratyphi* has fortunately lagged far behind the increase in recent years in the incidence of illness caused by other salmonellae. It is clear, however, that some enteric especially paratyphoid, infections can result in a malady clinically unrecognizable as enteric fever while, conversely, some of the other salmonellas can on occasion cause an illness clinically indistinguishable from the classical enteric syndrome. In these circumstances, laboratory techniques in pinpointing the organism are all the more important in the organization and application of control measures which may differ according to the organism concerned.

Dysentery

There were 35,626 notifications of dysentery in 1959. This total though high was almost 7 per cent. less than in 1958. The fatality ratio remained at 0·1 per cent. Distribution among males and females was approximately equal and the greatest incidence was in the 0–5 year age group.

Apart from Wales, which showed increased figures, the general tendency in most conurbations was towards a lowered incidence. Tyneside was particularly notable in returning a rate lower than that for rural districts.

Dysentery is an infectious disease caused by known bacterial agents with well defined epidemiological characteristics. It is possible therefore to devise reasonable preventive steps with existing resources which theoretically ought to make control more effective. The difficulties lie in the wide variations of the clinical picture, from the symptomless excreter on the one hand to the overt dysenteric syndrome on the other, in the particular prevalence among children and the aged, and in the fact that dissemination of the disease is related to defects in the personal hygienic practices of those who are infected and of their immediate contacts.

Leprosy

For some time it has been felt that the recorded cases of leprosy in the United Kingdom did not give a complete and detailed picture of the position. A review was accordingly made of all cases on the Register and as a result it was found that of the 308 cases registered at the end of 1959, 50 were no longer infectious and 69 had gone abroad, died, or could not be traced, leaving 189 cases still requiring surveillance.

It is illogical to keep on the register patients who have been cured, or in whom the disease has been arrested for a considerable time. It is therefore intended to have the register periodically reviewed so as to ensure that in the future only those persons capable of transmitting the disease are recorded therein.

Q Fever

It sometimes happens that when a hitherto unknown infection is recognised as an entity other cases come to light and the distribution is found to be surprisingly widespread. This has been the case with Q fever in Australia in 1937 and in this country in 1948. The disease is caused by the infection of man by one of the family of micro-organisms known as Rickettsiae, another member of which causes typhus fever. Credit for its recognition and for the identification of the causal organism lies with the Australian workers concerned.

In this country, as in Australia, the disease occurs in association with domestic livestock, principally sheep. It is, therefore, a disease of rural rather than urban areas. It has not yet been made notifiable and so its incidence cannot be measured, but, though the sporadic case may pass unnoticed and be diagnosed as a simple pneumonia, it is unlikely that a series of cases or a small outbreak in any given locality would remain unrecognized. It is not yet a serious public health problem but it merits further investigation especially regarding its manner of spread among animals and human beings.

Undulant Fever

Undulant fever has had its incidence in this country greatly restricted by the now almost universal practice of pasteurization of milk. Not only has the restriction been quantitative; it has also been qualitative insomuch as the disease is now largely one of rural areas affecting principally those who work with cattle. Few of the general population contract it as the result of drinking milk.

The disease itself may be so unobtrusive or so protean in its manifestations as to be diagnosed with difficulty or not at all. For these reasons an accurate idea of its incidence in the country cannot be obtained, and estimates of prevalence may be very wide of the truth. The same limitations apply to the interpretation of the mortality statistics. Nevertheless the case mortality appears to be low and the disease is of little general importance although constituting a hazard to those at special occupational risk.

Since so much of the milk consumed in this country is pasteurized the residual question of the prevention of undulant fever now lies more in the veterinary field than in the medical. The eradication of the disease, or its strict control, in dairy herds offers the most promising prospect of diminishing still further its incidence in human beings.

Venereal Diseases

There has been a slight but definite increase in venereal disease, at any rate, as recorded at the clinics. The number of cases of infectious syphilis is still, happily, small but it is increasing. In 1959 the number of cases of gonorrhoea reached 31,344, which is the highest since 1947. Non-gonococcal urethritis in males is also increasing rapidly reaching a total of 20,227 as compared with 17,606 in 1958. Another disquieting feature is the proportion of persons under 20 years of age who become infected, particularly with gonorrhoea.

A contributory factor to the increase of gonorrhoea is the fact that strains of the organism partially resistant to penicillin have become more widely spread in the community. If this tendency progresses penicillin may become ineffective for the treatment of the disease and, although other antibiotics are effective, most of them in turn may lose their efficacy. It is to be hoped that these fears will not be realized and that if they are, the discovery of new and effective antibiotics will keep pace with loss of potency of the old. If not, it may be necessary to revert to the tedious and less effective methods of treatment of earlier days which taxed the resources of patient and physicians alike and by their very tedium provoked defection and neglect, with the likelihood of chronic disease and potentially crippling consequences. These are some of the epidemiological and microbiological features of the increased incidence of venereal disease, but as always with this group of disorders, social factors also operate.

Smallpox

The occurrence of a sporadic case of smallpox in Liverpool is recorded. The patient, who had been vaccinated in infancy, suffered a moderately severe illness but made a good recovery. There was no other case.

Vaccination

Some 45 per cent. of infants under one year were vaccinated against smallpox during 1959. As usual there was great variation in the acceptance rates in local health authority areas.

Complications of Vaccination

Twenty-one reports of individual vaccinations done under National Health Service arrangements in connection with which there occurred, or were alleged to occur, (*a*) generalized vaccinia, (*b*) post-vaccinal encephalomyelitis or (*c*) fatal complications other than those due to (*a*) or (*b*). In order to assess their true significance these must be related to the nearly half a million vaccinations performed during the year. The 16 reported cases of generalized vaccinia all ran a mild course and rapidly made a complete recovery. In addition to these, a child suffering from eczema contracted generalized vaccinia from a primarily vaccinated younger sibling and died. The danger of exposing eczematous children to vaccinia has thus again been tragically demonstrated.

The three reported cases of post-vaccinal encephalitis all recovered but one of them required follow-up treatment to control a tendency to fits.

Two instances of fatal complications in category (*c*) were reported.

CONTROL OF INFECTION IN HOSPITALS

In a community of healthy persons the occurrence of infection tends to become limited to the victim and his close associates unless the phenomenon of epidemicity occurs and the infection sweeps across all barriers and works itself out in the population at large. In a hospital other conditions prevail. Many of those at risk are already ill, the nursing staff and others caring for the patients are continually exposed to infections of different kinds, and may be carrying them unawares. When the infection does manifest itself, it is apt to spread rapidly.

For these reasons the control of infection in hospitals is a major concern of the administrators concerned. At one time antisepsis was widely practised to this end, then strict asepsis followed, and, later, when the properties of the antibiotics first became known it was thought that their use would eliminate much of the risk of infection from hospital practice. Unfortunately the emergence of strains of bacteria resistant to such agents has denied some of that early promise and aseptic techniques still constitute the principal means of avoiding hospital infection, reinforced in certain cases by the judicious use of antibiotics.

The review of the present situation in Chapter II B attempts to define the various factors in the problem of hospital infections. Unsuitable accommodation, overcrowding of wards and the overworking of the nursing staff are all of importance. Another potent factor is the defective sterilization of surgical instruments and dressings. The institution of arrangements for the central supply of certain kinds of equipment sterilized by modern techniques has eliminated one very important source of concern to surgeons and nurses alike. Bedding has been recognised as a potential vehicle for the carriage of septic organisms. When it is suitably treated it ceases to be a threat to the health of the patients.

The subject is indeed so complex that hospitals have been advised to appoint a senior medical member of the staff as Control of Infection Officer. It is his duty to keep track of all infections occurring in the hospital and to recommend measures for their control. In this he can be assisted by a Control of Infection Committee composed of members of the hospital staff with whom should be associated the Medical Officer of Health of the area in which the hospital is located. By such means it is hoped to ensure that patients entering hospital do not contract infections they might otherwise avoid.

THE LABORATORY SERVICES

The three main constituent parts of this group of Services had again a busy and useful year. The *Public Health Laboratory Service* records a number of important activities. One of them, an investigation into the contamination by sewage of 40 English and Welsh bathing beaches, led to the conclusion that the risk to health of bathing in sewage-contaminated sea water could for all practical purposes be ignored. But however comforting such a conclusion may be for the local authorities concerned about the contamination it does not cover all the potential risks to health caused by the discharge of crude sewage into the sea. When such a practice occurs in or near estuaries where shellfish are either cultivated for human consumption or occur naturally and are periodically harvested for the same purpose, enteric fever may be contracted by persons consuming them.

The identification of new respiratory viruses and the association of some of them with specific clinical signs is again a definite step forward. Hitherto the different types of illness of the upper respiratory tract have not been identifiable with precision and have been usually ascribed either to influenza or the common cold. Recent work has revealed that the situation is not quite so simple and that a number of viruses may give rise to illness, which from the virological point of view is quite specific, though the symptomatology may be such as to render a differential diagnosis on clinical grounds impracticable.

Finally, there is a large group of illnesses known as the zoonoses which are common to animals and man, animals frequently being the reservoirs of the infections concerned. Familiar examples of these are brucellosis, rabies, leptospiral jaundice and Q fever. For the proper study of their epidemiology and means of prevention collaboration between the medical and veterinary professions is essential. The Public Health Laboratory Service has achieved this through the establishment with the Ministry of Agriculture of a joint committee to co-ordinate field inquiries into human infections conveyed by animals. A further step in prospect is the exchange of information between public health and veterinary laboratories on pathogenic bacteria isolated therein. By this means it is hoped that sufficient information on these subjects will be gathered to enable effective preventive measures to be devised and applied.

In the section on the *Hospitals Laboratory Service* reference is made to the planning and provision of central sterile supply departments for hospitals.

The Central Pathology Committee appointed a working party to examine the many aspects of the problem and reports accordingly. A summary of the working party's recommendations is given in Chapter III B.

The demand for blood on the *National Blood Transfusion Service* continues to increase and it is fortunate that the number of donors has hitherto kept pace with the demand. How much longer it will do so, especially in view of the development of cardiac surgery and other procedures involving transfusion, it is impossible to say. It would seem, however, that the time has come for surgeons to ask themselves in any particular case " is blood transfusion really necessary " and to seek some alternative supportive transfusion or other means of treatment if the answer is in the negative.

The use of heart-lung machines presents a special difficulty because the blood required is prevented from clotting by the addition of heparin. Unlike the acid citric dextrose solution which enables blood to be stored in usable condition for up to 3 weeks at 4° Centigrade, heparin demands that the blood be used within a few days of its collection, in actual practice within a few hours. The discovery of an anti-coagulant solution which could be used for the preparation of blood for the heart-lung machine as well as for normal storage purposes would be a great convenience to all concerned. Recent work in the United States of America inspires the hope that such a solution may soon be available.

A retrospective pilot survey carried out by the Regional Transfusion Centre, Birmingham, on the final use of a random selection of bottles of blood has provided information which will be of use in the design of more extensive surveys in other hospital regions.

The increase in the donor panel by over 68,000 persons is again a tribute to the sense of social responsibility of a substantial proportion of our people. It now includes over 784,000 individuals whose reward is in the knowledge of the invaluable contribution they are making towards the recovery of their fellow citizens, and of the gratitude, unspoken but yet real, and at times overwhelming which these offerings have earned.

TUBERCULOSIS

How much tuberculosis is brought to light and notified depends very largely on the facilities provided for its detection. The great improvement in such facilities since notification was established in this country in 1912 has had the effect of revealing recently in the older generation much tuberculosis which went undetected in those earlier years. In consequence of this, statistics of morbidity and the action that should be based on them may require some reappraisal, more particularly in respect of the residual pools of infection which have been thereby brought to light.

Nevertheless, there can be little doubt that the great fall in the incidence of tuberculosis which has been observed to take place over the past 40 to 50 years is no purely statistical phenomenon but evidence of solid achievement. Granted that the constitution of the tubercle bacillus in this country may be weakening through unknown natural causes, there still remain the general hygienic measures operating favourably on the health and state of resistance of the population. Adequate housing, full employment, a good and varied dietary, careful medical supervision of the young before and during school life must all be given credit for the improvement which has occurred with respect to pulmonary tuberculosis. The almost universal pasteurization of our milk supplies can be regarded as accounting for the virtual disappearance of the other forms of the disease. Mass radiography as a means of detecting the early case and B.C.G. now extended so as to be available to all children before leaving school have also played their part.

When tuberculosis does make itself known the effective treatment now available to patients has entirely changed the outlook. A much higher proportion of arrest or cure of the disease has been achieved than at one time would have seemed possible. And this has greatly affected the mortality.

These various factors in combination inspire the hope that a steady determined pressure on the disease may further reduce its incidence and ultimately bring it under complete control.

The mass radiography records relate to the year 1958. This lag is caused by the somewhat lengthy investigation required in certain cases of pulmonary abnormality before a diagnosis can be established and the records completed.

The mass radiography scheme is valuable in bringing to light symptomless cases both of tuberculosis and malignant disease of the lung. It thus enables treatment to be instituted at a much earlier date than would be the case if the disease were to be allowed to progress until it became clinically manifest.

THE RHEUMATIC DISEASES

The account of progress in the elucidation of the rheumatic diseases continues to be a depressing one of little achievement. One can only hope that the continuation of present research and the institution of other enquiries in the future may gradually dissipate the mists of ignorance in which this important subject has been shrouded for so long.

Deaths ascribed to acute rheumatism show a slowly descending, though irregular, trend. When one compares the extremities of the 1950 decade the descent is shown more clearly: 1950, total deaths, 569; 1959, 126. Notifications of the disease in children under the age of 16 years in the 8 areas which formerly notified it were 75, including 2 recurrences, in 1959 as compared with 84, including 3 recurrences, in 1958. During 1959 the area in which notification was required was extended to include the County of Lancaster and the county boroughs of Cardiff, Manchester and Newcastle-upon-Tyne, bringing the estimated number of children under 15 years of age to 1,288,200 or nearly double the 1958 figure so that future returns should have even greater significance.

THE CANCERS

Chapter VI opens with a note on the development of radiotherapy for malignant disease in England and Wales. In this context the remarkable speed with which, soon after their discovery by Röntgen in 1895, X-rays were adopted by the medical profession of Europe and the United States of America is one of the major features of a striking era of discovery. At first employed as a diagnostic medium the rays were soon used in the treatment of certain superficial lesions.

The discovery that radium had similar properties to X-rays added another weapon to our armamentarium against malignant disease and the establishment of the Radium Commission in 1929 laid the foundation for a scientific application of the new knowledge and technique in this country.

The early workers in X-ray therapy were handicapped by the lack of apparatus to produce ionizing rays sufficiently penetrating for their needs. Something had been done to overcome this handicap by the development of units using 10 gram. radium and by the standardization and improvement of radium needles and tubes which could be inserted into the areas where the rays were most effective. But the next fundamental advance, and the one which is now evolving was the development of megavoltages and the use of radioactive isotopes. Several means of producing therapeutic rays are being employed at the present time and their properties subjected to continual expert scrutiny. The more important of these are mentioned in the chapter itself. Here I would merely remark that this is a development which, on account of the high cost involved, could only have been undertaken and generally applied through the provision of resources by government. In this case these have been administered through the National Health Service which has thus shown itself to be capable of providing highly technical and costly treatment which could have been available, if at all, only upon a very modest scale under the former system of voluntary hospital care.

Our knowledge of cancer morbidity still suffers from the fact that cancer registration is by no means complete throughout the country. At the present rate of progress several years may elapse before we are able to make a reasonably accurate assessment of the position and of what will be required to meet it. Nevertheless, the degree of registration achieved by a number of Regional Hospital Boards is most encouraging.

So far as our present incomplete statistics show, cancer of the lung, the most disquieting of the present-day cancers, continues to show a rising trend, but it would appear that whereas in men of 65 years and over the rate of increase has been comparatively uniform since about 1930 it has progressively slowed in the lower age groups. The diagrams on pages 124 and 125 bring this out very strikingly.

MENTAL HEALTH

The statistics of mental health given in Chapter VII and the early acceptance of the Mental Health Act of 1959 mark the pattern of change which is occurring in psychiatry. It is a process not yet complete and is likely to change still more. Reinforcing this evidence of change is the continuing fall in the number of patients in residence despite a higher admission rate. It is hoped that with the increasing practice of both preventive and therapeutic measures within the community the rise in the rate of admissions will cease.

One important function of the mental health service is to attempt to measure future bed requirements for mentally afflicted patients. There are three great classes of such patients: short-stay, medium-stay and long-stay and the requirements of each obviously differ. Steps are accordingly being taken in conjunction with the General Register Office to measure the change in the requirements for beds for mental illness which has been brought about by the efficacy of modern methods of nursing and treatment. This should enable planning to be reviewed on a realistic basis.

The same general principles which apply to the care of the mentally ill also apply to the various types of patients formerly called "mental defectives" except that most of these are long-stay patients. The picture of what is needed in the way of accommodation is not so definite as in the case of mental illness, psychopaths in particular constituting a difficult problem.

The Act of 1959 lays new and enlarged responsibilities on the Local Health Authorities and they have shown great activity in working out their mental health schemes for the future. The enthusiasm of medical officers of health has been and is most encouraging.

GENERAL PUBLIC HEALTH

In Chapter VIII the role of the medical officer of health as community physician is enlarged upon. The concept is of long standing but the present discussion of it is useful in indicating the wide field open to the medical officer of health. There are many ways in which his participation in the life of the community and his collaboration with his medical, nursing and other colleagues may be fruitful. The idea of the health team is implied in much modern teaching on the subject of the health services and of health education. For this new attitude to their wider responsibilities, medical officers of health are beginning energetically to prepare themselves. Suggestions are also made about the type of public health department suited to modern conditions and to the way in which it may be organized by the medical officer of health so as to enable every member of his staff to work to the best advantage.

Amongst the many fields of interest to the medical officer of health, that which is commonly described as the clean air movement is gaining momentum. It is strange that in a country where food and water have been so scrupulously safeguarded against pollution the air we breathe should have been neglected for so long. Now that a beginning has been made the effects are likely to be cumulative and will enable our cities and manufacturing areas to acquire a more gracious appearance. When once the smoke nuisance has been brought under control the more insidious one of the fumes from internal combustion engines will merit attention.

SEA- AND AIRPORTS

The health services based on seaports and airports operated satisfactorily throughout the year. No important communicable disease was introduced from abroad although the usual pattern of infectious diseases was reported by ships arriving from overseas. Of these, chicken-pox merits the closest scrutiny on account of the liability of its being compared with mild atypical smallpox.

The number of passengers arriving at British airports is continually increasing and it says much for the efficacy of the arrangements made for the control of communicable diseases that no major incidents arose out of the arrival of large numbers from countries where important epidemic diseases are still prevalent.

The fall in the number of deratting certificates issued at the 35 designated and approved ports in England and Wales has continued. This gratifying trend may be ascribed to three causes: (*a*) better design of vessels with consequent elimination of much rat harbourage, (*b*) the constant servicing of ships arriving at British ports, and, lastly, but by no means least, the educational talks given by the deratization personnel to members of the crews of the ships being routinely serviced or deratted.

An important administrative measure taken during the year was the delegation to the Welsh Board of Health of various functions concerning health control, medical inspection of aliens, inspection of shellfish and of imported foods at ports in Wales. This should make for greater promptitude of action in doubtful cases requiring expert advice.

MATERNAL AND CHILD CARE

The improvement in the vital statistics of mothers and children which was recorded in 1958 has continued during 1959. The infant mortality rate of 22·2 per 1,000 live births and the still-birth rate of 20·8 per 1,000 total births constitute two new records. The maternal death rate of 0·32 maternal deaths per 1,000 total (live and still) births is appreciably lower than that of 1958.

The Committee under the chairmanship of the Earl of Cranbrook, appointed in April 1956 " to review the present organization of the maternity services in England and Wales, to consider what should be their content and to make recommendations " reported in 1959. The Committee's recommendations were largely accepted by the Department and action was taken to notify those concerned of those features of the report which it was thought should occupy their attention.

The survey on the shortage of midwives revealed serious deficiencies in the numbers employed by hospitals as well as in the establishments of local health authorities. The causes of the shortage constitute a vicious circle which may be difficult to break, though the means to be employed do not appear to offer great administrative problems. Perhaps the most effective single remedy might be the employment of part time staff as a means of affording relief to the normal establishments by reducing the load of work and giving opportunity for more social relaxation than many of the staff appear to have at present. Employers should realize that conditions of service operate quite as powerfully as pay in recruitment and avoidance of wastage.

The report of the Committee on the Welfare of Children in Hospital which worked under Sir Harry Platt's chairmanship endorsed the view held by many that the best place for an ailing child is his home and his best nurse his mother. Where the nature of the child's malady or other considerations make it necessary for him to be admitted to hospital, precautions should be taken to cushion the transition from home to institutional care so as to lessen any psychic trauma which such a change has been known to cause to sensitive children.

An effective precautionary measure would be to allow the mother to accompany the young child to hospital and enlist her services in such simple nursing duties as she may be able to carry out. For older children, less may suffice, especially if they are admitted to a ward containing others of their own age. In such cases unrestricted visiting allowed to the parents may be all that is required. Simple measures like these are often surprisingly effective.

In contrast to the normal child who temporarily requires institutional treatment for some pathological incident and may be expected to resume active normal life at its termination, the congenitally handicapped child suffers from a condition which is likely to last throughout his lifetime. In addition to his having to contend with his congenital disability, he may be exposed to injurious influences in the home arising out of the attitude of his parents and siblings towards him. In such cases the treatment of the parents is almost as important as the nursing of the child. The sooner such parental counselling is begun the better will be their chances of helping the child to come to terms with his disability where that is possible. Early diagnosis of the type of handicap from which the child suffers and appropriate guidance of the parents in their attitude to it are of very great importance, and there is no better example of this than the early detection of auditory defect which is now possible.

THE DENTAL HEALTH SERVICES

It is encouraging to know that the objective of the general dental service is gradually being attained. It is the early detection of dental disease followed by radical treatment. This involves the co-operation of patients whereby they seek regular examination and treatment and so anticipate the onset of disease rather than, as formerly, waiting until the trouble expressed itself as pain before consulting their dentist. By no means all persons are as yet so preventive minded but their numbers are on the increase.

All this only serves to mark one of the outstanding difficulties which confronts the dental health services—namely the shortage of dentists. Both the diminution in dental manpower which is annually occurring as more and more of the 1921 dentists retire, and the recognized need for further dental services are converging forces which make the consideration of the problem of recruitment and training a matter of the most urgent priority.

That, on the average, children aged five years are estimated to have five decayed teeth will come as a shock to many thinking persons. When it is realised that the condition of the milk teeth largely conditions that of the permanent dentition such a state of affairs bodes ill for dental health at later ages. Decay of this order is entirely the responsibility of parents, who accustom their children at an early age to artificially or highly sweetened foods. The sooner parents regard sweets and other carbohydrates consumed outside mealtimes as the harbingers of future dental disease, the better will it be for their children.

Certain local authorities are inaugurating programmes of dental health education. These are likely to be effective when directed at expectant mothers but the most effective dental education would be that directed to children in school where they may include dental hygiene as part of their ordinary toilet and so come to practise what they are taught. For this reason the Braintree experiment and the experiment planned for Harlow New Town will be followed with interest.

The extent of need for treatment is revealed by the fact that nearly thirteen million estimates for treatment were made by dentists in 1959. It may be safely assumed that actual requirements are substantially greater than this figure indicates. Conservative treatment would now appear to be an established practice and its increase, if maintained, will probably be due to a growing appreciation on the part of the public of the benefits to be derived therefrom.

HOSPITAL AND PUBLIC HEALTH NURSING SERVICES

Experiments continue to be made in the training of nurses but some time must elapse before results can be assessed. One important question is whether obstetric nursing experience should form a part of the training syllabus. The proposal has much to commend it in that quite apart from giving a broadening to the student nurse's general outlook it will bring her abreast of her colleagues in certain Commonwealth and other countries where already obstetric nursing experience is an integral part of training.

Post-graduate nursing education continues to be provided on an increasing scale, regional hospital boards are now effectively in the movement and one useful result of their participation is the availability of post graduate instruction in the working areas of the nurses and midwives concerned. By bringing the opportunity to the pupils more of these may find it convenient to make full use of it. It is to be hoped that such training facilities will continue to grow.

The visits of certain post graduate nursing students to the Ministry are very welcome. There they can become acquainted with the nursing problems on a national scale which puts their own local difficulties in a more realistic perspective. They can also meet the staff with whom they may have to deal when they assume higher appointments in their own localities and so know that a personal interest will be taken in the solution of their administrative problems.

The shortage of midwives continued to give so much concern in the Ministry that a medical and nursing team was assembled and sent to survey areas of the country said to be most seriously affected. Their interim report showed that the shortage was by no means general but was confined to certain localities.

The 1950's have been years of important centenaries and 1959 has been no exception for it was in 1859 that district nursing was instituted by Wm. Rathbone in Liverpool. Liverpool's example was followed by Manchester in 1864 and by London in 1868. Thereafter the movement gained momentum and ultimately became national in its scope. Now it is one of the most beneficial of the health services concerned with community care.

In the mental health services it is encouraging to record improved recruitment for training as mental nurses; but there is still a great need for the secondment of general nurses to mental hospitals.

We are now entering upon a period of building in which the design of hospitals generally and of wards in particular is now being related much more intimately to the nursing of patients than in the past. So much is this so that the association with the hospital planning personnel of an experienced nursing officer is likely to be a feature of the Department's organization for a considerable time to come.

WELSH BOARD OF HEALTH

An account of the State of the Public Health in Wales is to be found in Chapter XIII and should be read in full by all interested in Welsh affairs. The vital statistics are given in detail. Those relating to maternal and child care are uniformly rather less favourable than those of England and Wales as a whole.

As in England, so in Wales is the regional shortage of midwives causing concern to those responsible for the services of which those women are the operative agents. There are doubtless the same conditions militating against recruitment as occur in England and where these arise from unsatisfactory working or living conditions remedy of such conditions might go some little way towards a general amelioration of the situation.

Infectious Diseases

Among the infectious diseases tuberculosis again shows a welcome decline in incidence, conforming to the trend seen elsewhere in these islands.

Food poisoning and outbreaks of other intestinal infections provided several interesting exercises in epidemiology.

Venereal disease shows the same general aspect as it does in the country as a whole, with syphilis stationary or declining and gonorrhoea and " other conditions " on the increase.

Mental Health

Visits from officers of the Department to local health authorities in connection with certain provisions of the Mental Health Act revealed that progress in implementing its provisions might be slow. Two main difficulties are envisaged: (*a*) scarcity of trained staff and (*b*) scarcity of information which would enable the authorities to assess the demand on the services offered. It is possible that until a sufficient number of trained personnel become available adjacent local health authorities may be obliged to combine in obtaining the services of such staff as may be available.

INTERNATIONAL HEALTH

The 12th World Health Assembly which was held in Geneva from the 12th to the 29th May, paid me the signal honour of appointment as its President.

The United Kingdom continues to demonstrate its great interest in the activities of the World Health Organization, in many ways, not least by the impressive list of members which it provides for the Expert Advisory Panels of the World Health Organization.

A number of matters concerning international health also arose from the meetings of the other organizations with which the United Kingdom is associated, some of which were of more than passing interest.

The Western European Union's Public Health Committee held two sessions during 1959. Cancer control continued to be one of the principal subjects of discussion and it was decided to initiate a comparative study of cancer statistics available in the countries of the Union.

A proposed transfer of the social activities of the Western European Union to the Council of Europe was considered at the 9th meeting of the Western Union's Committee. The proposal was coolly received because the Committee felt that the transfer of these activities to a wider and less homogeneous organization would inevitably reduce the value and effectiveness of its work.

The Committee of Experts of the Committee of Ministers of the Council of Europe examined the question of a draft protocol of specifications for blood grouping reagents of human origin. It also dealt with a number of other important matters which find reference in Chapter 14.

OVERSEAS VISITORS

During 1958 and 1959 sponsored visitors to the United Kingdom owed their introduction to one of three organizations: the World Health Organization, the Central Treaty Organization (formerly the Baghdad Pact), and the Council of Europe, or to their own governments.

The World Health Organization Fellows constituted by far the largest group: 227 in 1958 and 257 in 1959, from more than 50 countries. The Central Treaty Organization sponsored 21 in 1958 and 11 in 1959 and the Council of Europe fellowships numbered 10 in 1958 and 19 in 1959.

Most of the W.H.O. fellows were qualified medical men and women and the subjects of study ranged over the whole field of medicine and allied interests.

I should like here to express my thanks to the many teaching schools, laboratories, hospitals and their staffs who have undertaken the instruction of those visitors and have contributed in no small way to the value and agreeableness of their experience in this country.

MINERS' REHABILITATION SERVICE

Once again the analysis of statistics provided by Mr. E. A. Nicoll, the Ministry's Adviser on the rehabilitation of injured miners, emphasizes the continued high standard provided for injured miners in the various miners' rehabilitation centres throughout the country.

The mining population in the areas served by the seven centres has declined by approximately 34,000 and that accounts for the decrease in the number of admissions from 2,942 to 2,882. Nevertheless, as the statistics (Appendix E) show, the centres have been utilized to 93 per cent. of capacity compared with 91·2 per cent. in the previous year.

The causes of injury follow the same pattern as before and the severity of the cases treated is indicated by the duration of total incapacity of seven months. Two-thirds of this time is spent undergoing hospital treatment and the remaining one-third at the rehabilitation centres.

The resettlement figures, which are an index of the value of achievement, show even better results than in previous years with a 72 per cent. return to pre-accident work and 22 per cent. to lighter work in the mines, making a 94 per cent. return to the parent industry. Only 3·6 per cent. required retraining or resettlement in a new job and 2·1 per cent. either retired because of age or went back to hospital for further treatment.

A figure of 0·3 per cent. failure of resettlement is an admirable achievement and fully justifies the value of a scheme which since its inception has treated 32,880 patients with a failure of resettlement in only 0·2 per cent. of the total number of cases.

THE ARTIFICIAL LIMB SERVICE

In 1959, persons over 60 years of age constituted more than half of the 2,803 cases whose rehabilitation was accomplished by the Artificial Limb Service. The reason for this high proportion, which is not peculiar to any one year, is the greater prevalence of peripheral vascular disease and its complications in this group of persons than in the younger members of the population. The rise in numbers requiring treatment occurs about 10 years earlier in men than in women and men are throughout more heavily affected, for of this 2,803 no fewer than 2,000 were males.

Injury accounted for some 21 per cent. of persons requiring artificial legs whereas of those who required artificial arms the proportion of traumatic cases rose to 84 per cent. Industrial accidents were largely responsible for these cases of loss of arm. Traffic accidents, rather surprisingly, caused less than half of the cases in those under 50 years of age and were just exceeded by industrial accidental injury.

An important advance in the treatment of children who suffer from congenital deformities of the limbs has been the realization that the sooner an appropriate prosthesis can be fitted the more satisfactory will be the functional result. Quite young children, aged from two to three years, can successfully master a simple appliance, provided that and so long as their parents are co-operative with the physician concerned and the child's interest in the apparatus can be sustained.

In addition to the work of rehabilitation of patients the Service held two courses for orthopaedic surgeons during the year. These may more appropriately be termed seminars for there was undoubtedly a two-way traffic of experience between the lecturers and the audience. Other teaching work was also undertaken, details of which are given in Chapter XV.

Research is claiming a larger proportion of the Service's time than formerly. An interesting project is an investigation into the application of external power to the control of artificial arms for the high level amputee and to appliances designed to help those with severely paralyzed upper extremities.

DRUG THERAPY AND PHARMACY

Important national and international activity in the pharmaceutical field is described in Chapter XVI. The publication of a new edition of the British Pharmaceutical Codex has enabled official approval to be given to a number of new therapeutic substances. The International Pharmacopoeia has developed so far as to be able to publish a supplement to the first edition and thus mark a further step in the process of obtaining uniformity in the quality of therapeutic substances throughout the world. It may be a considerable time, however, before it can supplant the national pharmacopoeas in current use.

At home, the Standing Joint Committee on the classification of proprietary preparations has revised the categories in which such preparations should be classified. The *raison d'être* of the Committee is the substantial number of proprietary preparations produced by manufacturing pharmaceutical chemists every year and brought to the notice of every practising doctor by various means. The classification of such preparations by the Standing Joint Committee enables the doctor to select from a number of similar remedies that preparation which is likely to be of greatest benefit to his patients.

THE BLIND

The value of the blind register and the register of the partially sighted is demonstrated once again in the statistical analysis of the certificates of the blind and of the partially sighted.

The pattern remains much the same as in previous years, but attention is drawn to a slight increase in the number of new admissions to the blind register for the second year running. At 31st December, 1959, the blind register stood at 96,949 persons and the number of newly registered during the year was 11,594. Compared with the previous year these figures show an increase of 474 and 796 respectively.

This increase is largely due to an additional 858 of those aged 70 years and more, and although this is offset by a decline in most other age groups there was also an increase of 44 in those of 5–20 years of age. The age distributions, the analyses of the causes of blindness and their classification by site, aetiology and clinical entity are well demonstrated in the tables set out in Chapter XVII. Senile cataract, senile macular degeneration, myopic chorio-retinal atrophy, glaucoma and diabetic retinopathy are the five major affections accounting for 77·4 per cent. of the newly registered blind and for 73·6 per cent. of the newly registered partially sighted. The age group 5–15 years is of interest in that it contributes only 0·86 per cent. of the blind but accounts for 5·3 per cent. of the partially sighted. The high rate of registration as partially sighted during school life suggests the value of registration as a means to definite action and, when this is done, registration is readily sought.

THE AGED

It is a sobering thought that at the present day persons aged 65 years and over amount to nearly 12 per cent. of the total population of England and Wales and that of these it is estimated that almost half a million are housebound through infirmity.

In the absence of definite preparation for it, aging may involve early decrepitude. It is the task of preventive medicine to endeavour to make aging a gradual process of diminishing activity unimpaired by the grosser forms of incapacity either of mind or of body. Nevertheless it cannot be said that the preventive aspects of aging have as yet received the attention and study that remedial measures have received, though the latter may be merely palliative. The measures described in Chapter XVIII, though excellent in themselves, are mainly of this palliative character. What is required, however, is a preventive approach to the pathological conditions that threaten to accelerate the waning of the aged person's faculties.

It must also be remembered that the causes of some of the grosser infirmities of the old are due to psychological rather than to physical factors and it may well be that in promoting sound mental health in the middle-aged we can help to ensure for them a contented period of less strenuous activity when the time comes to relinquish full employment. How this may be done on a national scale remains to be determined. The first step is clearly a comprehensive study of the psychology of aging to identify if possible those factors which have an adverse effect. When these have been defined, measures to deal with them will no doubt suggest themselves.

In a crude sort of way it may be said that anything which maintains the aging person's interest in life and contemporary affairs is likely to prevent him from becoming a burden on others. But this is not enough—what is wanted is that he shall continue to be an asset to society, enriching it by his experience and possibly also by the active creative contribution of which he may still be capable.

RECENT DEVELOPMENTS IN UROLOGY

The sketch of the recent developments in urology illustrates in another context the debt which modern surgery owes for its development to chemistry, physics and anaesthesia. The shades of Liebig and Thudichum would surely rejoice were they to see the stature their early application of chemistry to the problems of physiology has now attained. As pioneers of this application, frustrated by being in advance of their time, they would now experience the thrill of vindication of their early convictions. Röntgen would be surprised at the revelations his discovery can now effect in the diagnostic field; Stone, Morton and Simpson awed at the evolution which has taken place in the practice of anaesthesia. And yet it would appear that we are only on the threshold of a new and brilliant era of surgical achievement.

Modern surgical progress seems to have as one of its inherent characteristics the development of techniques which require for their performance a highly trained team of workers whose efficiency is purchased at the expense of the wider disciplines within surgery itself. This must lead to a limitation and restriction of outlook which may not be entirely to the advantage of the patient, especially in the making of a diagnosis of his illness. Are we likely to see surgeons developing into two main types—general surgeons whose speciality will be diagnosis and surgical master technicians who will apply their specialized technique for the benefit of patients referred to them by the general surgeons? It is an interesting speculation.

ACKNOWLEDGEMENTS

This Annual Report is both an essay in communication and in itself a demonstration of co-operative effort. It reflects also the interdependence of government departments. It is therefore always a pleasure to recognise the spirit of collaboration, and to express thanks for its many manifestations. Special mention must be made of the Registrar General's Office which provides the statistical information on the trends of events affecting the public health which is so essential to the formation of sound judgment. The Ministry of Agriculture and Fisheries is another department whose activities, to an increasing degree, are complementary to those recorded in the following pages. The emergence of the zoonoses, those diseases common to the lower animals and man, into the public health consciousness has provided a common ground for study and combined action of which advantage is being taken by the two Ministries.

The Medical Research Council throughout its history of nearly half-a-century has been a continuing source of information and counsel. It is a great privilege to have its authoritative opinion so readily at our disposal. On many subjects the Ministry of Pensions and National Insurance has kept in close touch regarding the early detection of certain diseases in epidemic form.

Liaison has been closely maintained with the Ministry of Health and Local Government of Northern Ireland, the Welsh Board of Health and the Department of Health for Scotland. The Medical Directorates of the Fighting Services have also earned our thanks for their co-operation.

There is a sense in which this report is the consolidated record of the achievements of the great body of workers both within the National Health Service and on the establishments of local health authorities who operate the vast machinery which safeguards the health of their fellow citizens. Ancillary to them are the members of the many voluntary organizations throughout the country which provide services differing from those offered by the National Health Service but complementary to them.

And in a special category of their own there are the Foundations. Of these the doyen is the King Edward's Hospital Fund for London, to whose educational establishments the National Health Service owes so much. The Nuffield Foundation, amongst its many activities continues its great work for medicine and science in this country, and for its ever present helpfulness we are very grateful. A number of other Foundations, with general purposes that are akin to those of the Nuffield Foundation, yet differing in specific objectives, have begun to appear, and may soon prove as fruitful as the great organizations in North America to which medicine and science owe so much.

It has formerly been the custom to indicate throughout this introduction the names of certain of the contributors to the composite document which constitutes this Report. But the number of contributors now exceeds forty and I have thought it invidious to select from so many the few to whom special recognition could be accorded. Nevertheless I am deeply grateful to them and to others of the staff whose efforts have contributed once again to this annual review of the Public Health.

I am, Sir,

Your obedient servant,

JOHN A. CHARLES.

I

VITAL STATISTICS

Population

The estimated home population of England and Wales at mid-1959 was 45,386,000, it having increased by 277,000 since mid-1958. This is an estimate of the number of people actually in the country, including the Armed Forces of other countries, and forms the basis of the birth and death rates given in this report.

The increase in population from mid-1958 to mid-1959 consists partly of a natural increase (excess of births over deaths) of 216,000, partly of an inward balance of migration of 48,000 and a small residue, 13,000, which is caused by other movements of the population.

The broad trend of population growth in England and Wales since 1801 is shown by Table I of Appendix A (page 258).

The age and sex distribution of the population in 1959 is shown by Table I below.

TABLE I

England and Wales: Estimated Home Population by Sex and Age at mid-1959, and proportion per 1,000 at all ages

Age	Population (thousands)			Proportion per 1,000
	Males	Females	Persons	Persons
0–	1,771	1,681	3,452	76
5–	1,679	1,603	3,282	72
10–	1,869	1,785	3,654	81
15–	1,496	1,457	2,953	65
20–	1,399	1,429	2,828	62
25–	2,943	2,941	5,884	130
35–	3,095	3,195	6,290	139
45–	3,171	3,295	6,466	142
55–	2,382	2,826	5,208	115
65–	1,401	2,052	3,453	76
75–	589	1,044	1,633	36
85 and over	90	193	283	6
All ages	21,885	23,501	45,386	1,000

The present situation may be summarized in the following way.

About 106 boys are born for every 100 girls, but the death rates for males are higher than those for females at all ages so that at mid-1959 the number of males per thousand females falls from 1,054 at ages 0–4 to 1,001 at ages 25–34 (approximate equality), 843 at ages 55–64 and 549 at ages 75 and over (nearly twice as many women as men). At young ages falling mortality has narrowed the differential between the two sexes and has postponed the age-group in which the excess of males at birth is counterbalanced by excess male mortality from 5–9 in 1911 to 35–44 in 1959. At older ages the death rates for males have fallen much less than those for females, and consequently the excess of females at these ages has been increasing. At the 1911 Census there were 757 men for every 1,000 women at ages 65 and over; in 1959 there were only 632.

Two main movements may be discerned. First, after a large rise in the latter part of the 19th century, a sharp fall in the flow of births occurred; so that whereas at the beginning of this century the younger age-groups of the population represented larger generations than the older age-groups giving an unduly youthful population with, e.g. in 1911, 30·6 per cent. aged 0–14 and 5·2 per cent. aged 65 and over, in 1959 the situation has been reversed, the older age-groups representing the survivors of larger generations than the younger age-groups (22·9 per cent. aged 0–14 and 11·8 per cent. aged 65 and over). The population has " grown up " or " aged " and its age structure has approached nearer to that of a population with a relatively level flow of births, in which one would expect to have at current mortality about one in seven persons aged 65 or over. Second, and more recently, there have been upward fluctuations in the annual flow of births. There was a particularly sharp rise at the end of World War II with a peak of 881,000 live births in 1947, compared with an average annual figure of 608,000 in 1936–40. Again after a decline, at first rapid then gradual and a little irregular to 668,000 in 1955, there was a rise to 750,000 in 1959. In consequence there have been large fluctuations in the size of the child population. The proportion of the population in the 0–14 age-group which was 21·2 per cent. in 1939 rose to 22·2 per cent. in 1951 and 22·9 per cent. in 1959.

The more recent effect of these two movements has been to increase the proportions of the population outside the working age range and thus to increase the general pressure of dependency. The ratio of the population in the 0–14 and 65 and over age-groups taken together to the population in the 15–64 age-group had decreased from 0·56 in 1911 to 0·46 in 1931 but in 1959 it had risen to 0·53.

The long term population trend on certain assumptions about future births, deaths and migration (closely related to current conditions), has been estimated jointly by the Registrar General and the Government Actuary and published in the Registrar General's Quarterly Return No. 444. By 1979 the total population (including H.M. Forces overseas but excluding foreign Forces in this country) will have increased from 45,504,000 to 49,230,000. The proportion aged 0–14 will then have fallen slightly to 22·3 per cent. and the proportion aged 65 and over will have risen to 14·9; the ratio of the 0–14 and 65 and over population to that aged 15–64 will have risen from 0·53 in 1959 to 0·59. At that time live births may be running at or slightly above the present level of 750,000 a year.

Table II which follows shows the expectation of life at birth and at one year of age for different periods since 1841.

TABLE II
Expectation of Life

Year	At Birth		At Age 1 Year	
	Male	Female	Male	Female
1841	40	42	47	48
1871–80	41	45	48	50
1910–12	52	55	58	60
1930–32	59	63	62	65
1954	68	73	69	74
1955	68	73	68	74
1956	68	73	69	74
1957	68	74	69	74
1958	68	74	69	74
1959	68	74	69	74

Births and Deaths

Table II of Appendix A (page 258) gives a summary of birth and death rates, including infant mortality rates from 1936.

The birth rate in 1959 was 16·5 per 1,000 population, thus continuing the rise that started in 1956. The increase in 1959, compared with 1958, was only 0·1 per 1,000 compared with 0·3, 0·4 and 0·7 per 1,000 in 1958, 1957, 1956 over each preceding year. It is possible therefore that the peak in the upward swing has now been or soon will be reached.

The still-birth rate in 1959 was 20·8 per 1,000 total (live and still) births. Apart from this being the lowest figure ever reached in England and Wales it is encouraging to be able to report that the rate has fallen for every year since 1954 and the relatively stable rate which existed between 1948 and 1957 has now been left behind.

The death rate of 11·6 per 1,000 population in 1959 was slightly lower than in 1958. This was due to a slight fall in the male death rate, the female rate being unchanged in the same period.

Age and sex specific and standardized death rates

The death rates referred to above, by their nature, cannot reveal any changes that may have taken place in the rates for different age and sex groups. These are shown in the table below which summarizes the information given in Table III of Appendix A (page 259).

This table shows that above 25 years of age the death rate fell in all age and sex groups. Below that age, however, although there are individual exceptions the general trend was upwards.

Numbers of deaths in the lower ages are now small and relatively small changes in the absolute numbers of deaths will produce quite large percentage changes. Nevertheless in 1959 one point is worth mentioning. The increase in the male death rate between 15 and 24 years of age was almost entirely accounted for by the increase in the number of deaths as a result of motor vehicle accidents. To whatever one attributes this increase it is a sombre fact that in males of this age group 41 per cent. of all deaths are the result of this cause.

Percentage changes in death rates at various ages between 1958 and 1959

Age group	Males	Females
	percentage	
1–	+ 1·0	+ 5·2
5–	—	+ 6·5
10–	—	+20·8
15–	+13·3	+ 5·7
20–	+ 6·5	− 1·9
25–	− 3·4	− 1·2
35–	− 0·4	− 1·1
45–	− 2·3	− 3·1
55–	− 0·5	− 0·9
65–	− 1·3	− 1·3
75–	− 1·9	− 1·4
85 and over	− 1·1	− 0·1

Among young females and especially those in the 10–14 year age-group there seems to have been no single cause for the increase.

In order to provide a single measure of the changes that have occurred in the death rate which allows for changes in the age and sex structure of the population the technique of standardization is used. My last report, pp. 23–24, discussed briefly the reasons which had led the Registrar General to adopt the Standardized Mortality Ratio (S.M.R.) as the principal measure of standardization. It can be defined, e.g. for males, as the number of deaths of males registered in England and Wales per cent. of the number that would have occurred if the annual death rates in each separate age group had been the same as in 1950–52.* It should be noted that the S.M.R. does not compare the levels of male and female mortality but the trends within each sex.

The table below shows the S.M.Rs. for all causes in England and Wales for selected years from 1901 to 1959. It shows that in 1959, compared with 1958, there was a small improvement in the overall mortality position in both sexes.

Standardized mortality ratios, 1901–1959

	1901	1921	1931	1938	1948	1950–1952	1954	1955	1956	1957	1958	1959
Males	251	151	133	116	93	100	95	97	96	94	95	94
Females ..	281	169	150	123	95	100	91	93	92	88	90	89
Persons ..	266	160	142	119	94	100	93	95	94	91	92	91

Causes of Death

Table IV of Appendix A (page 260) gives numbers of deaths assigned to some of the principal causes from 1954 to 1959.

Deaths from both forms of tuberculosis continued to fall and in 1959 the death rate was less than half what it was in 1954.

* The method of calculation of an S.M.R. (for a limited age range) is shown in the Registrar General's Decennial Supplement on Occupational Mortality, 1951, (Part II, Vol. I, page 17) H.M.S.O. London. 1958.

In 1959 the number of deaths (958) assigned to syphilitic disease fell below one thousand for the first time.

Also for the first time there was no death ascribed to diphtheria. This is remarkable progress when it is remembered that 18 years ago there were over 2,500 deaths per year.

After falling consistently for several years the number of deaths assigned to meningococcal infections increased slightly from 145 in 1958 to 159 in 1959. It is not thought that this increase is of any significance.

Among other infectious diseases there was little to report except that only 66 deaths were assigned to acute poliomyelitis. This is the lowest figure recorded in any year.

There was a further increase in the number of deaths from cancer of the lung and little sign yet of any slowing of the rate of increase. Leukaemia also showed a further slight increase.

Although the number of deaths assigned to coronary disease was greater than in previous years there was a considerable reduction in the number assigned to other forms of heart disease which more than compensated for this. How much of the increase in coronary disease is real and how much is the result of better diagnosis does not appear to be capable of ascertainment at the moment.

There were 7,862 deaths assigned to influenza, more than in any year since 1951 and over a thousand more than in 1957, the year of the pandemic of Asian influenza. Pneumonia deaths were the highest for any year since 1940, a sequel to the epidemic of respiratory disease which affected the country in the early months of the year. Bronchitis deaths, rather surprisingly in view of the increases in influenza and pneumonia, were fewer than in the previous year.

There were 4,911 deaths stated to have been the result of congenital malformations.

Deaths as a result of motor vehicle accidents numbered 6,026, nearly 600 more than in 1958.

The number of deaths from suicide was 5,207, the lowest figure since 1955.

The percentage contribution to total deaths of nine important groups is shown in Table III below.

TABLE III

Percentage contribution of nine principal causes of death to all causes

	1952	1953	1954	1955	1956	1957	1958	1959
(001–019) Tuberculosis	*2·1*	*1·8*	*1·6*	*1·3*	*1·0*	*0·9*	*0·9*	*0·7*
(140–205) Cancer, including Hodgkin's disease, Leukaemia and Aleukaemia	*17·6*	*17·5*	*18·0*	*17·6*	*17·8*	*18·3*	*18·2*	*18·4*
(330–334) Vascular lesions affecting central nervous system	*13·9*	*13·5*	*14·4*	*14·3*	*14·3*	*14·3*	*14·5*	*14·2*
(400–468) Diseases of circulatory system	*36·8*	*36·2*	*37·1*	*37·1*	*37·2*	*36·6*	*37·5*	*36·4*
(470–527) Diseases of respiratory system	*10·5*	*12·4*	*10·0*	*11·2*	*11·5*	*11·9*	*11·5*	*13·0*
(530–587) Diseases of digestive system ..	*3·3*	*3·1*	*3·2*	*3·1*	*3·0*	*3·0*	*2·9*	*2·8*
(590–637) Diseases of genito-urinary system	*2·6*	*2·4*	*2·5*	*2·3*	*2·2*	*2·2*	*2·0*	*2·0*
(750–776) Congenital malformations, certain diseases of early infancy	*2·9*	*2·8*	*2·8*	*2·7*	*2·7*	*2·8*	*2·7*	*2·7*
(E800–E999) Accidents, poisonings and violence	*3·8*	*3·9*	*4·2*	*4·1*	*4·2*	*4·2*	*4·3*	*4·3*

Table VI of Appendix A (page 262) gives standardized mortality ratios (all ages) for certain causes and death rates at ages under 15 from the more important infectious diseases from 1901–1910 or as far back as records permit. The enormous improvement in the mortality from infectious diseases is well shown here and can be compared with the relatively stable position of many of the other causes of death.

Table IV below shows recent Standardized Mortality Ratios for tuberculosis. For both sexes and both forms of the disease the trend is steadily downward.

TABLE IV

Tuberculosis: Standardized mortality ratios, 1931–1959

	Respiratory tuberculosis (001–008)		Other forms of tuberculosis (010–019)	
	M.	F.	M.	F.
1931	253	336	425	417
1938	178	224	287	283
1948	150	185	175	184
1950	115	127	113	117
1951	102	102	106	110
1952	83	72	80	73
1953	70	61	60	62
1954	63	52	52	50
1955	53	41	42	38
1956	44	32	31	33
1957	39	27	30	34
1958	36	26	29	29
1959	32	21	21	24

S.M.Rs. for cancer (all forms) since 1931 are shown in Table V. The slow upward trend for males is almost entirely attributable to the increase in the number of deaths assigned to cancer of the lung.

TABLE V

Standardized Mortality Ratios, 1931–1959
Cancer, including Hodgkin's disease and Leukaemia (140–205)

	1931	1938	1948	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Males ..	86	89	95	98	101	101	102	103	104	105	106	106	107
Females ..	108	107	101	101	99	99	98	98	98	97	96	97	97
Persons ..	97	98	98	100	100	100	100	101	101	101	101	101	102

Maternal Mortality

With over three quarters of a million births (live and still) occurring in England and Wales in 1959, only 243 women died from the effects of pregnancy and childbearing, a maternal mortality rate of 0·32 per 1,000 total births compared with 0·35 in 1958. There were a further 47 deaths from abortion.

Table VIII of Appendix A (page 263) shows the individual causes of death ascribed to pregnancy and childbearing for the years 1953–1959. Although fluctuations are bound to occur with such small numbers the general trend for all the important causes is clearly downwards with the possible exception of other sepsis of pregnancy where the number of deaths has remained fairly constant at about fifteen per year.

Infant and Child Mortality

The infant mortality rate in 1959 was 22·2 per 1,000 live births. This is the lowest figure recorded in this country and compares with a rate of 22·5 per 1,000 in 1958.

The neonatal mortality fell from 16·2 per 1,000 live births in 1958 to 15·9 in 1959. On the other hand the rate for children aged between three and six months remained constant for the second successive year and that for children aged between six and twelve months actually rose slightly. These figures represent a noteworthy change from the position which is normally reported in this country with the neonatal rate falling more slowly than post-neonatal mortality rate. Now, in 1959, the position is reversed with the neonatal rate continuing its downward course but the late post-neonatal rate showing this slight rise referred to above. The position will require careful watching.

Table VI gives infant mortality rates in recent years in several countries. Particularly noticeable are the low rates in recent years in the Netherlands and Sweden.

TABLE VI

Infant Mortality Rates. England and Wales 1921–1959 together with those of certain other countries

	1921–25	1931–35	1941–45	1952	1953	1954	1955	1956	1957	1958	1959
England and Wales	76	62	50	28	27	25	25	24	23	23	22
Wales	81	69	57	33	31	32	31	29	28	26	24
Scotland	92	81	68	35	31	31	30	29	29	28	28
Northern Ireland	82	78	73	39	38	33	32	29	29	28	28
Irish Republic	70	68	75	41	39	38	37	36	33	35	32
Australia	58	41	35	24	23	22	22	22	21	20	22
Canada	98	75	55	38	35	32	31	32	31	30	28
New Zealand	43	32	30	22	20	22	22	19	20	19	20
France	95	73	82	46	42	41	39	36	34	32	30
The Federal Republic of Germany	—	—	—	48	46	43	42	38	36	36	34
Italy	127	105	108	64	59	53	49	48	50	48	45
Netherlands	69	44	50	23	22	21	20	19	17	17	17
Sweden	60	50	31	20	19	19	17	17	17	16	16
U.S.A.	74	59	41	29	28	27	27	26	26	26	26

Table VII shows the perinatal mortality rates (still births together with deaths during the first week of life) and the infant mortality at one week and over expressed as rates per 1,000 total births. Both rates fell in 1959. Rounding off the figures has concealed the fall in the rate for deaths 1 week to under 1 year from 8·548 to 8·451.

TABLE VII

Perinatal mortality and infant mortality at one week and over per 1,000 total live and still births, 1928–1959. England and Wales

	1928 –29	1938 –39	1948 –49	1951	1952	1953	1954	1955	1956	1957	1958	1959
Still births and deaths under 1 week (combined) per 1,000 total births	61·1	58·6	38·2	38·2	37·5	36·9	38·1	37·4	36·7	36·2	35·0	34·1
Deaths of infants aged 1 week but under 1 year per 1,000 total births	45·8	29·4	17·6	14·0	12·1	11·7	10·3	10·0	9·2	8·8	8·5	8·5

Tables X and XI of Appendix A (pages 265, 267) give details of infant and neonatal mortality by sex and cause for 1911–59 and 1921–59 respectively.

Child mortality since 1936 is shown in Table XII of Appendix A (page 268). There were rises in that recorded for ages 1, 3 and 4 while that for 2 fell slightly. This is the exact opposite to what occurred in 1958. These fluctuations are to be expected now that the mortality at these ages is so low. Further permanent reduction in the death rates at these ages, although possible, will be difficult to achieve.

Summary of Principal Mortality Statistics

The principal mortality statistics for certain years from 1908 onwards are shown in Table VIII, page 31.

Notifiable Infectious Diseases

Original notifications are the formal notifications sent by medical practitioners to local medical officers of health. The numbers of these are published in the Registrar General's Weekly Returns. Each medical officer of health makes a quarterly return to the Registrar General giving the corrected total of notifications of each disease after revision of diagnosis has been made either by the notifying practitioner or at the hospital where the patient was admitted; details of sex and age are also given. No corrected figures are received in respect of Port Health Authorities. Throughout this report, except where otherwise stated, the notification figures include those relating to non-civilians.

Table XIII of Appendix A (page 268) gives numbers of original and final notifications of infectious diseases during 1957, 1958 and 1959. These diseases are discussed in greater detail in the next chapter. Tables XVIII and XIX of Appendix B (pages 271 and 272) give similar details for tuberculosis, discussed further in Chapter IV.

Although no death was assigned to diphtheria there were 102 corrected notifications of the disease, more than in any year since 1955. This is, in itself, a warning that vigilance must not be relaxed and that immunization should be maintained at as high a level as possible.

The number of notifications of dysentery fell slightly when compared with 1958 but still remained above 35,000.

TABLE VIII

England and Wales. Principal Mortality Statistics, 1908, 1938, 1948 and 1954 to 1959, compared with 1950–52

	1908	1938	1948	1950–52 (Annual averages)	1954	1955	1956	1957	1958	1959
1. *Crude death rate* per thousand living (all causes) ..	*14·8*	*11·6*	*11·0*	*11·8*	*11·3*	*11·7*	*11·7*	*11·5*	*11·7*	*11·6*
2. *Mortality per cent. of 1950–52 mortality* (after adjustment for sex and age differences in the population) ..	*223*	*119*	*95*	*100*	*93*	*95*	*94*	*91*	*92*	*91*
3. *Still births*	*	24,729	18,399	15,902	16,200	15,829	16,405	16,615	16,288	15,901
Rates per 1,000 total births	*	*38*	*23*	*23*	*23*	*23*	*23*	*22*	*22*	*21*
4. *Deaths under 1 year*	113,254	32,724	26,766	19,865	17,160	16,613	16,554	16,720	16,685	16,629
Rates per 1,000 live births†	*120*	*53*	*34*	*29*	*25*	*25*	*24*	*23*	*23*	*22*
5. *Deaths at ages 1–14 years*	70,239	19,262	8,853	6,976	5,110	5,391	4,922	5,286	4,843	5,045
Rates per million living	*7,027*	*2,335*	*1,037*	*771*	*550*	*575*	*519*	*553*	*504*	*523*
6. *Deaths from Maternal Causes* (including abortion) ..	3,361	2,096	811	536	446	405	374	333	328	290
Rates per 1,000 total births	*3·57*‡	*3·24*	*1·02*	*0·77*	*0·65*	*0·59*	*0·52*	*0·45*	*0·43*	*0·38*
7. *Tuberculosis* (all forms) { *Deaths*	56,080	25,539	21,675	13,453	7,897	6,492	5,375	4,784	4,480	3,854
Rates per million living ..	*1,595*	*620*	*507*	*307*	*178*	*146*	*120*	*107*	*99*	*85*
8. *Diphtheria* .. .. { *Deaths*	5,569	2,861	155	34	8	12	3	4	8	—
Rates per million living ..	*158*	*69*	*4*	*1*	*0*	*0*	*0*	*0*	*0*	—
9. *Cancer of lung* .. { *Deaths*	367	4,658	10,162	13,189	16,264	17,199	18,097	19,028	19,820	21,063
Rates per million living ..	*10*	*113*	*238*	*301*	*361*	*387*	*405*	*424*	*439*	*464*
10. *Cancer of other sites* .. { *Deaths*	32,350	63,523	71,493	73,142	73,831	74,141	74,613	74,989	75,984	76,054
Rates per million living ..	*920*	*1,541*	*1,672*	*1,667*	*1,668*	*1,668*	*1,670*	*1,670*	*1,684*	*1,676*

* Not available.
† Based on related live births from 1938–1956.
‡ Based on live births only.

As might have been anticipated, 1959 was the year in which the biennial rise in measles epidemicity occurred and over half a million cases were notified. This was almost 100,000 cases less than in 1957, the last epidemic year.

Although the number of deaths from meningococcal infections rose slightly, the number of notifications fell.

The number of notifications of poliomyelitis was only half that of 1958 which had itself been a " good " year.

One of the interesting occurrences of recent years has been the increase in the number of cases of scarlet fever being notified. In 1959 there were 47,914 corrected notifications, more than in any year since 1953. Although the number of cases has increased there seems to be no evidence of increase in virulence.

International Mortality Statistics

It is impossible to make worthwhile comparisons of mortality by cause in different countries without hedging them around with saving clauses. This is mainly because of the different standards of diagnosis in these countries and the different terminology used. This does not mean to say the comparisons should not be made. Indeed they are often very useful, but they should be made with a full realisation of the difficulties involved.

TABLE IX

Death rates by sex and age per 100,000 population.
England and Wales and certain other countries

Males

<table>
<tr><th></th><th>Year</th><th>Under 1 year</th><th>1–4</th><th>5–14</th><th>15–24</th><th>25–44</th><th>45–64</th><th>65 and over</th><th>All ages</th></tr>
<tr><td>U.S.A. ..</td><td>1955</td><td colspan="2">757·6</td><td>58·4</td><td>162·4</td><td>283·3</td><td>1,534·1</td><td>7,025·9</td><td>1,076·6</td></tr>
<tr><td>Chile .. ..</td><td>1952</td><td>17,291·9</td><td>1,160·7</td><td>203·1</td><td>387·9</td><td>696·1</td><td>2,004·2</td><td>7,931·9</td><td>1,479·8</td></tr>
<tr><td>Israel .. ..</td><td>1956</td><td colspan="2">882·2</td><td>53·6</td><td>247·6</td><td>192·1</td><td>942·3</td><td>6,207·0</td><td>667·3</td></tr>
<tr><td>Canada ..</td><td>1956</td><td colspan="2">928·3</td><td>69·6</td><td>147·5</td><td>225·7</td><td>1,241·4</td><td>6,663·7</td><td>939·4</td></tr>
<tr><td>Ceylon ..</td><td>1953</td><td colspan="2">3,358·6</td><td>225·6</td><td>188·3</td><td>333·0</td><td>1,134·7</td><td>7,239·6</td><td>1,065·3</td></tr>
<tr><td>France ..</td><td>1955</td><td>3,937·5</td><td>191·3</td><td>48·8</td><td>130·8</td><td>290·7</td><td>1,439·0</td><td>7,736·5</td><td>1,278·3</td></tr>
<tr><td>Netherlands ..</td><td>1955</td><td>2,330·5</td><td>136·8</td><td>59·7</td><td>83·9</td><td>146·8</td><td>949·6</td><td>6,229·5</td><td>807·7</td></tr>
<tr><td>England and Wales</td><td>1955</td><td>2,881·5</td><td>103·6</td><td>47·1</td><td>102·9</td><td>188·9</td><td>1,353·5</td><td>8,294·7</td><td>1,248·2</td></tr>
</table>

Females

<table>
<tr><th></th><th>Year</th><th>Under 1 year</th><th>1–4</th><th>5–14</th><th>15–24</th><th>25–44</th><th>45–64</th><th>65 and over</th><th>All ages</th></tr>
<tr><td>U.S.A. ..</td><td>1955</td><td colspan="2">589·6</td><td>38·0</td><td>67·4</td><td>172·0</td><td>837·5</td><td>5,384·6</td><td>788·1</td></tr>
<tr><td>Chile .. ..</td><td>1952</td><td>15,078·6</td><td>1,251·3</td><td>183·2</td><td>347·5</td><td>569·4</td><td>1,419·4</td><td>6,944·8</td><td>1,286·8</td></tr>
<tr><td>Israel .. ..</td><td>1956</td><td colspan="2">820·7</td><td>41·9</td><td>69·2</td><td>136·6</td><td>746·6</td><td>5,640·2</td><td>593·0</td></tr>
<tr><td>Canada ..</td><td>1956</td><td colspan="2">756·5</td><td>42·8</td><td>55·7</td><td>137·3</td><td>754·7</td><td>5,384·5</td><td>698·5</td></tr>
<tr><td>Ceylon ..</td><td>1953</td><td colspan="2">3,256·7</td><td>262·8</td><td>299·6</td><td>481·6</td><td>1,026·0</td><td>7,748·3</td><td>1,136·8</td></tr>
<tr><td>France ..</td><td>1955</td><td>3,060·0</td><td>171·0</td><td>34·2</td><td>63·0</td><td>173·9</td><td>791·6</td><td>5,748·1</td><td>1,142·1</td></tr>
<tr><td>Netherlands ..</td><td>1955</td><td>1,770·1</td><td>111·7</td><td>38·6</td><td>41·8</td><td>116·9</td><td>630·4</td><td>5,560·9</td><td>706·3</td></tr>
<tr><td>England and Wales</td><td>1955</td><td>2,188·7</td><td>96·9</td><td>34·2</td><td>47·5</td><td>143·6</td><td>768·2</td><td>6,070·7</td><td>1,092·7</td></tr>
</table>

A comparison of mortality for all causes can, however, be made directly and depends for its success only on the reasonably complete registration of death with accurate recording of the age of the deceased. Table IX on page 32 compares the mortality by age and sex in several different countries with that of England and Wales.

Child mortality 1–14 in England and Wales was lower than in any of the other countries shown although infant mortality was lower in the Netherlands. With increasing age the Netherlands again has the lowest death rates with England and Wales in the next most favourable position although Israel and Canada have a lower rate than this country for females aged 25–44. Between the ages of 15 and 44 the relatively unfavourable position of the United States may cause some surprise. Above the age of 45 mortality among males in England and Wales takes on a much less favourable appearance, although for females the position is better.

For males over 65 England and Wales has the highest mortality of all the countries shown. Two conditions spring to mind as being partly responsible for this state of affairs; cancer of lung and coronary disease. However, the cause would seem to be much more complex than this. Its detection and elimination provide medical science in this country with probably the greatest problem of the century.

Morbidity Statistics from General Practice

In the Report for 1958 a brief summary was given of the first volume of the results of an investigation carried out by the College of General Practitioners and the General Register Office in which 171 doctors in general practice kept records of all consultations given to their national health service patients. A second volume* has now been published relating to the distribution of morbidity according to the occupation of the patient. It presents the results of some 280,000 clinical records from over a hundred practitioners (not all of the 171 doctors mentioned above were able to participate in the occupational study).

In studying occupational morbidity as revealed by this survey it must be remembered that many of the rates for persons of working age will be influenced by the necessity to obtain medical certificates of incapacity. The incapacity itself will also vary in its effect according to the occupation. Thus a severe cold may keep an employer at home, but he may not require medical attention and does not require a certificate of incapacity. For his employee, however, although medical attention may not be necessary a medical certificate will be. Similarly, strained muscle may keep a manual worker off work but would not affect a sedentary one. Both these factors may have a considerable effect on the published rates and it should therefore be remembered that differences do not necessarily reflect different levels of morbidity but may show instead the effect of the same level of illness on different occupational groups.

Morbidity among Men

The picture which emerges from the analysis of morbidity among working males is by no means clear, possibly for the reasons mentioned above.

* Studies on Medical and Population Subjects No. 14. Morbidity Statistics from General Practice. Volume II (Occupation) by W. P. D. Logan. H.M.S.O., London.

Nevertheless, some fairly definite findings have emerged. These are summarized in the table below, necessarily with a considerable amount of simplification. Morbidity above the average is indicated by + and below the average by —.

	Agricultural Occupations	*Non-manual Occupations*	*Manual Occupations*
Psychoneurotic disorders ..	—	+	—
Cardiovascular disorders ..	—	+	—
Respiratory disorders ..	—	—	+
Gastric disorders	—	—	+
Arthritis and Rheumatism ..	—	—	+
Injuries	—	—	+

Morbidity among Women

Women were classified according to their own occupation and also according to whether or not they had family responsibilities. The patient consulting rates per 1,000 women are summarized for five diagnoses and three age groups in the table below.

Patient consulting rates per 1,000 females in selected occupational categories by age-groups: five selected diagnoses

Int. Classn. No.	Selected diagnosis	Age-group								
		15–44			45–64			65 and over		
		Working full-time			Working full-time			Working full-time		
		With family responsibilities	Without family responsibilities	Housewives	With family responsibilities	Without family responsibilities	Housewives	With family responsibilities	Without family responsibilities	Housewives
	All diseases and conditions	788	655	644	750	646	628	636	599	695
310–318	Psychoneurotic disorders	92	61	72	85	79	83	82	60	58
470	Acute nasopharyngitis (common cold) ..	124	89	61	91	73	49	67	63	51
500–502	Bronchitis	64	32	31	104	65	55	82	89	103
634	Disorders of menstruation	61	51	46	15	9	11	—	—	—
720–727	Arthritis and rheumatism (except rheumatic fever)	78	42	55	136	104	109	118	114	148

The highest rates in the 15–44 and 45–64 year age group were those for women working full-time and with family responsibilities. Over 65 years of age housewives had the highest consulting rate for all diagnoses and for bronchitis and arthritis and rheumatism. This last might be partly accounted for by the fact that housewives in this group would have been older, on the average, than women in the other two groups. It should also be remembered here that patient consulting rates may not reflect the true morbidity rate for reasons given above.

Morbidity among Children

Children were classified according to the social class of their father. Among those conditions which showed a relationship with social class the following may be mentioned.

Morbidity declining from social class I to V:*

- Whooping cough
- Asthma
- Acute laryngitis
- Acute upper respiratory infections
- Pyrexia of unknown origin

Increasing from social class I to V:*

- Acute Poliomyelitis
- Measles
- Infectious hepatitis
- Epilepsy
- Bronchitis
- Impetigo
- Cough
- Lacerations and contusions

---

* The categories known as social classes are as follows:—

Class I. Professional, etc., occupations.
Class II. Intermediate occupations.
Class III. Skilled occupations.
Class IV. Partly skiiled occupations.
Class V. Unskilled occupations.

(' ('
1 3

II A

GENERAL EPIDEMIOLOGY

Diphtheria

	Annual Average 1916/25	Annual Average 1933/42	1951	1952	1953	1954	1955	1956	1957	1958	1959
Corrected notifications*	51,753†	55,125†	664	376	266	173	155	53	37	80	102
Deaths‡	4,214	2,783	30	23	20	8	12	3	4	8	—
Fatality Ratio (deaths per 100 notifications) ..	8·2	5·0	4·5	6·1	7·5	4·6	7·7	5·7	10·8	10·0	—

* Including original notifications from Port Health Districts (1954, 7; 1955, 1; 1956, 2; 1957, 0; 1958, 2; 1959, 0).
† Partially corrected.
‡ Figures from 1951 to 1957 included deaths occurring when the interval between the onset of the disease and death exceeded 1 year. These have now been excluded.

In my report for 1958 I noted that for the first time since 1943 there had been an increase in the number of cases over the previous year. There was a further increase in 1959, the total of 102 being the highest since 1955. It is more encouraging to note that the disease was, in the main, mild and it is particularly satisfactory that for the first time there was no death attributed to diphtheria.

The increase in the number of cases resulted from a series of localised outbreaks in London boroughs, those particularly affected being Finsbury, Islington and Camberwell. There had been school outbreaks in Finsbury in the autumn of 1958 to which I referred in my Annual Report for that year and in one of the schools concerned at that time cases occurred again in the summer and autumn of 1959. Subsequently there were also cases in schools in the neighbouring borough of Islington and towards the end of the year there was a similar outbreak in a school in Camberwell. These outbreaks are more fully described on page 77.

Despite the increase in total incidence, the number of foci of diphtheria was remarkably small. Only 25 sanitary districts notified cases during the year and of these nine were London boroughs from which 74 of the cases were notified. Sixteen sanitary districts in the rest of the country notified the remaining 28 cases between them. These were six notifications from Coventry, three of the patients being children from one family. One other small outbreak deserves mention. Three notifications were made from Wycombe R.D., Buckinghamshire, the cases again being associated with a primary school. Before this, there had been no case notified from Buckinghamshire for nearly eight years.

It is very satisfactory to note that 88 local health authorities have now completed five years without a notification of diphtheria. In Canterbury, there has not been a notification since 1946.

The medical officers of health concerned have again been asked to give particulars about the cases notified in their districts. In the school outbreaks in London it was often difficult to decide which of the patients from whom swabs positive for diphtheria organisms were obtained should be regarded as cases and which as carriers. Illness was in general mild and many of those who were eventually notified had only slight symptoms of illness.

In the country as a whole, of the 102 notified cases, 38 had received primary or reinforcing immunization within five years, 40 had no previous record of immunization and 24 had a history of incomplete or doubtful immunization or of immunization more than five years previously. One of the patients was under one year old, 9 were between 1 and 4 years old, 61 were between 5 and 9, 16 were between 10 and 14, and 15 were over 15. That such a considerable proportion were between 5 and 14 reflects the fact that so many of the cases in the London outbreaks were among children attending infant and junior schools.

This age incidence, together with the decline in the number of reinforcing doses given at the time of school entry, emphasises the comment about this possible association which I made in my Report for 1958 (page 38). A considerable number of the school children notified had received a primary course of immunization in infancy but had not had a reinforcing dose. It is fortunate that the illness was so mild in the majority of cases but the organisms concerned were toxigenic and there is no reason to assume that, if further outbreaks occur, more serious cases might not result.

The immunization index for children under 5, which expresses as a percentage of the total in the age group the number who have completed a course of primary immunization, has shown a slight rise to 56·3 compared with 54·0 in 1958. It cannot be emphasised too often that immunity should not be allowed to wane and that a reinforcing dose shortly before school entry is of great importance. Immunization schedules should be planned to provide maximum protection at the time of maximum risk.

Scarlet Fever and Streptococcal Infections

Scarlet Fever

Notifications of scarlet fever were 47,919 in the year, an increase of some 9,000 over the preceding year and the highest total for the past six years. Though more prevalent, there is nothing to suggest that the disease has increased in severity; there was only one death.

Corrected Scarlet Fever Notifications and Deaths in England and Wales 1940–1959

Year	Corrected* notifications	Deaths	Fatality ratio†	Year	Corrected* notifications	Deaths	Fatality ratio†
1940	65,302	154	0·24	1950	65,889	33	0·05
1941	59,433	133	0·22	1951	48,744	15	0·03
1942	85,084	104	0·12	1952	67,261	8	0·01
1943	116,034	134	0·12	1953	61,180	4	0·01
1944	92,671	107	0·12	1954	43,026	4	0·01
1945	73,687	84	0·11	1955	32,619	2	0·01
1946	56,730	43	0·08	1956	33,103	1	0·00
1947	58,047	42	0·07	1957	29,547	3	0·01
1948	74,831	37	0·05	1958	38,853	4	0·01
1949	70,667	27	0·04	1959	47,919	1	0·00

* Including original notifications in Port Health Districts.

† Deaths per 100 notifications. The deaths from 1951 to 1957 included those occurring when the interval between the onset of the disease and death exceeded one year. These have now been excluded.

The seasonal incidence showed little variation from that of former years; notifications each year are highest in autumn and winter, less in the spring and lowest in the summer, with marked recessions corresponding to the school holidays.

Numerically, the increase was most apparent in the north west, the midlands, London and the home counties.

Spread of scarlet fever depends in the main on personal proximity. Local variations in incidence suggest that infection is somewhat more prevalent in the larger centres of population.

Streptococcal infections

During the year a number of small outbreaks of streptococcal infection were reported by the Public Health Laboratory Service laboratories from widely separated parts of the country. Many of these outbreaks were in schools, both day and residential. As in former years, the services of the central reference and regional streptococcal typing laboratories of the Public Health Laboratory Service continued to be of the greatest value in defining the bacterial sero-type concerned. In several outbreaks, Type 12 was found. As I have indicated in recent reports, this type is often associated with acute nephritis. In areas in which this complication was most frequently detected, attempts were made to secure the administration of prophylactic penicillin to close contacts and others at special risk of developing nephritis.

In one outbreak in the midlands several cases of rheumatism occurred in association with streptococcal infection in a school.

Measles

Corrected notifications, deaths and fatality ratios per cent. since notification began

Year	Corrected notifi-cations *	Deaths	Fatality Ratio‡	Year	Corrected notifi-cations *	Deaths	Fatality Ratio‡
1940 ..	409,521†	857	0·21	1950	367,725	221	0·06
1941 ..	409,715†	1,145	0·28	1951	616,192	317	0·05
1942 ..	286,341†	458	0·16	1952	389,502	141	0·04
1943 ..	376,104†	773	0·21	1953	545,050	242	0·04
1944 ..	158,479	243	0·15	1954	146,995	45	0·03
1945 ..	446,796	729	0·16	1955	693,803	174	0·03
1946 ..	160,402	204	0·13	1956	160,556	28	0·02
1947 ..	393,787	644	0·16	1957	633,678	94	0·01
1948 ..	399,606	327	0·08	1958	259,308	49	0·02
1949 ..	385,935	307	0·08	1959	539,524	98	0·02

* Including original notifications in Port Health Districts.
† Only partly corrected.
‡ Deaths per 100 notifications. The deaths from 1951 to 1957 included those occurring where the interval between the onset of the disease and death exceeded one year. These have now been excluded.

During the first half of the year there was a moderately high prevalence of measles. Notifications, which had begun to increase during the autumn of 1958, rose sharply in January to reach a peak of 26,461 in the week ended 21st February, 1959. The weekly incidence stayed at a high level until the middle of April, after which it gradually declined and remained low throughout the last four months of the year.

The number of deaths attributed to measles was 98 (49 male, 49 female). Their age distribution was: under 1 year, 23; 1–4 years, 39; 5–14 years, 25; 15 years or more, 11. The fatality ratio of 0·02 deaths per 100 notifications was similar to that of the past few years, and less than one-tenth of the ratio recorded when notification began in 1940

During the past twenty years measles has shared with many other forms of infectious disease a steady improvement in fatality ratios. The incidence of the disease, however, has remained high, and for this reason measles has come to assume a relatively greater importance as a cause of death when compared with diseases such as diphtheria, whose fatality rates are higher but whose incidence has declined. In the five years 1955–59 the total number of measles deaths was 443, which exceeded the total number of deaths from whooping-cough (318) and diphtheria(27) in the same period.

The diminution in the measles fatality ratio can be attributed in great part to modern methods of treatment of the secondary bacterial infections, which so often complicate the course of this disease. It is now a rare event for a child to die of bacterial pneumonia or any other secondary infection following an attack of measles. There are, however, complications, some of them due to the activity of the measles virus itself, which are not amenable to treatment with antibiotic or chemotherapeutic agents and may prove fatal. Encephalitis, for example, although uncommon, is an important contributory cause of death. Data which have been analysed by the Registrar General([1]) showed that 301 measles deaths including 5 " late effects " were registered during the years 1955–57 and that encephalitis was stated to be a secondary cause in 66 (22 per cent.) of them. Attention has also been directed in recent publications([2]) ([3]) in the United States of America to cases of giant-cell pneumonia, associated with measles virus infections, which proved fatal in children who were debilitated by other diseases.

It seems probable that any further reductions in the mortality from measles will depend largely on the practicability of specific prophylaxis. The use of gamma globulin for the prevention or modification of the disease has been found of value in suitable circumstances. The isolation of the virus of measles, mentioned briefly in my Report for 1957([4]), has been followed by the preparation of a vaccine which has undergone trial on a small scale in the United States of America.([5]) It is premature at the present time to form an opinion of the value of this vaccine or of the circumstances in which it is likely to prove useful. Nevertheless, the possibility of active immunization against measles is now a factor to be considered in the future control of this disease.

References

[1] Statistical Review of England and Wales, 1957, Part III, p. 185.
[2] Enders *et al*, 1959, *New Engl. J. Med.*, **261**, 875.
[3] Mitus *et al*, 1959, *ibid.*, **261**, 882.
[4] Ann. Rept. Min. Hlth., Part II, 1957, 43.
[5] Enders, J. F., 1959, *Connecticut Med. J.*, **23**, 561.

Whooping Cough

A striking change has taken place in the whooping cough position in the last two years. Many factors have probably been at work to ensure this. We can point to better housing, good nutrition, ready access to medical and nursing care and more efficacious therapy as factors which have each played a part in the general improvement in the health of the child and in the early and adequate treatment of the recognised infective hazards of childhood, among which whooping cough ranks high.

Corrected notifications, deaths and fatality ratios per cent. since notification began

Year	Corrected notifications		Deaths†					Fatality Ratio
	All ages	Under 1 year	All ages	Total under 1 year	Under 3 months	3–5 months	6–11 months	
1940	53,607*	N.A.	678	357	75	95	187	1·26
1941	173,330*	N.A.	2,383	1,218	345	334	539	1·37
1942	66,016*	N.A.	799	487	137	123	227	1·21
1943	96,136*	N.A.	1,114	621	158	181	282	1·16
1944	93,990	10,071	1,054	686	204	211	271	1·12
1945	62,687	6,649	689	412	111	127	174	1·10
1946	92,912	9,368	808	512	153	160	199	0·87
1947	92,662	11,000	905	564	151	181	232	0·98
1948	146,383	14,932	748	484	160	154	170	0·51
1949	102,809	9,724	527	357	99	119	139	0·51
1950	157,752	13,045	394	277	75	105	97	0·25
1951	169,347	14,796	453	273	87	71	115	0·27
1952	114,863	10,208	181	111	28	41	42	0·16
1953	157,835	13,978	243	167	54	54	59	0·15
1954	105,904	9,438	139	95	40	29	26	0·13
1955	79,101	7,093	87	60	20	23	17	0·11
1956	92,407	8,466	92	63	21	21	21	0·10
1957	85,017	7,604	87	68	22	23	23	0·10
1958	33,400	3,306	27	18	8	7	3	0·08
1959	33,252	3,319	25	16	6	5	5	0·08

* Only partly corrected.

† The deaths from 1951 to 1957 included those occurring where the interval between the onset of the disease and death exceeded one year. These have now been excluded.

In 1959, notifications of whooping cough were 33,252 of which 3,319 were of children under one year of age and 15,461 of those aged 1–4 years.

There were 25 deaths in all of which 16 were in children under one year of age. Of these 16 deaths, 11 were in infants less than six months old.

Thus, while only 10 per cent. of the cases were in infants, 64 per cent. of all deaths from whooping cough were in infancy and of these 69 per cent. were in those under six months old.

As in former years, the incidence of whooping cough was slightly higher in females.

Immunization against whooping cough

All save two of the local health authorities now provide immunization against whooping cough and make an annual return to this Department of inoculations carried out.

The table below summarizes these returns for 1959 and for 1958, the first year for which information was available in this form.

	Year	Age at date of final injection		
		0–4	5–14 years	Total
Number of children who have completed a primary course (normally 3 injections) of pertussis vaccine (singly or in combination) in the Authority's area during the year ended 31st December, 1958.	1958	458,461	11,829	470,290
	1959	510,748	17,197	527,945

Prophylaxis can be expected both to benefit directly those who are themselves immunized and to reflect this benefit on those not immunized by reducing the general pool of infection and the risks of the school child conveying infection to younger children at home.

Influenza

The influenza of the winter of 1958–59 was noteworthy for two reasons, its unusually late appearance and the co-existence of outbreaks due to two distinct types of virus, A2 and B.

There was very little influenza in the country until mid-January though sporadic cases due to virus A2 were reported from several places during late 1958. It was this virus sometimes called A Asian which was largely responsible for the epidemic wave which occurred in the first quarter of 1959.

From the end of January the mortality mounted steadily. In the weeks ended 31st January, 7th and 14th February deaths from influenza in England and Wales were 54, 144 and 455 respectively, and for the next three weeks exceeded 1,000, the week with the highest fatality (1,572) being the last week in February. After that the weekly total of influenza deaths fell steadily though somewhat slowly to less than 100 in the week ended 25th April.

Deaths from influenza totalled 7,862 for the year, of which 7,269 occurred in February, March and April. 5,661 were in those aged 65 and over.

Pneumonia deaths exceeded 1,000 in each week from mid-February to late March, the highest total being 2,121 at the end of February.

Deaths from bronchitis rose from 1,125 in the week ended 17th January to 1,909 in that ended 21st February. From then deaths from bronchitis exceeded 1,000 in each week until the week ended 21st March.

In the Greater London conurbation, where the deaths occurring in each day have been studied, these rose to a steeple-like peak on 19th February which was the second day of a dense fog.* Atmospheric conditions may therefore have had an effect in determining the time at which the epidemic mortality reached its peak.

Together, deaths from influenza, pneumonia and bronchitis in 1959 exceeded those of the preceding year by nearly 8,000, and the greater part of this increase may reasonably be attributed to the influenza outbreak.

* Martin, A. E., Bradley, W. H., 1960, *Mon. Bull. Min. Hlth*, **19**, 56.

During February, March and April weekly notifications of pneumonia exceeded 1,000 from mid-February (1,464 in the week ended 14th February) to late March (1,452 in the week ended 21st March), the highest total being 2,926 in the last week of February.

Morbidity

The most reliable nation-wide index of influenza morbidity remains the increase in new claims to sickness benefit seen in every influenza outbreak.

The following table based on information kindly supplied by the Ministry of Pensions and National Insurance shows that the main effect of the year's influenza was felt in the six weeks 10th February–17th March.

Weekly new claims on Ministry of Pensions and National Insurance (England, Wales and Scotland)

January–March, 1959

Week ended	*Total new claims*
27th January	208,358
3rd February	236,267
10th February	299,574
17th February	408,383
24th February	449,238
3rd March	388,213
10th March	293,392
17th March	231,369
24th March	190,166
31st March	123,352

The number of new claims—449,238—for the last week in February was the highest recorded, apart from the peak period of the 1957 influenza epidemic, since the establishment of the Ministry of Pensions and National Insurance.

Influenza Vaccines

The availability of influenza virus vaccines on a commercial scale gave rise during the year to many enquiries from medical officers of health, general medical practitioners and members of the public. The questions which were most frequently raised concerned the safety and efficacy of the vaccines, the indications for their use and the arrangements for their supply.

During the past twenty years vaccines prepared from a variety of strains of influenza virus have been subjected to extensive clinical trials, both in the United States and in Great Britain. The troublesome reactions, which were associated with some of the earlier vaccines, have now been obviated by improved methods of preparation. As a result, the administration of inactivated influenza virus vaccines produced by modern techniques can be regarded as a reasonably safe procedure. The small amounts of egg or chicken protein, which are present in the finished product, constitute a risk to persons sensitive to these substances and the desirability of vaccinating allergic subjects may need careful consideration. Some influenza vaccines incorporate aluminium phosphate as an adjuvant.

This is open to objection, since the use of other alum-containing prophylactics has been shown(1) to carry an enhanced risk of provoking paralysis in cases of poliomyelitis infection. No such adverse effect has been recorded in association with influenza vaccine, but the possibility that it could occur must be conceded. The Medical Research Council's Committee on Influenza and Other Respiratory Virus Vaccines has continued to study the properties of vaccines prepared with adjuvants other than aluminium phosphate.

To be effective as a prophylactic, inactivated influenza virus vaccine must be capable of inducing antibody formation, a property which can be studied by serological methods. Carefully controlled field trials have established that the administration of such a vaccine is followed by the development of specific immunity to infection. The protection afforded is of the order of 60 per cent. The duration of the antibody response is seldom more than one year and, for this reason, annual doses of vaccine have been thought necessary if immunity is to be maintained. It is possible that protection from illness may outlast the presence of detectable antibody, but further information is needed on this point as also on the effect of repeated doses of vaccine. In the existing state of knowledge success in the prevention of illness during winter outbreaks of influenza would appear to depend on the administration of a suitable vaccine, preferably in the latter part of the preceding autumn. The relative merit of monovalent, bivalent and polyvalent vaccines is a subject on which there is some diversity of expert opinion but, for practical purposes, a bivalent vaccine prepared from recent epidemic variants of influenza viruses A and B respectively is considered to be a reasonable compromise.[2] Recommendations for prophylaxis and public health measures in the control of influenza are contained in a report by the W.H.O. Expert Committee on Respiratory Virus Diseases.[3] The Committee was unanimous that vaccines should contain a representative strain of the A2 sub-group or family of viruses currently prevalent.

The prediction of influenza outbreaks cannot be made with certainty and the practical application of influenza vaccines for their control is further complicated by the fact that new variants, especially of influenza Virus A, may develop, against which pre-existing vaccines prove to be relatively impotent. This situation arose during the pandemic of 1957, which was associated with a new variant, known as the Asian variant, of influenza virus A. The steps which were then taken to prepare, test and distribute an effective vaccine, were described briefly in my Report[4] for that year. The subject has been discussed in greater detail in a recent Ministry of Health publication[5] where suggestions are made for the control of future invasions by new influenza virus variants.

In order to effect a material reduction in morbidity from influenza it would be necessary to offer protection on a wide scale. This may well be indicated under the threat of an impending epidemic, but it is doubtful if such a course would be justifiable as a regular preventive measure in the absence of evidence of a longer period of immunity following vaccination than obtains at present. An alternative objective would be the protection of persons at special risk from complications. A joint working party of the Medical Research Council's Committee on Influenza and other Respiratory Virus Vaccines and of the Research Committee of the British Tuberculosis Association has been studying the effects of influenza vaccines on the acute exacerbations of illness which occur in patients with chronic bronchitis. To what extent such exacerbations are associated with influenza virus infections or attributable to other causes is not known and it is hoped that the present studies may throw some light on this matter. The difficulty experienced in differentiating virus influenza on clinical grounds from influenza-like illnesses due to other agents makes interpretation of such studies far from easy. A report by the working party[6] on a field trial, conducted during the winter of 1957–58, showed that protection from clinical influenza was provided by an Asian type vaccine in groups of male patients, but not apparently in the females included in this investigation. No evidence was obtained of a protective action against attacks of bronchitis or other respiratory diseases or of a reduction in mortality.

It is still a matter of some uncertainty how best to make use of the influenza vaccines at present available. Throughout 1959 vaccination against influenza was available under the general medical service and it was left to practitioners to decide whether or not it was desirable in an individual case.

References

[1] *Lancet*, 1956, ii, 1223.
[2] *Brit. med. J.*, 1959, ii, 748.
[3] *Wld. Hlth. Org. techn. Rep. Ser.*, 1959, 170.
[4] Page 47.
[5] Reports on Public Health and Medical Subjects No. 100. The Influenza Epidemic in England and Wales 1957–1958 (H.M.S.O., 1960).
[6] *Brit. med. J.*, 1959, ii, 905.

Winter Respiratory Disease

The most sensitive index of winter respiratory disease is the demand for hospital accommodation for this group of illnesses as observed by the emergency bed bureaux in London, Birmingham, Liverpool and certain other large towns. Experience is required in interpreting the data for not all winter respiratory disease is influenzal in origin—regular seasonal and intermittent climatic factors, particularly cold and fog, affect demand for beds for pneumonia and bronchitis. During the winter of 1958–59 the effect of influenza was clearly discernible in London by 7th February, 1959, and continued until mid-March. In the Liverpool region the months of greatest pressure on the bed bureau are usually December and January, but during the winter of 1958–59 the expected increase was observed in December but did not reach its peak until February, and pressure was still relatively high in March, as is shown by the table below—kindly provided by Dr. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board.

Requests received (Liverpool bed bureau)

Year	November	December	January	February	March	Total
1957–58	950	1,389	1,249	858	917	5,363
1958–59	993	1,094	1,112	1,343	1,036	5,578

In Birmingham the bed bureau received 1,628 calls and arranged 1,539 admissions in January 1959. The table below, kindly provided by Dr. Christie Gordon, Senior Administrative Medical Officer, Birmingham Regional Hospital Board, shows the comparable figures for the past four years.

Requests received (Birmingham bed bureau)

	1955–56	1956–57	1957–58	1958–59
December	—	1,061	1,326	1,215
January	1,352	1,115	1,480	1,628
February	1,182	1,082	1,252	1,870
March	1,197	1,168	1,324	1,294

Great as the demand for hospital accommodation certainly was, it fell to the general practitioner to see and treat the majority of those with influenza. An excellent account of the effect of epidemic influenza on a general practice has been published during the year by Dr. John Fry of Beckenham.* Over a period of nine weeks from January to March, 14 per cent. of patients in the practice were seen with influenza and a further 6 per cent. were thought to have treated themselves. The highest rates of infection were noted in school children and adolescents, the more gregarious groups, and the lowest rates in the elderly living more retired lives. The clinical features were those common in most other influenza epidemics. While laboratory investigations showed that both influenza viruses A and B were concerned, no clinical differences could be noted between the illness caused by one virus and that due to the other.

Epidemic bronchiolitis of infants

In my Report for 1953 (page 45) I mentioned an outbreak of epidemic bronchiolitis in young children which affected many parts of the country during November and early December of that year. The seasonal rises in acute respiratory disease in the young again reached epidemic level during January and February, 1959, especially in the Birmingham area and to a less extent in London.

In Birmingham this epidemic began on 24th December, 1958, reached its peak at the end of February and thereafter rapidly declined. During the period 24th December–27th February, 292 children under the age of 2 years were admitted to hospital, all suffering from bronchiolitis, of whom 7 died. In the same period 51 children over 2 were admitted, the majority of whom suffered from broncho-pneumonia.

Close liaison was maintained between the Department's medical staff and that of the Birmingham Regional Hospital Board, and a medical officer of the Department visited the special unit for the reception of these cases at Dudley Road Hospital, Birmingham, to see the patients and discuss the outbreak with the paediatricians and the virologist concerned.

The precise cause of epidemic bronchiolitis of infants has yet to be established and the role of some of the many newly discovered respiratory tract viruses as possible causative agents is at present being investigated.

The arrangements for the study of acute respiratory diseases in the young, described elsewhere,† have continued during the past winter and reports available agree in general with that from Birmingham as to the clinical findings and seasonal distribution, although in one area, Leytonstone, the outbreak continued until the middle of April.

* Fry, J., 1959, *Brit. med. J.*, ii, 135.
† *Monthly Bull. Min. Hlth.*, 1957, **16**, 192.

Meningococcal Infection

I. Corrected notifications and deaths 1950–59 including original notifications in port health districts

Year	No. of Notifications	No. of Deaths	Fatality Ratio
1950	1,150	283	24·6
1951	1,390	298	21·4
1952	1,327	290	21·9
1953	1,354	291	21·5
1954	1,246	259	20·8
1955	1,125	205	18·2
1956	1,168	189	16·2
1957	1,016	184	18·1
1958	836	145	17·3
1959	746	159	21·3

Corrected notifications during the year declined again to the lowest total since 1950 when, under the Public Health (Acute Poliomyelitis, Acute Encephalitis and Meningococcal Infection) Regulations, meningococcal infection was made notifiable. Figures for earlier years, when "cerebrospinal fever" was notifiable, are not exactly comparable but have not been as low as the 1959 figures since 1930. The number of deaths rose slightly and there was accordingly an increase in the case fatality ratio to the highest level since 1953.

The notification rates per 100,000 population given in Table II show that the incidence is still greatest in younger children and that although it has declined steadily and appreciably over the last eight years the rate of fall has been slower in this group than among older patients. In Table III it can be seen that once again 60 per cent. of all notifications relate to children under 5 years.

II. Meningococcal infection: Notification rates per 100,000 population (excluding port health districts)

	All ages	0–	5–	15 and over
1952	3·0	21·4	4·8	0·8
1953	3·1	24·9	4·3	0·7
1954	2·8	23·5	3·7	0·6
1955	2·5	21·2	3·4	0·6
1956	2·6	20·2	3·5	0·8
1957	2·3	19·4	2·7	0·5
1958	1·9	16·1	1·8	0·5
1959	1·6	13·0	2·3	0·4

III. Total notifications in the several age groups expressed as percentages of all corrected notifications

Ages	*per cent.*
0–	60·3
5–	21·3
15–	7·4
25 and over	10·6
Unknown	0·4

Table IV below shows that, as in previous years, the fatality rate is also highest among those under 5 and is lowest among children of school age.

IV. Fatality ratios (deaths per 100 notifications) in the several age groups

All ages	.. ..	21·3
0–4	.. ..	26·3
5–15	.. ..	10·1
15 and over	.. ..	18·2

Of the 159 deaths, 118 were of children under 5 years and of these over half were of infants. It will be seen from Table V, which gives the ages of death during the first five years for each year from 1952 to 1959 inclusive, that in this respect also the pattern in 1959 resembles that in earlier years.

V. Age at death in the first five years of life

Ages	1952	1953	1954	1955	1956	1957	1958	1959
0–	115	123	105	77	71	76	72	62
1–	51	51	40	39	32	40	22	29
2–	28	28	31	15	14	8	10	14
3–	12	13	17	11	6	8	2	7
4–	9	11	4	4	5	9	4	6
Total under 5 years ..	215	276	197	146	128	141	110	118

It should be remembered that the figures in the above tables include all types of meningococcal infections although almost certainly most of them relate to meningococcal meningitis.

Poliomyelitis

I. Acute Poliomyelitis (including polioencephalitis)
Corrected notifications and deaths in England and Wales 1950–59

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
(a) Paralytic	5,565	1,529	2,747	2,976	1,319	3,712	1,717	3,177	1,419	739
(b) Non-paralytic ..	2,195	1,085	1,163	1,571	641	2,619	1,483	1,667	575	289
Total notifications*	7,760	2,614	3,910	4,547	1,960	6,331	3,200	4,844	1,994	1,028
Total deaths† ..	755	217	295	338	134	270	137	255	154	87

* Including original notifications from Port Health Districts.
† Including deaths from late effects of poliomyelitis which in years 1950 to 1959 numbered 21, 26, 20, 18, 22, 29, 23, 29, 25 and 21 respectively.

The incidence rate of poliomyelitis in 1959 was 2·3 cases per 100,000 population, this being the lowest reported rate since 1946. The previously lowest reported rate since 1947, when poliomyelitis outbreaks began to occur on a large scale annually, was 4·3 in 1948. The rate in 1958 was 4·4. The number of corrected notifications in 1959, 1,028, was over 800 fewer than in any year in the 1947–1958 period.

The number of provisional notifications was 31 in the last week of 1958 and weekly totals declined as expected during the first quarter of 1959. The seasonal increase normally found during the second quarter was very slight, the numbers rising gradually and irregularly to a maximum of 58 in the 30th week. Only in one year since 1946 has the figure in the peak week been under 100, the highest figure in 1948 being 88 in the 39th and 41st weeks. By the 45th week of 1959 the number had fallen to 24 and there was then a further decline in the closing weeks of the year. In the 51st week there were only 2 notifications, a lower figure than has been recorded in any week since 1946.

Apart from the general low incidence, a particularly satisfactory feature is the very low level in the closing weeks of the year as high figures at this time have often been followed by a high incidence in the following year. In recent years the weekly figures have normally declined in the late autumn and winter but the nadir has been delayed until about the end of the first quarter of the following year. There were only 26 notifications during the last four weeks of 1959 which is over 80 fewer than in the corresponding period in any year since 1946.

Not surprisingly, serious outbreaks were very few and of the sanitary districts where more than 5 cases occurred, only 4 had an incidence higher than 18·3 per 100,000 population which was the incidence for England and Wales as a whole in 1947. The 4 districts were Southampton C.B. with 85 corrected notifications (58 paralytic) and an incidence rate of 42·5 per 100,000, Islington Met.B. with 59 notifications (38 paralytic) and an incidence of 26·4 per 100,000, Hornsey M.B. with 22 notifications and a rate of 22·8 and Watford M.B. with 16 notifications and a rate of 21·7. Cases in Islington and Southampton accounted for 14 per cent. of all notifications in the year.

The Southampton outbreak, which began remarkably late in the year, in October 1958, is described in more detail on page 74. In Islington the onset of the outbreak was unusually early, in April, and 30 confirmed cases were notified in May and early June. After a brief period in which the outbreak appeared to be abating, several more confirmed cases occurred in July and early August, after which only occasional sporadic cases were notified. About 90 per cent. of the patients were under 15 years old. A conspicuous feature was that multiple cases occurred in several households, 5 families contributing 13 cases of whom 3 died. There were 4 deaths in all. The area from which cases were reported was localised to the northern part of the borough in the early stages though later there was some spread towards the south. The incidence in the rest of London was somewhat higher than the national level and there was also a small outbreak in Hornsey M.B., Middlesex, which borders on Islington, although few direct links were established between the Islington cases and those outside the boundary of the borough.

Among the counties, Southampton (Hampshire) had the highest rate, followed by London, which is simply an indication that the only two outbreaks of considerable size occurred within these counties. Six counties in England and six in Wales notified no case during the year.

The regional incidence rates for the last ten years are shown in Table II which indicates the generally low rates in 1959 and the effect on two regions, the Southern and the London and South Eastern, of the two large outbreaks. In 4 regions the incidence of 1 per 100,000 is the same as the lowest figure for a region recorded in 1958 (Wales).

II. Regional incidence per 100,000 population (corrected notifications)

Standard Regions	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Northern	18	5	15	6	9	5	10	6	4	2
East and West Riding ..	14	9	9	8	5	17	4	6	10	1
North Western	10	4	4	6	3	6	13	4	6	2
North Midland	19	7	4	10	4	11	4	13	5	1
Midland	33	7	6	10	3	7	3	13	3	1
Southern	20	6	12	17	3	13	6	10	6	5
South Western	31	9	10	15	7	17	4	16	4	2
Eastern	14	5	13	12	6	19	5	18	4	3
London and S.E.	14	5	11	12	4	24	9	13	3	3
England	18	6	9	10	5	15	7	11	5	2
Wales	16	5	7	9	3	10	4	9	1	1
England and Wales	18	6	9	10	4	14	7	11	4	2

Work carried out by the Public Health Laboratory Service indicated once again that Type 1 virus was much the most frequently identified type. A small number of Type 3 isolations was made, the majority of them from laboratories in Lancashire. Only a single isolation of Type 2 virus was recorded during the year.

It is likely that the increased accuracy in diagnosis which these virological investigations provide and the increased reliance on them of hospital and local authority doctors has led to some changes in habits of notification although these changes may operate in different directions. The isolation of poliovirus from the stools of a patient with the aseptic meningitis syndrome or the symptoms of abortive poliomyelitis during an outbreak has led to notifications which would otherwise not have been made. On the other hand, the failure to find the virus in a previously notified case has led to withdrawal of the notification. This has usually but not exclusively affected non-paralytic cases. It may be that these developments are not entirely logical. Valuable though these virological investigations are, no one would claim that failure to find poliovirus in the stools of a patient excludes the diagnosis of poliomyelitis or even that the presence of virus is proof of the diagnosis. Despite these limitations virus findings will continue to play an increasing part in diagnosis, but the effect on notification figures should lead to some caution when comparing present and future figures, such as the proportion of cases in a year which are paralytic or the case fatality ratio, with figures in earlier years.

It may be relevant at this stage to mention that isolations of Coxsackie virus were again numerous in 1959 and that a considerable proportion of them were from patients with meningitic illness and in a few instances from patients with encephalitis and with paralysis. Doubtless some of these patients would have been considered in earlier years to have been suffering from poliomyelitis. Rather smaller numbers of similar cases were associated with the presence of ECHO viruses and adenoviruses.

The proportion of cases occurring in different age groups is shown in Table III, the incidence by age and sex in Table IV and the deaths at different ages in Table V.

III. Proportion of poliomyelitis in certain age groups: 1959

Age Group	*Percentage*
0–4 years	41·2
5–14 years	30·0
15 years and over ..	28·8

IV. Acute poliomyelitis: incidence per 100,000 population by sex in age groups, 1959

Age	Paralytic cases per 100,000			Non-paralytic cases per 100,000		
	Males	Females	Ratio of Males to Females	Males	Females	Ratio of Males to Females
0–4 years ..	11·2	8·7	1·3	2·7	1·7	1·6
5–9 years ..	4·0	3·2	1·2	3·6	2·1	1·7
10–14 years ..	1·2	1·6	0·8	1·3	1·1	1·2
15–24 years ..	1·1	1·4	0·8	0·5	0·6	0·8
25 years and over	0·7	0·3	2·3	0·2	0·1	2·0
All ages	1·9	1·3	1·5	0·8	0·5	1·6

V. Poliomyelitis: deaths in 1959 in various age groups and death rates per million living

	No. of deaths	*Rate per million living*
All ages	87	1·92
0–	10	2·90
5–	6	1·83
10–	9	2·46
15–	6	2·03
20–	8	2·83
25–	28	4·76
35–	14	2·23
45–	3	0·46
55–	1	0·19
65–	1	0·29
75 and over	1	0·52

There were 87 deaths, giving a case fatality ratio of 8·5 per 100 notifications or of 11·8 per 100 paralytic case notifications.

The proportion of notifications in children under 5 years of age again rose appreciably to over 40 per cent., nearly 5 per cent. higher than at any time in the previous 12 years. As in previous years the incidence rate, both of paralytic and non-paralytic cases, was appreciably higher for males although at ages 10 to 24 years for paralytic cases and 15 to 24 years for non-paralytic cases the rates for females were the higher. Nearly three quarters of the deaths were of patients over 15 although less than a third of the cases were in this age group.

At various times, and particularly when there has been an outbreak of poliomyelitis in a seaside resort, the suggestion has been made that bathing in water which is subject to contamination by sewage may have caused poliomyelitis. It is inevitable that in such outbreaks some of the persons affected will give a history of recent bathing, but this alone is no indication of a causal relationship unless it can be shown that non-bathers are less liable to develop the infection. A Report from the Medical Research Council published at the end of 1959* helps to clarify this problem and the results do not suggest that there is any causal relationship. While gross contamination of beaches by sewage is undesirable for various reasons, the argument that poliomyelitis is likely to spread by this means receives no support.

Acute Encephalitis

There were 140 notifications of acute infective encephalitis in 1959, 90 male and 50 female. 23·6 per cent. of these were in persons under 5 years of age and 56·4 per cent. in persons under 15. The number of notifications of post-infectious encephalitis was 140 of which 80 related to males and 60 to females. The usually observed predominance among males was therefore again observed.

The number of deaths attributed to acute infective encephalitis was 108 distributed by age as follows: 0–4 years, 43; 5–14 years, 16; 15–44 years, 24; 45–64 years, 21; 65 years and over, 4. Deaths attributed to post-infective encephalitis are not separately recorded but are included with certain other forms of encephalitis in No. 343 of the International Statistical Classification of Diseases, Injuries and Causes of Death. There were 108 deaths in this category, the age distributions being as follows: 0–4 years, 25; 5–14 years, 19; 15–44 years, 26; 45–64 years, 24; 65 years and over, 14.

In the Registrar General's Statistical Review of England and Wales for the year 1957 (Commentary Section, page 185), the deaths from encephalitis certified as secondary to infectious disease in England and Wales in the years 1955–57 are related to the nature of the antecedent infection. Nearly half (66 out of 138) followed an attack of measles, smaller numbers of cases being associated with chicken pox, herpes zoster and whooping cough. Table XCVIII (page 184) shows that encephalitis deaths contributed a considerable proportion of the total measles deaths (66 out of 301) and of the total chicken pox deaths (13 out of 35) and a smaller but appreciable proportion of the total mumps deaths (5 out of 24). On the other hand, encephalitis was responsible for only 5 of the 201 deaths from herpes zoster and 8 of the 271 deaths from whooping cough.

In my Report for 1955 I referred to an outbreak of encephalomyelitis of uncertain origin in a London teaching hospital and in my Report for 1956 to the occurrence of other small outbreaks and occasional sporadic cases. In October and November 1959 there was an outbreak of similar nature in a teachers' training college in Newcastle. The aetiology of this form of illness is still unknown and it is impossible to be certain that the cases occurring in 1959 were due to the same disease but the similarity of the epidemiological and clinical features was striking.

Illness was restricted to students at the college, girls mainly of about 20 years of age. Members of the staff, who were older, and of a grammar school for girls, which occupied the same buildings, were not affected, nor were cases observed among the general population in Newcastle.

About 46 of some 200 students were affected although over half of these had very mild symptoms. Nineteen had a more serious attack and 7 of these

* Medical Research Council Memorandum No. 37, "*Sewage Contamination of Bathing Beaches in England and Wales*", 1959, London, Her Majesty's Stationery Office.

had quite long illness with well-marked neurological abnormalities. Most patients had a premonitory illness with gastro-intestinal symptoms, in particular anorexia, abdominal pain and sometimes diarrhoea or vomiting. Rather fewer had mild sore throat or respiratory tract symptoms. After a varying period those who were to become more seriously affected developed headache, slightly raised temperature, sometimes blurring of vision, ataxia and weakness of the legs. In a very few cases weakness of arms, paraesthesiae, sensory loss or diplopia were noted. In general, although muscle tenderness was not uncommon, sensory symptoms were less in evidence than in the 1955 outbreak in London. A tendency to relapse, marked fatiguability and emotional lability were prominent.

The physical signs included rigidity of affected limbs, variable but usually increased tendon reflexes and muscle tenderness. Sensory abnormalities were unusual and meningism was not a prominent feature. The cerebro-spinal fluid, where examined, was normal and the electromyograms of the cases studied strongly resembled those described in the 1955 outbreak.[1] Efforts to isolate a virus or other infective agent were unsuccessful.

The majority of the patients recovered completely in a short time but some of those more seriously affected suffered from muscle weakness lasting for several weeks, though 3 months from the onset of the outbreak there were none who were not showing an appreciable degree of recovery.

Since 1956 a few more single cases and outbreaks have been reported and in one outbreak in the United States of America which seems to have been of the same disease it was thought that there was a significant association of illness with infection by bacteria of the Bethesda–Ballerup group of paracolon organisms.[2]

This has not been confirmed elsewhere and although an infective cause seems to be very probable, none has yet been identified.

[1] Richardson, A. T., 1956, *Ann. Phys. M.*, Lond., 3, 81.
[2] Shelokov, A., Habel, K., Verder, E. and Welsh, W., 1957. *N. England J. Med.*, **257**, 395.

Enteric Fevers

Year	Typhoid fever corrected notifications*	Paratyphoid fever corrected notifications*
1950	236	293
1951	206	1,095
1952	135	1,039
1953	101	353
1954	122	548
1955	193	876
1956	136	440
1957	125	310
1958	150	200
1959	123	379

* Including original notifications from Port Health Districts.

Typhoid Fever

Notifications of typhoid fever for the year were fewer than in 1958 and were well below the average, 171, for the ten years 1949–1958. There were three deaths. There were no major outbreaks but cases occurred sporadically or in small groups. No less than one-third of the patients were infected abroad. In particular, two coach tours on the Continent in July and August resulted in 13 cases widely scattered in England and Wales.

My previous reports have commented on the number of patients with typhoid fever in whom infection was contracted abroad. Since 1955, the average number has varied from 25 to 40 per year—a considerable proportion of the total. The annual recurrence of this source of disease leads me to draw attention yet again to the desirability of all persons going abroad considering the need for vaccination against typhoid and paratyphoid fever in tne light of the advice contained in the memorandum "Notice to Travellers" issued jointly by this Department and the Department of Health for Scotland.

Paratyphoid Fever

Notifications of paratyphoid fever showed an increase compared to 1958 but the total was still well below the average, 574, for the ten years 1949–1958. Deaths were two. Although the majority of cases occurred sporadically or as minor family incidents, there were a few outbreaks of moderate proportions. Among these was one at the beginning of the year at a hospital for chronic sick in the north east of England where a bacteriophage type of *Salmonella paratyphi* not previously encountered in this country was identified as the causal organism. The source of the outbreak was not discovered and the illness occasioned was mild. In another incident relating to infection with *Salmonella paratyphi* phage type 3a, the occurrence, within a period of three weeks, in the first quarter, of a total of 29 cases dispersed over seven sanitary districts in the south and south-east led to the suspicion that products of a particular bakery may have been involved. Thorough investigation, however, yielded no direct bacteriological evidence in support of this in the numerous foodstuffs examined.

Infection with *Salm. paratyphi B* phage type Taunton gave rise to 18 cases in a metropolitan borough in the second quarter. Ten of the cases were primary and eight secondary. The outbreak was traced to a food-handler at a bakery.

Still another outbreak was more widespread. The causal organism was *Salm. paratyphi B* phage type 1 var. 6, which had not, as far as is known, been previously associated with outbreaks. From the beginning of April to the end of July five cases and one symptomless excreter were reported—four of the cases being in the Liverpool area. In August, 20 cases or excreters came to notice —of which 12 were in North Wales, 4 in Lancashire and 2 in London. Thirty-six further infections were reported in September, the incidence still being confined to the same areas—17 in North Wales, 13 in Lancashire and 6 in the London area. Thereafter the incidence gradually subsided throughout the fourth quarter of the year, becoming at the same time more dispersed, with small numbers of cases occurring in Bournemouth, Birmingham, Sheffield, Exeter and Bristol. Reports agree that the illness resulting was generally mild and that in many cases it resembled clinically the food poisoning rather than the enteric fever type of disease. Despite extensive investigations the vehicle of infection was not identified.

Man remains the ultimate source of well-nigh all the infections causing the enteric fevers and transmission of the organisms concerned is closely related to the various means by which food and drink become contaminated by infected human excreta. In recent years, medical and public opinion has been exercised over the possibility that bathing beaches contaminated with sewage may be one of the factors involved. It is reassuring to find that the Committee[1] set up in 1953 to study this problem considers that the presumed danger of contracting enteric fever from such bathing beaches is remote.

[1] Sewage Contamination of Bathing Beaches in England and Wales.—Medical Research Council Memorandum No. 37, 1959, H.M.S.O.

Dysentery

I. Dysentery notifications (including non-civilians) 1950–1959

Year	Corrected Notifications*	Deaths†	Fatality Ratio
1950	17,286	65	0·4
1951	28,590	74	0·3
1952	14,535	36	0·2
1953	18,426	36	0·2
1954	31,858	39	0·1
1955	36,718	40	0·1
1956	49,009	33	0·1
1957	28,910	22	0·1
1958	38,107	32	0·1
1959	35,626	33	0·1

* Including original notifications from Port Health Districts.

† These deaths are those assigned to causes 045–048 (Dysentery, all forms) of the 1955 International List. They include deaths from amoebiasis with liver abscess—11 in 1950, 9 in 1951, 6 in 1952, 2 in 1953, 5 in 1954, 3 in 1955, 2 in 1956, 3 in 1957, 2 in 1958 and 3 in 1959.

The number of notifications was less than in 1958 but was nearly 9,000 more than the average (26,800) for the ten years 1949–1958. The fatality ratio maintained a low figure which is in accordance with the experience of recent years.

II. Corrected notifications, England and Wales 1959, by quarters and sex

	Male	Female	Total	Percentage of Annual Total
First quarter	6,237	6,444	12,681	35·6
Second quarter	5,211	5,458	10,669	30·0
Third quarter	2,563	2,544	5,107	14·3
Fourth quarter	3,603	3,552	7,155	20·1

As usual, the incidence was highest in the first quarter and lowest in the third, and there was little difference in the total numbers of males and females affected.

III. Notification rates per 100,000 population in England and Wales 1955–1959, by sex and age groups

Year	Males				Females				Persons			
	All ages	0–	5–	15+	All ages	0–	5–	15+	All ages	0–	5–	15+
1955 ..	85	407	209	22	81	370	190	33	83	389	200	28
1956 ..	112	474	300	30	108	443	277	44	110	459	288	37
1957 ..	66	292	170	18	63	260	156	27	64	276	163	23
1958 ..	86	400	218	23	83	378	199	34	84	389	209	29
1959 ..	80	368	198	24	77	329	175	36	78	349	187	30

The high number of notifications for both sexes in the 0–4 year age group is in accordance with the known tendency of the disease for prevalence in pre-school and early school life. As in previous years, the figures recorded for males under 15 years exceeded those for females in that group while after 15, the opposite is the case. It is not known whether any defects in the completeness of notification apply equally to these categories, and consequently whether the figures reflect the comparative incidence with reasonable accuracy. While the factors involved lack precise definition, it is probable that the necessarily close relationship of many young female adults to children in their care may be of some importance.

IV. Notifications per 100,000 population in the Standard Regions of England and Wales 1955–1959

Standard Region	1955	1956	1957	1958	1959
England and Wales	83	110	64	84	78
Northern	156	72	83	79	48
North Western	168	101	97	129	82
East and West Ridings	121	198	154	193	142
North Midland	73	148	51	53	94
Midland	39	112	52	59	97
Eastern	67	120	56	38	30
London and South Eastern	61	115	47	76	76
Southern	25	55	34	44	45
South Western	28	69	22	48	38
Wales	48	52	29	82	116

The incidence in England and Wales taken as a whole was somewhat lower than in 1958 and, as in recent years, infection was not evenly distributed over the Standard Regions. Rates remained comparatively low in the East, South and South-West, and in 1959, the Northern region joined these by showing exceptionally low figures. In an intermediate position, the London and South Eastern region maintained the rate of last year, the North Midland and Midland regions had an increase and the North Western a diminution. Highest notifications came from Wales where the upward trend which appeared in 1958 was continued, and from the East and West Ridings of Yorkshire, where although figures were high, there was an appreciably lower incidence than last year.

V. Notifications per 100,000 populations in conurbations and areas outside conurbations, 1955–1959

	1955	1956	1957	1958	1959
Conurbations—All	109	127	78	108	87
Tyneside	193	88	132	59	42
West Yorkshire	185	250	166	169	184
South East Lancashire ..	235	146	144	205	83
Merseyside	98	49	50	110	61
West Midlands	31	86	36	36	59
Greater London	72	126	52	92	85
Urban areas 100,000 population and over..	118	172	93	119	135
Urban areas of population 50,000 to under 100,000	62	110	55	77	72
Urban areas of population under 50,000 ..	52	80	52	55	65
Rural Districts	49	67	36	54	43

The highest incidence was in the West Yorkshire conurbation followed by Urban areas of 100,000 population and over, and both returned increased figures compared to last year. The majority of other conurbations and areas showed a general tendency towards lowered incidence and this was most marked in South East Lancashire and Merseyside. Tyneside notifications were of particular interest in that they were lower than those from rural districts.

VI. Laboratory findings 1955–1959 (from returns of the Public Health Laboratory Service)

Year	Bacillary dysentery				Amoebic dysentery
	Total isolations	Sonne per cent.	Flexner per cent.	Others per cent.	Total isolations*
1955	35,559	97·6	2·3	0·08	50
1956	44,802	98·4	1·5	0·05	36
1957	27,035	96·6	3·3	0·10	63
1958	35,933	97·1	2·2	0.01	170
1959	32,308	98·9	1·0	0·07	150

*Isolations made from patients in hospitals for tropical diseases who contracted the infection abroad.

The number of notified cases of dysentery, mainly of the Sonne variety, remains a matter for some concern. Although the disease is generally mild, there is an appreciable mortality especially among young children and the aged. Contributing to this is the tendency to attack, in particular, day nurseries, nursery schools and geriatric units. Apart from the mortality which the infection produces, it may have severe debilitating effects and can cause serious upsets in family, school and institutional life.

Control is by no means easy. In this country the disease is mainly a winter one in contrast to the warm weather incidence of other intestinal infections such as enteric fever. Notification is probably incomplete, in adults at least, and a carrier stage may be of comparatively long duration. For every known case there may be many symptomless excreters. Experience indicates that direct and indirect contact—often hand carriage—rather than food is the main factor in transmission. Only detailed attention to personal cleanliness and, above all, the washing of hands after attendance at the toilet, combined with adequate sanitary provision in homes, schools and similar institutions, will break the cycle of infection and reduce the incidence.

Food Poisoning

Seven thousand eight hundred and forty-six food poisoning incidents—general outbreaks, family outbreaks and single cases—were reported in 1959, 546 more than in 1958 and 775 more than in 1957. The microbial causes are shown in the table.

Food poisoning, all types, 1959—outbreaks, family outbreaks and sporadic cases by presumed causes

Presumed causal agent	Outbreaks	Family outbreaks	Sporadic cases	All incidents
Salmonella ..	94	351	4,593	5,038
Staphylococci ..	31	34	53	118
Cl. welchii ..	79	17	14	110
Not discovered	91	264	2,225	2,580
All agents ..	295	666	6,885	7,846

Though the number of incidents has increased the general picture was similar to that of previous years and shows once again that effective measures for the reduction of food poisoning have yet to be taken. From the reports received it was calculated that at least 17,500 persons were affected but this number is probably far less than the real number. Twenty-seven fatal cases came to the notice of the laboratory services; 15 were attributed to infection with *Salm. typhi-murium*, 8 with other salmonellae, 1 with *Staph. aureus* and 3 with *Cl. welchii*. Seventy-five per cent. of outbreaks traced to a specific food were associated with such processed and made-up meats as stews, reheated meat, meat pies (mainly beefsteak and shepherd's pies), cold meat and the like. The information on foodstuffs came mainly from outbreaks due to staphylococci and *Cl. welchii*. In salmonella outbreaks, particularly small ones, the foods responsible were seldom identified. Though most of the staphylococcal and *Cl. welchii* food poisoning can therefore be attributed to the foods mentioned, it is not possible at present to be as confident about the foods associated with salmonella infection. The foods most commonly mentioned in salmonella outbreaks are also processed and made-up meats but there may be other foods not yet suspected which play an important part. The study of sources of salmonellae is continuing, and information is being built up on the frequency of contamination of both animal and human foods. The human foods most frequently contaminated are egg products and meat. Heat treatment of egg products before distribution is likely to be the only satisfactory means of control and there is an urgent need for the application of effective methods of pasteurization. The problem of contamination of meat will, however, require more study both by veterinarians and medical men before effective control measures can be taken.

(80926) C

For the present the public should note that fresh meat and fish cooked and eaten when hot, fresh vegetables and fruit and pasteurized milk and canned foods of all kinds are seldom implicated in food poisoning.

Anthrax

Anthrax in man is "almost exclusively an occupational disease"[1] in this country and approximately five-sixths of recorded cases occur in the course of employments falling within the provisions of the Factories Acts. These industrial cases are notifiable to the Chief Inspector of Factories, Ministry of Labour. At the present time some 25 cases come to attention each year in this way of which nearly all are of external type, indeed since 1945 there have been only 3 cases of internal anthrax, all fatal. Over the same period deaths in this group from external anthrax totalled 8, an average of one death in two years.

In addition, some 4 cases a year, not otherwise reported, form the subject of claims to benefit payable under the National Insurance (Industrial Injuries) Act.

Of the remaining cases, some come to attention by formal notification to the Medical Officer of Health in the 63 districts where the disease is notifiable and others are reported informally. An average of 1 case not otherwise reported comes to notice each year in this way.

External and internal anthrax, cases and deaths by ten-year periods

Years	External anthrax		Internal anthrax	
	Cases	Deaths	Cases	Deaths
1900–09	478	97	25	24
1910–19	632	60	34	34
1920–29	396	48	10	10
1930–39	261	32	3	3
1940–49	207	19	1	1
1950–59	192	7	2	2

Average annual incidence of external and internal anthrax in the years stated

Years	Average number of cases in each year	
	External anthrax	Internal anthrax
1900–20	55	2·9
1921–34	34	0·6
1935–56	24	0·2

Thus the number of cases of anthrax reported from all sources in any one year is modest and the number of deaths is small, the more so for external anthrax in recent years since the introduction of sulphonamides and later penicillin. (It may be mentioned here that supplies of anti-anthrax serum are held at regional centres for the treatment of patients sensitive to penicillin or for prophylactic use.)[2] It is necessary, therefore, to look back over the previous years of this century to appreciate the extent and tempo of an improvement which is clearly evident in the preceding tables of cases coming to the notice of the Chief Inspector of Factories.

The decreased incidence since 1920 is in great part due to the introduction of measures demanding disinfection of the more hazardous imported materials. In 1921 the Government Wool Disinfecting Station was opened at Liverpool and goat hair from India and wool and animal hair from Egypt and the Sudan were scheduled for disinfection and in 1935 all goat hair was scheduled except certain categories from China. Probably of equal importance has been the general improvement in industrial hygiene, both in methods of working and in personal cleanliness. To some extent changes in the course of trade or fashion have removed certain hazards or at times introduced fresh risks. Bacteriological evidence shows that raw materials peculiarly connected with anthrax are as heavily infected now as formerly.

In November 1959 the Report of the Committee of Inquiry on Anthrax was published by the Ministry of Labour.[1] It is a comprehensive review of the whole subject of anthrax both in establishments coming within the provisions of the Factories Act and occurring elsewhere. (The preceding tables were prepared from tabulations appearing in this Report.) Dr. A. J. H. Tomlinson, Director, Public Health Laboratory Service Laboratory, London (County Hall), represented this Ministry on the Committee. Departmental evidence was also given to the Committee. Recommendations include a timely re-alignment of legislative requirements with industrial hazards to remove restrictions no longer appropriate and retain or impose disinfection where indicated.

Certain sources of anthrax lie wholly or in part outside the provisions of the Factories Acts, notably bone meal and kindred products which from time to time occasion anthrax in the farm worker or gardener. Accordingly, the Committee of Inquiry further recommended that anthrax should be made a notifiable disease under the Public Health Act, 1936, while retaining the existing arrangements whereby industrial anthrax is notifiable to the Factory Inspectorate. This recommendation is under consideration at the present time.

The Committee also recommended that consultations should take place between the Factory Inspectorate and the Health Service authorities in order to determine how in each area arrangements might most effectively be made to establish recognised procedures, known to all concerned, for referring all cases of suspected anthrax for immediate medical advice. At the end of the year these recommendations were being considered by the Ministry of Labour in consultation with this Ministry.

References

[1] Report of the Committee of Inquiry on Anthrax, Ministry of Labour (Cmnd. 846), November, 1959.

[2] H.M. (58)66.

Undulant Fever

Comment has been made in previous Reports (1953–1958) on various aspects of problems connected with brucellosis, but in view of concern which has been evident in some quarters during 1959, further comment aimed at placing brucellosis and undulant fever in proper perspective in the public health field may be useful.

Undulant fever is an unobtrusive infection in the main and its incidence in this country is not readily ascertainable. Reported cases are usually single, sporadic and few. Localised outbreaks of undulant fever have been recorded from time to time, notably by Elkington[1] and by Cruickshank and Stevenson[2] in schools and by Higgins[3] in a village in Wiltshire. Laboratory investigations made in unaffected members of these communities suggest that many infections are subclinical or entirely inapparent. There is evidence that infection, once acquired, may remain latent for many years and can be reactivated by trauma. (Dalrymple-Champneys.)[4]

Of indigenous human infections so far reported in this country, all have been caused by *Brucella abortus*.

Brucellosis is a fairly common disease in cattle in this country, but figures are not available indicating the proportion of herds infected. Estimates of the prevalence in Great Britain according to Stableforth[5] are complicated by vaccination. A rough estimate of bovine brucellosis, based on the prevalence of abortion and making necessary adjustments, suggests 3 per cent. of herds infected at the present time compared with 8 per cent. before 1939. The diagnosis of the disease in bovines by clinical examination alone is not usually feasible.

The hazard to the public arises from the ingestion of *Br. abortus* in the milk or milk products made from the milk of infected animals, or from exposure to contact with infected material likely to occur in such occupations as veterinary surgeons, slaughtermen, farmers, cow keepers and milkers.

However, as 95 per cent. of milk consumed in England and Wales is now being heat treated, undulant fever as an urban disease has virtually disappeared; it is now more or less confined to rural communities.

Mortality from undulant fever during the past 10 years is shown in the table below.

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Deaths in Males	—	1	2	2	—	—	2	—	1	—
Females	1	1	—	2	—	1	1	—	—	1

Notification. Undulant fever is not a notifiable disease and information of its incidence is incomplete. Under the name " brucellosis ", human infection with brucella is notifiable in certain districts under local orders—Devizes M.B. and R.D., Bradford and Melksham R.D. and from 1st January, 1960, Amesbury R.D., while applications from three other local authorities in Wiltshire were under consideration at the end of 1959. No case was reported in any of these areas during the year.

Until 1940 *Br. abortus* was wholly responsible for brucellosis in cattle in this country, but in that year a strain indistinguishable from *Br. melitensis* was isolated from a herd.

In order to contain this infection the Brucellosis Melitensis Order, 1940, was introduced necessitating the slaughter of cattle secreting the organisms (the

Order also applied to sheep, goats and swine, and was extended to horses, asses and mules by an Amendment Order, 1942). Since then frequent isolations have been made from herds in different parts of the country.

As all indigenous human infections in this country so far reported have been caused by *Br. abortus*, it was decided in December, 1956, after consultation between the Government Departments concerned, that the procedure of slaughtering cattle secreting *Br. melitensis* be discontinued, but the powers contained in the Brucellosis Melitensis Order be retained so that they could be invoked at any time if necessary.

Regarding control measures one is faced with the difficulty of trying to differentiate between infection arising from the consumption of raw milk and that occurring from contact with infected animals.

So far as milk is concerned, heat treatment will render it safe and powers are given to Medical Officers of Health under the Milk and Dairies Regulations, 1959, to enforce the heat treatment of milk which is the source of disease or found to be infected after biological test or culture.

From the preventive aspect the real solution lies in the veterinary field through the eradication of the disease in animals, which may now receive more consideration as the end of the attested herd scheme for tuberculosis is within sight. Meantime reliance must be placed on the pasteurization of milk and milk products and on the education in the rules of hygiene of farmers, farm workers and others engaged in the handling of animals.

References

[1] Elkington, G. W., Wilson, G. S., Taylor, J., Fulton, F., 1940, *Brit. med. J.*, **1**, 477.
[2] Cruickshank, J. C., Stevenson, G. A., 1942, *Brit. med. J.*, **1**, 522.
[3] Higgins, P. J., Mann, P. G., Reynolds, J., 1955, *Bath Clin. Sos. Symposium.*
[4] Dalrymple-Champneys, W., 1950, *Lancet*, **1**, 429, 477.
[5] W.H.O. Monograph Series (1952), No. 19, p. 71.

Leprosy

Leprosy has been notifiable since 22nd June, 1951, and by the end of 1959, the number of cases in England and Wales recorded in the Leprosy Register was 308.

A comprehensive review of this nine-year cumulation of notifications has recently been undertaken in collaboration with the Adviser in Leprosy to the Ministry. It was aimed at assessing the present condition of those who had been under treatment for a long period, at classifying " burnt out ", arrested and non-infectious cases (50 in number) and at eliminating those who had gone abroad, died or could not be traced (69 in number). Allowing for the consequent adjustments, there were left at the end of the year 189 cases consisting of 67 presumed active and 122 arrested or quiescent but still requiring surveillance.

Leprosy is a disease of low infectivity with a characteristically chronic course. Certain forms have a tendency to spontaneous arrest and with regard to the others the influence of modern chemotherapy has been such as to bring the problem of the disease within manageable proportions. In consequence there are people who once suffered from leprosy but who, although they may still bear healed stigmata, disabilities, or deformities resulting from the malady, are no longer infectious or of public health importance. Such persons should no longer continue to be considered as active leprosy patients and accordingly notifications will in future be subjected to periodical review with a view to the elimination of such cases from the statistics.

Q Fever

It is only during the past twenty-five years that Q fever has been clearly recognised as a specific illness in man, although earlier accounts have survived of a disease which, on clinical and epidemological grounds, was almost certainly Q fever.

In his "Report on the Influenza Epidemic of 1889–90" Dr. H. F. Parsons[1] wrote that "In 1885 an influenza-like illness prevailed throughout a large part of Australasia and, owing to the prevalence in Melbourne at that time of severe fogs, it obtained the local name of fog fever (Brit. Med. Journal, 22nd February, 1890, page 450)."

Five years later, when pandemic influenza appeared in Australia, the medical inspector of the Board of Health, Victoria, noted the similarity between the influenza of 1890 and the fog fever of 1885. In New South Wales the reporting medical officer, Dr. Ashburton Thompson, made special inquiry into "a disease thought to resemble influenza closely which is met with every year in some or many rural localities and seems to be associated in its origin with assemblage of large numbers of men and sheep in the sheds at the shearing season", known both as "fog fever" and "shearing-shed fever". Dr. Thompson included reports on this condition from three practitioners, one of whom mentioned that he had come across such cases throughout his eleven years in his district, a sheep shearing centre.

Curiously, little was heard of influenza and nothing of shearing shed fever in Queensland at that time, but it was from this State that Derrick[2] wrote in 1937 calling the disease Q fever. It remained for Burnet and Freeman to identify the causal rickettsia, now named after the former *R. burneti.*[3]

Until 1944 the recognition of naturally occurring human infection was virtually limited to Australia. In that year it appeared in troops in the Mediterranean theatre of the war, where 1,000 cases were recorded in allied troops,[4] under the name of Balkan grippe. Thereafter Q fever was identified in Southern Europe and North Africa, in Panama and in the United States of America, reaching the eastern seaboard in 1948. The presence of infection in this country was suspected from serological evidence obtained by Dr. Stoker at Cambridge in two airmen from the same station in Wiltshire who had pneumonia in late 1948,[5] but the first authenticated outbreak here occurred in 1949 at a hospital in London where four members of the staff were infected, three probably at the post-mortem examination of the original and fatal case. Investigation of the source of infection of the primary case found evidence of infection in workers and in cows on three farms in one urban district in Kent.[6] A small outbreak involving three persons who had attended the delivery of an infected cow occurred later in that year in Devon.

Thereafter, as so often happens, a number of further and increasingly larger outbreaks have occurred, many of which were in rural areas. Much painstaking investigation has been undertaken by individual members of the Public Health Laboratory Service into the distribution of infection in domestic animals, in particular cattle and sheep. Reference has been made to these matters in earlier Reports (1950, page 68; 1952, page 87 ; 1954, page 75; 1958, page 88). Published accounts of individual outbreaks include two in Kent, one affecting 28 members of a college of art,[7] and other persons living on or visiting a farm[8], one in Cardiganshire in 1953 in which there were 15 cases among visitors or residents in three rural villages[9], and one in Cardiff in which there were 16 cases in persons living in or associated with one suburban area of the city.[10] An investigation made by Evans (1956),[11] into the distribution of *R. burneti* (as judged by the production of antibodies) in raw milk, sheep sera and normal human sera from blood donors in South Wales showed that 5 per cent. of samples of raw milk from indivdual herds, 2·7 per cent. of sheep sera and 4·1 per cent. of normal human sera had specific complement-fixing antibodies for Q fever. Despite such wide distribution of infection in men and domestic animals recognisable cases of Q fever were few—of 2,482 consecutive cases of non-bacterial pneumonia in South Wales only 15 appeared to have been caused by *R. burneti.*

In 1959 a number of cases of Q fever occurred among naval personnel who had attended a training centre in the Black Mountains in Breconshire.

The first patient to come to notice was a man aged 41 who had been admitted to a naval hospital in late July with broncho-pneumonia. Serological investigations showed evidence of infection with *R. burneti* and a steeply rising complement fixation titre. This man had recently returned from a 3-day course of training in the Black Mountains, an exercise undertaken throughout the year by succeeding groups of 25 men, who used a ruined farm house as a base for their initiative test. Sheep and cattle sheltered in the farm buildings and grazed the surrounding pastureland. Lambing and calving occurred there in winter and spring. The men lived in the open for some 36 hours of the test. In view of these findings and history, it was decided to undertake serological investigation of all who had attended this course. Single sera were obtained retrospectively from those who had already completed this exercise, and for the remainder paired sera were examined, the first taken on joining the training party (which assembled in Wiltshire some five weeks before going to Breconshire) and the second a month after the mountain course.

In all, 618 men and 83 members of the base staff were examined of whom 57 showed serological evidence of infection—54 trainees and 3 base staff. Of 182 sera taken prospectively only one had a titre of 1 in 10 or greater and it seems reasonable to conclude that infection was acquired during the training course in Breconshire. Infection was unevenly distributed over the groups attending this course, being much greater in July, when of two groups totalling 60 men, 32 were found infected (including the patient with broncho-pneumonia above mentioned). Of the 57 with serological evidence of infection, 50 were re-examined three months later by which time only three retained any significant rise in antibody titre.

Recognisable illnesses were reported in 18 men, all occurring within some 16 days of their return from Breconshire. Two had pneumonia, one had pyrexia and icterus and 15 suffered influenza-like illnesses. There was no death.

A full account of this outbreak has been published by Fraser, Hatch, Carmichael and Evans,[12] and grateful acknowledgement is made of the authors' permission to draw so extensively on their report, which reveals considerable similarity between these events and those recounted in the earlier report on "An outbreak of Q fever in a rural district of Central Wales"[9] which took place in 1953.

In both, the onsets of individual illnesses were spread over several weeks, suggesting a common source of sustained infectivity; in both, there was a background of pastoral activities, notably sheep farming, and particularly lambing and in neither was the path of infection firmly established.

From this point there are minor divergences in the two stories. Of the 15 patients forming the Cardiganshire outbreak, 13 had some contact with sheep at a material time, 8 of these with flocks still lambing. Sera from five of these flocks were examined and all showed an appreciably higher proportion with complement fixing antibody to *R. burneti* than was found in specimens of sera taken from sheep at a slaughterhouse 12 miles away.

Of 317 sera from the five flocks, 3·5 per cent. reacted at a titre of 1/10 or greater, while of 121 sera taken from sheep at a slaughterhouse, 0·83 per cent. reacted thus. Other investigations made at the time excluded infection from milk or water and case-to-case infection.

The possibility of infection of both sheep and man from some third source was also considered, in particular the tick *Ixodes ricinus* which is found on sheep and cattle in this part of Wales in late April, May and June. No patient recalled being bitten by an adult tick prior to his illness. Later in the same year a collection of 900 *I. ricinus* was made (chiefly from cattle) on farms where cases of Q fever had occurred in the spring but in no case was *R. burneti* isolated.

Of the 54 naval trainees presenting evidence of infection with *R. burneti* none had any permanent occupational exposure to sheep or cattle and save for the 3 members of the staff of the training centre none spent more than three days in Breconshire. Nevertheless during this time all were in close contact with sheep and cattle, and with their excreta though not as far as could be ascertained with the products of recent parturition. Men from some groups complained of insect bites, mainly about the head, neck and forearms, but no ticks were seen.

No evidence of *R. burneti* was found in dust from patients' clothing and bedding or in samples of litter from the farm buildings, nor in such of the cattle and sheep having access to the barns as were examined, although infection had been found in sheep in the vicinity in previous years.

In both of these outbreaks there was therefore close association with sheep, in one, a moderate level of infection was found in flocks examined, in the other, infected flocks were in the neighbourhood and in neither outbreak was the path of infection demonstrated.

It is of interest to compare these two outbreaks in rural Wales with that in Cardiff[10] briefly reported previously (An. Rpt. 1958, p. 197). This outbreak occurred in residents of a new housing estate on the rural fringe of the City or in persons visiting that area. There were 16 cases, 14 males, aged between 25 and 65, drawn from a variety of urban occupations, in the main unknown to one another and having nothing in common save their association with one small suburban area of Cardiff.

Here again investigations excluded milk- or water-borne infection and case-to-case spread. It was observed, however, that many of those infected gave a history of insect bites shortly before the onset of their illness. Moreover, cattle and sheep grazed in nearby fields. Ticks were not found in any of the sheep or cattle examined or in other domestic animals. Despite this, in the absence of any history of direct contact between patients and livestock, the possibility of an insect vector is the subject of continuing study.

An interesting observation by Fraser *et al.* is that after the return of the trainees from Breconshire and their dispersal to many widely scattered establishments, a further isolated case of Q fever arose in two of these units, both in men who had not attended the mountain course. As the authors remark, "the possibility exists of case-to-case spread between men in close contact under field conditions."

The epidemiology of Q fever may be said to have reached the stage where the causal agent has been identified as have the commoner hosts (sheep and cattle) and at least one possible native vector (*I. ricinus*), but the paths and modes of infection have yet to be established.

References

[1] Parsons, H. F., 1891, *Report on the influenza epidemic of 1889–90.* Local Government Board.
[2] Derrick, E. H., 1937. *Med. J. Austr.*, ii, 281.
[3] Burnet, F. M. and Freeman, M., 1937. *Med. J. Austr.*, ii, 296.
[4] *Monthly Bulletin M. Health and Publ. H. Lab. Service*, 1949, 256.
[5] Stoker, M. G. P., 1949. *Lancet*, i, 178.
[6] MacCallum, F. O., Marmion, B. P., and Stoker, M. G. P., 1949. *Lancet*, ii, 1026; Harman, J. B., *ibid*, 1028.
[7] Harvey, M. S., Forbes, G. B., and Marmion, B. P., 1951. *Lancet*, ii, 1152.
[8] Stoker, M. G. P. and Thompson, J., 1953. *Lancet*, i, 137.
[9] *Mon. Bull. Min. Hlth.*, 1956, **15**, 10.
[10] Evans, A. D. and Baird, T. T. *Proc. Roy. Soc. Med.*, 1959, **52**, 616.
[11] Evans, A. D., 1956. *Mon. Bull. Min. Hlth.*, **15**, 215.
[12] Fraser, P. K., Hatch, L. A., Carmichael, R. J. and Evans, A. D., 1960. *Lancet*, ii, 971.

Malaria

Source	1951	1952	1953	1954	1955	1956	1957	1958	1959
Contracted abroad ..	177	308	559	424	264	182	136	113	83
Indigenous	—	—	3	—	—	—	1	—	—

During the year, 83 cases of malaria were notified. None of these was indigenous.

Malaria Reference Laboratory

Figures relating to the number of persons infected with malaria for therapy purposes are given below, together with those for 1957 and 1958.

Species of parasite	Blood inoculation			Transmission by mosquito bites			Total		
	1957	1958	1959	1957	1958	1959	1957	1958	1959
P. vivax	70	57	47	48	28	20	118	85	67
P. malariae	1	—	2	—	—	—	1	—	2
P. falciparum	—	—	—	—	—	—	—	—	—
P. ovale	—	—	—	—	—	—	—	—	—
Total	71	57	49	48	28	20	119	85	69

Patients infected with malaria for therapy purposes.

49 blood. 20 mosquitoes = 69.

All G.P.I. except for 1 nephritis and 1 paralysis agitans.

Mosquitoes infected = 4,984.

Mosquitoes dissected = 127.

Blood smears examined = 163 thin films, 37 thick films and 209 examined for the World Health Organisation.

Infected blood sent to all parts of Great Britain, Holland, Norway, Sweden, Belgium and U.S.A.

Material for teaching purposes sent to all parts of Great Britain, including the Royal Naval Medical School, Royal Army Medical School, Royal Air Force Medical School; Lagos and Vom, Nigeria and Canada.

Blood smears received and examined from Public Health Laboratories. 8 *P. vivax,* 5 *P. falciparum*; 1 *P. vivax* diagnosed as *P. falciparum* and 1 no parasites.

Mosquito surveys. Colchester, Essex; Isle of Grain, Kent.

Lectures and Demonstrations. St. George's Nurses. D.T.M. & H. class, London School of Tropical Medicine. Rosebery Girls School. Officers from the Army School of Hygiene.

Mosquito larvae sent to Australia; British Museum; Royal Albert Museum, Exeter.

Papers published. "A study of the infectivity of patients to mosquitoes in the asymptomatic phase of parasitic relapses of induced infections with *P. vivax.* (Madagascar strain.)" Shute, P. G. & Maryon, M., 1959. W.H.O./Mal. 233.

"Quiescent malaria parasites (*P. falciparum*) in a young Nigerian professional boxer." Shute, P. G., 1959. *Brit. med. J,* ii 730.

Venereal Diseases

During 1959 the trends of incidence of the venereal diseases at the clinics followed the characteristic pattern of recent years, with a general tendency to increase in prevalence which was considerable for some diseases but slight or absent for others.

Syphilis

The number of cases of early infectious syphilis treated at the clinics for the first time during 1959 (Appendix C, Table B) showed a distinct rise for both sexes although the total remains small. Slight increases were recorded for males and females in 1955 and for females in 1956. The present increase is larger than for either of these years and whether it is due to temporary fluctuation or indicates that syphilis is about to follow gonorrhoea in increasing prevalence remains to be seen. Rises in incidence have already been reported in some other western countries. In the Report for 1957 it was noted that the falling incidence of infectious syphilis was hard to understand in relation to the continuing rise of gonorrhoea and it was suggested that the use of penicillin in increasing dosage for gonorrhoea might be adequate to abort concurrent syphilitic infection in the incubation period. The development of the present situation will be watched with interest and some anxiety. Early syphilis seems to occur almost exclusively in large centres of population and, as before, there is evidence of considerable local variation. Some of the details are shown in the following table which gives the numbers of cases in ten urban areas. The London area, which showed a slight reduction in 1958, now shows an appreciable increase. Merseyside, where there was a notable increase last year, shows a reversal of this trend to a figure almost identical with that of 1957. Other centres show slight increases, except Birmingham and Southampton, where there was some diminution.

In the Report for 1957 it was mentioned that there was evidence to suggest that the incidence of infectious syphilis among practising homosexuals was disproportionately high. This is still true, for at one large clinic for venereal diseases in London, 24 out of 60 patients suffering from early syphilis gave a history of homosexual contact.

Early syphilitic infections dealt with for the first time in 1958 and 1959 in ten sample areas

	1958			1959		
	Males	Females	Total	Males	Females	Total
London Administrative Area (3,204,000)*	202	96	298	263	92	355
Merseyside (Liverpool, Bootle, Birkenhead, Wallasey) (1,086,170)	77	7	84	50	8	58
Manchester and Salford (834,300) ..	9	2	11	10	3	13
Tyneside (Newcastle, South Shields, Tynemouth) (449,100)	7	4	11	6	7	13
Hull (301,800)	3	1	4	5	2	7
Southampton (200,000)	14	1	15	9	1	10
Bristol (436,600)	18	1	19	22	5	27
Birmingham (1,091,500)	18	2	20	7	4	11
Leeds and Bradford (802,400)	8	2	10	1	2	3
Sheffield (499,400)	8	3	11	3	1	4

* The figures in brackets are the estimated population at 30th June, 1959.

The number of new patients suffering from late syphilis continues to decline but it is still uncertain whether this is a true indication of diminished incidence or whether it reflects the fact that general physicians and others are now much more willing to undertake the treatment of these conditions. The table which follows shows a decline in reported cases of cardiovascular syphilis, neurosyphilis and all other late manifestations. The figures for late latent syphilis include a considerable number of immigrants from areas where yaws is endemic. In many of these cases positive serological tests may be due to latent syphilis or to yaws contracted in early life. When the patient gives the history of yaws or has characteristic scars of that disease, the diagnosis of yaws rather than syphilis may be made, but some measure of uncertainty usually remains. In 1959 yaws was diagnosed in 301 cases as compared with 280 in 1958.

The Registrar-General's figures for 1959 show that deaths from general paralysis of the insane and from tabes dorsalis have shown some increase, although the figures remain very low. Those from syphilitic aneurysm of the aorta show a decrease which is more marked for females than for males (Appendix C, Table E).

Late Syphilis

	Year	Males	Females	Total
Cardio-vascular syphilis	1958	220	92	312
	1959	193	85	278
Neuro-syphilis	1958	397	177	574
	1959	307	151	458
All other late or latent stages	1958	1,205	1,094	2,299
	1959	1,075	971	2,046
Total late or latent syphilis	1958	1,822	1,363	3,185
	1959	1,575	1,207	2,782

The number of new cases of congenital syphilis in infants of less than one year of age rose slightly in 1959 to 20 as compared with 17 in 1958. The death rate of infants under 1 year certified as dying from congenital syphilis in returns to the Registrar-General was 0·003 per 1,000 live births (Appendix C, Table D). Even if it be accepted that some cases are missed and some of the patients are treated elsewhere than at the venereal diseases clinics, these must be regarded as very satisfactory figures. The comparative rarity of these manifestations of syphilis has led to the suggestion in some quarters that antenatal blood tests for syphilis are no longer necessary. It is certain, however, that this simple precaution has prevented much prenatal infection and is an excellent method of helping to maintain the present satisfactory situation. Experience with gonorrhoea indicates that decline in the apparent incidence of a venereal infection is not synonymous with control of the disease and the case for retention, and indeed extention, of the practice of routine serological tests in pregnancy is an overwhelming one. The number of cases of later congenital syphilis (Appendix C, Table C) again shows a fall, to 352 in 1959 as compared with 420 in 1958. It is satisfactory to note that the manifestations of this condition are becoming quite uncommon.

Testing for Syphilis in Pregnancy

Results of routine serological tests for syphilis of pregnant women at certain regional blood transfusion centres are shown in the following table:—

1959

Regional Blood Transfusion Centre	No. of ante-natal patients tested			Positive syphilis tests				
	Primiparae	Multiparae	Parity not known	Primiparae		Multiparae		Parity not known
				No.	Per cent.	No.	Per cent.	No.
Leeds	8,349	6,647	3,129	23	0·28	15	0·23	5
Sheffield	14,582	7,465	—	18	0·12	24	0·32	—
Liverpool	22,332	24,986	—	16	0·07	21	0·09	—
Plymouth*	2,116	1,877	—	9	0·43	8	0·43	—
Oxford	1,933	2,031	86	—	—	—	—	—
Cambridge	7,650	3,525	1,010	14	0·18	6	0·17	1

* In addition six "doubtful" results were recorded in primiparae and six in multiparae.

A summary of results of tests from primiparae and multiparae at these centres during seven years is shown below. It indicates that the fall in the incidence of positive tests was maintained in 1959.

	No. of Primiparae	Percentage Positive	No. of Multiparae	Percentage Positive
1953	28,263	0·21	27,573	0·43
1954	39,181	0·23	47,941	0·32
1955	41,392	0·21	40,712	0·43
1956	48,420	0·28	40,295	0·35
1957	49,914	0·14	43,730	0·29
1958	49,315	0·13	40,765	0·23
1959	56,962	0·14	46,531	0·16

Gonorrhoea

The number of new cases of gonorrhoea diagnosed at the clinics rose from 27,887 in 1958 to 31,344 in 1959. This number is the highest since 1947. The increase over 1958 is just over 12 per cent. and is proportionately much the same for women as for men. The rise is not limited to large centres of population but is now fairly general throughout the country. It was pointed out in 1958 that the total number of cases is appreciably increased by the fact that some patients attend with two or more infections in the course of any one year. The table below gives numbers of cases and of patients treated at seven large clinics (four in London and three in the provinces) during 1958, and indicates that during that year reinfections were again responsible for many new cases.

Gonorrhoea 1958

	Cases		Patients	
	Males	Females	Males	Females
St. Mary's Hospital	2,661	659	1,516	386
London Hospital	1,454	339	1,227	304
General Hospital, Birmingham	1,120	234	971	227
St. Luke's Clinic, Manchester	1,002	318	859	277
SS. Peter's and Paul's Hospital	1,064	157	858	130
St. Thomas's Hospital	906	218	834	215
General Hospital, Newcastle-upon-Tyne ..	231	67	219	64

It seems likely that several factors are responsible for the continuing serious increase in gonorrhoea. The Working Party of the Medical Research Council, which is investigating the problem of the sensitivity of the gonococcus to penicillin, has already performed a large number of tests. The results, so far, confirm the reports that some strains of gonococci are exhibiting an increased resistance to penicillin. In spite of good advice at the clinics and of propaganda in newspapers and on television, a considerable proportion of patients discontinue attendance when symptoms are relieved. Many of these may be harbouring latent infection which is transmissible. In large centres of population immigrants living in difficult social circumstances still contribute greatly to the high prevalence of gonorrhoea and are particularly prone to multiple infections. There is evidence, too, of an increasing number of infections resulting from promiscuity among young people. In an investigation by the Co-operative Clinical Group of the Medical Society for the Study of Venereal Diseases a comparison was made between the ages of patients suffering from infectious venereal diseases who attended 147 clinics in the years 1957 and 1958. The total number of cases of gonorrhoea treated at these centres rose from 15,308 in 1957 to 17,404 in 1958, an increase of 13·8 per cent. The most marked rise was in the age group 18 to 19 years, the increase being 27·9 per cent. for females and 36·3 per cent. for males. The increase for the age group 20 to 24 years was also above the average for the whole series, being 16·4 per cent. for males and 20·1 per cent. for females. At H.M. Prison, Holloway, the consultant venereologist reported that of 425 known prostitutes admitted during 1959, 35 per cent. were between the ages of 15 and 20 years and 31 per cent. between 21 and 25. As usual the incidence of venereal diseases was high. Three hundred and eighty-one of these women were examined and syphilis was diagnosed in 6 cases and gonorrhoea in 171. Many other had symptoms and signs suggestive of infection but were not observed long enough for final diagnosis.

Other Venereal Diseases

New cases of chancroid increased slightly to 267 as compared with 259 in 1958. There were 80 cases of lymphogranuloma venereum as against 77 in 1958. Cases of granuloma inguinale decreased from 19 in 1958 to 12 in 1959. Cases of non-gonococcal urethritis in men again showed a considerable increase as indeed they have year by year since this condition was placed in a separate category in 1951. The increase is, however, greater than in previous years, the number rising from 17,606 in 1958 to 20,227 in 1959 (Appendix C, Table A). The number of women with "other conditions needing treatment", many of whom are contacts of men with non-gonococcal urethritis, also showed an increase from 12,149 in 1958 to 12,752 in 1959.

Other Conditions treated at the Clinics

The venereal disease clinics are places where many anxious patients seek advice, because they have taken risks or because they have symptoms which they fear may be due to infectious diseases. This serves a most useful purpose in bringing to light cases of venereal infection, in dispelling anxiety and in ensuring treatment for many minor but troublesome complaints. It adds considerably to the burden of work at the clinics but is much to be encouraged. Table A of Appendix C shows that 27,993 new patients attended for diagnosis and treatment of these complaints, and a further 32,704 were examined, tested and reassured but required no treatment. The equivalent figures for 1958 were 26,711 and 30,712 respectively.

The Present Position

Study of the figures for venereal diseases in 1959 certainly gives no justification for complacency. Gonorrhoea in both sexes and non-gonococcal urethritis in men again show spectacular increases. The significance of the rise in infectious syphilis is a matter for speculation, but the number of cases is still very small. The reasons for the serious increases in gonorrhoea and non-gonococcal urethritis are not clear-cut. Various factors are probably concerned but none emerges as the paramount cause. Immigrants, delinquents, itinerants and prostitutes all play their part. It seems likely that habitual promiscuity is more widespread than formerly. Medical Officers of Health, doctors at clinics for venereal diseases, social workers and others are especially anxious about sexual promiscuity among young people. For instance, the Medical Officer of Health for the City of Wakefield, in his Annual Report for 1958, stated that it had come to his knowledge that some young girls of 14 years were attending special clinics unknown to their parents. In his area contraceptives had been found to be carried by both boys and girls of 14 years and upwards. He blamed parents for lack of discipline and for failing to make home attractive and to provide the children with an atmosphere of well-being, comfort and affection. If these criticisms are valid for many homes throughout the country and the so-called teenage problems have their roots in unsatisfactory home life, it is not surprising that there is increasing promiscuity and therefore venereal disease among young people. This is a matter which lies outside the immediate scope of preventive medicine but it is one of general concern about which everyone would like more information. The Central Council of Health Education, with the aid of various voluntary organisations, is sponsoring an investigation into the causes of promiscuity among young people. The information collected may well point to the causes of the social sickness of which increasing venereal disease is only one symptom. It is often said that much venereal disease results from ignorance and it is true that the general public is not well-informed. Efforts are being made to remedy this deficiency and two recent television programmes, which must have reached large audiences, may help. It seems unlikely, however, that such measures can be more than contributory because moral standards are based upon stable family life and knowledge does not of itself bring virtue. Though our society may seem to be physically and materially strong and healthy, it is a matter for consideration whether its roots in family life may not be suffering from decay.

Smallpox

Year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Cases	8	27	135*	30	—	—	—	4	6	1
Deaths	—	10	1†	8	—	—	—	2	1	—
Number of imported cases ..	1	1+1*	—	1	—	—	—	1	1	—

* Variola minor
† The death in 1952 followed the acute condition after an interval of more than 1 year.

One case of smallpox occurred during the year in a Liverpool medical student. He had been vaccinated in infancy. The illness was moderately severe but recovery was uneventful.

An account of this event with special reference to the use of antivaccinial gamma globulin in the student's family contacts has been published elsewhere.†

During the year, the services of the Ministry's advisory smallpox panel were called upon by medical officers of health to provide a second opinion in 51 suspected cases. It cannot be too strongly emphasized that the medical officer of health is the consultant of first instance wherever there is any suspicion of smallpox, whether this arises in the mind of the attendant practitioner, or the infectious diseases consultant called in by the practitioner. The medical officer

† Semple, A. B., Parry, W. H., Hobday, T. L., 1959. *Lancet* 2, 34.

of health has special training in smallpox and is familiar with the administrative problems involved; he has ready access to the expert opinion of members of the smallpox panel and to the diagnostic facilities provided by the Public Health Laboratory Service.

Vaccination

The following table summarizes the returns of vaccinations carried out by local health authorities under Section 26 of the National Health Service Act, 1946, during the years 1950–59:—

Year	Number primarily vaccinated					Number re-vaccinated				
	Under 1 year	Age 1–4 years	Age 5–14 years	Age 15 and over	Total	Under 1 year	Age 1–4 years	Age 5–14 years	Age 15 and over	Total
1950	169,766	62,250	22,155	30,195	284,366	770	2,862	11,353	70,475	85,460
1951	203,702	64,679	51,452	87,127	406,960*	1,250	8,446	48,634	258,779	317,109*
1952	206,131	42,291	25,376	40,903	314,701	465	3,727	12,304	90,650	107,146
1953	231,200	63,962	76,212	102,992	474,366†	503	6,104	40,443	186,559	233,609†
1954	234,587	37,924	11,196	20,853	304,560	260	2,831	11,820	58,960	73,871
1955	251,819	36,156	10,690	29,351	309,016	399	2,809	11,936	57,458	72,602
1956	263,939	37,541	11,125	21,195	333,800	574	2,937	10,240	58,531	72,332
1957	303,406	51,906	29,766	39,189	424,627	826	4,679	18,052	90,286	113,843
1958	327,063	38,241	18,929	27,008	421,241	512	3,143	13,569	75,570	92,794
1959	337,310	47,831	14,248	23,433	422,822	679	3,540	10,228	61,471	75,918

* In 1951 there were in addition 37,708 vaccinations or re-vaccinations which cannot be classified.
† In 1953 there were in addition 1,375 vaccinations or re-vaccinations which cannot be classified.

The total number of persons primarily vaccinated in England and Wales during 1959 was 1,581 more than in 1958, but the number re-vaccinated was 16,876 fewer. The number of primary vaccinations in infants showed an increase of 10,247.

When related to the 748,974 live births registered in the twelve months ended 30th June, 1959, the 337,310 primary vaccinations under the age of one year represent a vaccination acceptance rate of 45 per cent.

There was again wide variation in local acceptance rates for routine infant vaccination. In Hampshire (67·77) of the counties and Canterbury (79·23), Eastbourne (72·45), Oxford (67·94) and Carlisle (67·23) of the county boroughs, this figure exceeded 67 per cent. Lowest among counties were Rutland (9·20), Cardigan (16·10) and Derby (19·90) and among county boroughs Bradford (2·27), Leicester (4·84), Merthyr Tyfil (5·24), Middlesbrough (8·64) and Gloucester (8·92). There were 21 counties and 22 county boroughs in England and 2 counties and 1 county borough in Wales with acceptance rates of 50 per cent. or more, compared with 24 counties (1 in Wales) and 23 county boroughs in 1958.

Complications of Vaccination

During 1959 local authorities submitted 21 special reports of individual vaccinations done under the National Health Service (Part III arrangements) in connexion with which there occurred, or were alleged to occur, (*a*) generalized vaccinia, (*b*) post-vaccinal encephalomyelitis, (*c*) complications other than (*a*) or (*b*) but which proved fatal.

Generalized Vaccinia. In all of the 16 cases reported this complication was associated with primary vaccination. In 14 cases the age was under one year, in one it was 13 months, and the one other case was six years old. All the reported cases were examples of the clinically mild form of this complication in which there is little or no constitutional disturbance and the generalized eruption resembles that associated with a mild attack of chicken pox.

During the year there was also brought to the notice of the Department a fatal case of generalized vaccinia in a child aged two years suffering from eczema who had not been vaccinated but who was the sister of a younger child primarily vaccinated without any associated complication. Persons suffering from eczema are very liable to acquire, as in this instance, by contact a severe and sometimes fatal form of generalized vaccinia from members of their own family or from others who, as a result of primary or subsequent vaccination, are experiencing the normal limited local reaction with vesicle and pustule formation at the site of inoculation on the arm or elsewhere. Although it is well known that eczematous persons should never themselves be subjected to routine vaccination, it is not generally realized that when the siblings or other household contacts of a person with eczema are vaccinated they must be rigidly separated from the latter for at least 21 days.

Post-Vaccinal Encephalomyelitis. Three cases were reported, all being associated with primary vaccination done as a routine under the age of six months. In two cases the clinical picture was that of meningeal inflammation, a diagnosis with which the results of an examination of the cerebro-spinal fluid proved to be consistent. Both these children recovered rapidly without sequelae. In the third case a clinical picture dominated by coma and convulsions was unaccompanied by any abnormality of the cerebro-spinal fluid and suggested mainly an encephalitic reaction. This child also recovered rapidly but needed further treatment after discharge from hospital in order to control a tendency to fits.

Other Complications. Two instances of fatal complications associated with vaccination from causes other than generalized vaccinia or post-vaccinal encephalomyelitis were reported during the year.

One was a child aged three months who died suddenly on the ninth day after a primary vaccination, having been apparently quite well a few hours earlier. The only clinical finding was hyperpyrexia, the rectal temperature being 108° F. immediately before death. At post-mortem histological examination of the central nervous system was completely negative. An extensive virological examination was made and vaccinia virus was recovered from the heart, spleen and bone marrow but not from any part of the central nervous system. It appears therefore that in this case there was an extensive viral invasion of visceral organs without any unusual involvement of the skin or central nervous system. The fatal outcome in this case was possibly the result of an extremely rare abnormality of congenital origin which is characterized by a more or less complete failure of the developing immunity mechanism normally present in a child of this age. Children inheriting this abnormality succumb readily to natural infections and, unfortunately, also to those artificially induced for preventive purposes using attenuated living agents such as smallpox vaccine.

The other was a child aged five months who was admitted to hospital with convulsions and hyperpyrexia on the eighth day after a primary vaccination. Convulsions continued until death on the day after admission. At post-mortem a histological examination of the central nervous system failed to show any evidence of encephalitis. No virological examination was made in this case.

IIB

NOTEWORTHY OUTBREAKS

Poliomyelitis in Southampton 1958–59

I referred in my Report for 1958 (page 47) to the occurrence of an outbreak of poliomyelitis in Southampton which began unusually late in the year, in October, and had continued into 1959. As a result of this outbreak Southampton was among the districts with a notably high incidence in 1958. In 1959 it also had an incidence only approached by Islington and over the two year period the total number of provisional notifications was greater than that for any other district in England and Wales. Partly on this account and partly because of some unusual epidemiological features, this episode is now described in rather more detail.

Figure 1 shows the weekly uncorrected notifications over the whole period. It should be remembered that there is normally some lag between the time of onset of illness and the publication of the notification in the Registrar General's Returns and also that the great increase in the number of cases in the second week in January may be related in part to delays in transmission of notification over the Christmas period.

It will be seen that the outbreak had two main phases. Notifications were high throughout November and December 1958 and January and early February 1959, a time at which poliomyelitis incidence in the country as a whole is generally falling to its nadir. In late February and March it appeared that the outbreak was abating but the number of cases increased in April, again usually a period of very low incidence, and remained raised for another four months.

Regarding the spread of illness in more detail, up to 20th August, 1958, there had been in the borough only 3 notifications of poliomyelitis, the patients having no demonstrable connection one with the other. At the end of September there was a very small outbreak of poliomyelitis in the village of Curdridge, a few miles from Southampton in the Droxford Rural District, and 3 patients from this village were admitted to the infectious diseases hospital in Southampton during the first few days in October. A fourth patient, a boy of 2 (K) from an adjoining village 7 miles from Southampton, was admitted to a children's ward in a general hospital in Southampton on 2nd October with a diagnosis of a respiratory tract infection and pulmonary collapse. After 3 days K was found to be suffering from poliomyelitis with respiratory paralysis and was transferred to the infectious diseases hospital on 6th October. (This boy's brother was subsequently also admitted to hospital with paralytic poliomyelitis.)

The general ward to which K had been admitted was partly partitioned into sections. In one section, not the one to which he had been admitted, there were four children and a fifth child joined this group the day after K's removal. This last child (D) was only in hospital for 4 days but 11 days after discharge home on 18th October he developed paralytic poliomyelitis. His home was on the east of Southampton and about 4 miles outside the borough. Another boy, R, was discharged to his home in the eastern part of Southampton on 8th

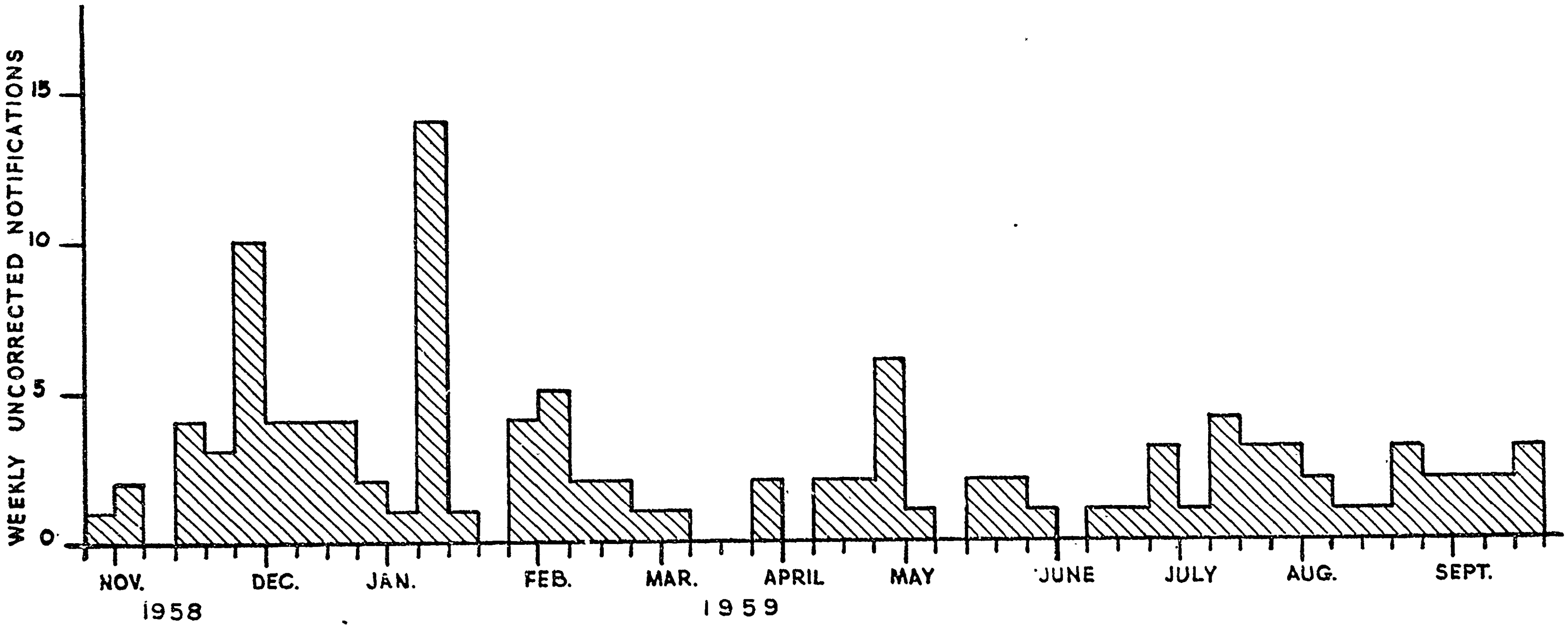


FIG. 1 WEEKLY UNCORRECTED NOTIFICATIONS FROM SOUTHAMPTON C.B
OCTOBER 1958 TO SEPTEMBER 1959

October and developed symptoms on the 19th or 20th. He was admitted to the fever hospital with paralytic poliomyelitis on 22nd. Another child, B, had been in the ward since mid-September and was still confined to bed as an in-patient when he developed poliomyelitis on 24th October. Of the other two children in this group, one developed a mild gastro-intestinal upset on 10th October, but was discharged on 13th, and the other developed a headache and vomiting on 14th October. The father of the first of these, who had been a regular visitor to the ward, developed severe paralytic poliomyelitis on or just before 24th October. He did not live in Southampton. Thus, of these 5 children, 3 developed poliomyelitis and the other 2 had illnesses compatible with an abortive attack. In the month after the re-admission of R, 15 cases occurred in Southampton, 14 of them from the eastern part and the majority from a localised area less than a mile from R's home, although there was no evidence of contact between R and any of the later cases.

From the end of November onwards, cases were being reported, usually in small groups, from many parts of the borough, though many areas remained little if at all affected. Forty-three cases, 26 of them paralytic, were notified in 1958 and, despite the temporary improvement in late February and March 1959, there were few weeks without one or more notifications until the middle of September. The number of corrected notifications over the two years was 128, 85 of them paralytic, and of these all but 5 fell between mid-October 1958 and mid-September 1959. There were 5 deaths. Nearly 40 per cent. of the patients were children under 5, which is a slightly higher proportion than has been seen generally in this age group in the last few years in England and Wales. Although only about a quarter of the patients were over 15 years old, this quarter included about 60 per cent. of the respiratory cases and 3 of the 5 deaths.

At the onset of the outbreak, about 30 per cent. of the eligible population, predominantly children under 15, had received poliomyelitis vaccine. Vaccination programmes were not interrupted and by mid-summer 1959 over 80 per cent. of those eligible under 15 had been vaccinated. Immunization among young adults was only begun after the start of the outbreak but even so about half of those eligible had been vaccinated by mid-summer 1959.

In all, 26 patients, 14 of whom had paralytic illness, had received 1 or more doses of vaccine. Eight had had only a single injection and 6 of these had paralysis. Fourteen had had 2 doses and 7 had paralysis. Four had had 3 doses and 1 of these had paralysis. There were no deaths among these 26 patients.

A curious feature about the outbreak is the degree to which it remained localised to the borough itself. The sanitary districts immediately bordering on Southampton are Eastleigh M.B., Winchester R.D., New Forest R.D. and Romsey and Stockbridge R.D. In 1958 a single case was notified from the Winchester R.D , the patient being the child D, discharged from the children's hospital in Southampton, who was mentioned in the discussion of the hospital outbreak. There were 3 notifications from the New Forest R.D. in 1958 but 2 of these were recorded in August, nearly 2 months before the onset of the Southampton outbreak. There was also a small village outbreak in this district in February 1959. The first patient recognized was a young man working in a part of Southampton where cases had occurred and there were subsequently cases in his family and in the school attended by his younger brother so that it is probable that this outbreak was a sequel to that in Southampton. It was not until the end of June 1959, over 10 months after the onset of the Southampton outbreak, that either of the other two sanitary districts recorded a notification. This is surprising enough in the case of the rural districts but is even more so in the case of Eastleigh. This urban area is contiguous with Southampton, the boundary between the two being an artificial one. Many of the people living in Eastleigh work in Southampton and the mixing of the populations is considerable.

Many other sanitary districts in Hampshire had small numbers of cases in both years and in 1959, even if Southampton C.B. is excluded, the notification rate for the county was appreciably higher than that for England and Wales as a whole. The districts concerned, however, were spread widely over Hampshire and, apart from the examples mentioned, there is nothing to indicate that they were associated with the Southampton cases.

A full account of this outbreak has been published.*

Diphtheria Outbreak in North London

In the last six years the number of corrected notifications of diphtheria in England and Wales has been under 200 a year and in three of those years it has been under 100. In each of the years 1958 and 1959, only 25 of nearly 1,500 sanitary districts in England and Wales notified cases of diphtheria.

It is evident therefore that diphtheria can no longer be regarded as being widely distributed in this country and this is borne out further by the investigations carried out in the Public Health Laboratories which indicate that, except in association with known cases, carriers of diphtheria organisms are extremely few. Very large numbers of throat swabs are sent regularly to the laboratories, mainly from children with sore throats with or without clinical evidence suggestive of diphtheria. From these swabs a very small number of positive results is found and this is good evidence that there is no widespread carrier state in the community.

The investigation and complete control of such outbreaks as do occur is therefore of particular importance as is the need to treat thoroughly both carriers and cases whenever they are discovered.

I referred in my Report for 1958 (page 37) to an outbreak of diphtheria in north London, mainly affecting young schoolchildren. Cases and carriers of diphtheria were again discovered in the summer and autumn of 1959 in one of the schools originally affected and subsequently there were similar outbreaks in other schools in the same and adjoining boroughs. Such an event is now unusual and therefore merits fuller description.

At the beginning of September 1958 a boy of 7 came home from a holiday in Wales with a nasal discharge but returned to his school (School A) in Finsbury, in which borough the last previous notification of diphtheria had been in 1952. His older brother who also attended this school developed a mild sore throat and a throat swab revealed virulent diphtheria organisms. A nasal swab from the younger boy was then also found to be positive. Both children were sent to hospital though neither was seriously ill and in fact it was not considered on the clinical evidence that either had definite diphtheria. Swabbing of their contacts, including other children in their respective classes, revealed one symptom-free carrier.

* Maurice Williams, H. C., and McLachlan, I. M., 1960. *Med. Officer*, **103**, 293.

A few days later a girl of 6, a contact of the first child, who attended a nearby school (School B) on the Holborn–Islington boundary was swabbed while mildly ill at home. She and subsequently her younger sister were found to have positive swabs but again neither was definitely considered to have diphtheria clinically. Altogether 16 positive swabs were found in children at this school and 3 more in the associated Junior School. Of these 19 children, 3 had mild sore throats and one of these had typical membrane formation. The mother of one carrier and an attending health visitor also produced positive swabs.

Meanwhile a girl of 7 in a third neighbouring school (School C) also developed a mild sore throat and was considered clinically to have diphtheria. This was confirmed bacteriologically. Three classmates and the older sister of one of them were then found to be carriers. Another clinical case was discovered in the associated Infants' School and 3 more carriers were found in the class of the child affected.

A month later 2 children aged 2 years living in the same block of flats were thought to be suffering from diphtheria and both had positive swabs. Among their siblings 3 were found to be carriers and one of these attended School B (the other 2 were under school age). Further investigation revealed 6 more carriers in School B and 2 among contacts of carriers.

The outbreak then appeared to have abated. In all, positive findings had been obtained from 48 individuals, a few of whom lived outside Finsbury, and notifications were received relating to 33, the remainder being regarded as carriers. Only 6 of these 33 had had symptoms for which a doctor had been consulted, most of the others having shown little or no clinical abnormality.

In June 1959 a 7 year old boy at School C was attending a casualty department on account of an arm injury. He complained of a mild sore throat and a routine swab grew diphtheria organisms. During the next month swabbing in the school revealed some 35 carriers. Another 20 carriers including 3 adults were identified among the families and contacts of children at the school. Thirty-eight of these children had symptoms and were notified although in only 3 or 4 were the symptoms anything but trivial. The 17 who remained entirely free of symptoms were regarded as carriers and were not notified.

The situation appeared to have improved by the end of the term but it was felt advisable to watch carefully for a possible recrudescence when the new term began at the beginning of September. As it happened, this caution was justified. When the school re-assembled, one child, a boy of 9, returned with a nasal and aural discharge and he and 10 other children had positive swabs. Five of these had been treated in June or July as cases or carriers and had had 2 or more negative swabs before discharge from hospital. The 4 year old brother of the first child mentioned also had mild symptoms and a positive nasal swab and an older brother was a symptomless carrier. Three more of their contacts were later found to be carriers. Eleven of these 16 children had mild symptoms and were notified.

Subsequent investigations in the school failed to detect any more carriers and it was just being considered that the episode was over when a similar situation developed in the neighbouring borough of Islington. Two children aged 5 in one class of an infant school (School D) developed definite though not severe symptoms and were found on swabbing to be harbouring diphtheria organisms. This school is a small one but occupies the same premises as another infant and junior school (School E). Full investigations in these schools resulted in the discovery of another clinical case and 3 carriers in School D and of a case and a carrier in School E.

By the end of October these schools appeared to be clear but then a girl of 9 at yet another Islington school (School F) developed clinical diphtheria, confirmed by a positive swab. Two carriers were also found in this school but these 3 children were probably not linked with the others as the organism concerned was bacteriologically distinct.

Unfortunately a new outbreak due to an organism indistinguishable from those found in the earlier outbreaks now manifested itself in another school (School G), where the discovery of a 7 year old girl with mild clinical illness and a positive swab led to the finding of 3 more cases and 27 carriers. In the family of the second case, a boy of 6 with membrane formation, both parents had had sore throats and the three siblings had had febrile illnesses either before or at the same time. Swabs from the parents were negative but all the children had positive swabs. There was no evidence to indicate whether the boy had been infected at school and had subsequently infected his family or whether one of the family had acquired infection from some other source and the child had introduced it to the school. Apart from the three domiciliary contact carriers already mentioned in this outbreak, the sister of another carrier also yielded a positive swab. She attended a different school, but fortunately no other positive findings were made in this school.

Early in December another school (School H) became involved with the discovery of a positive swab in a 12 year old child with a sore throat and 3 classmates, 2 of whom had no symptoms, were then found to have positive swabs.

This was the last school to be affected in this area although as the outbreak ended in North London a somewhat similar series of events, caused by a diphtheria organism of similar type, began in boroughs south of the river Thames and particularly in Camberwell. In North London the affected schools were in Finsbury, Islington and Holborn though individual patients and carriers also lived in neighbouring boroughs. All the isolations made, with the exception of the three at School F, were of an identical toxin-producing organism of mitis type. It was particularly fortunate in view of the large number of persons affected, that despite this organism's undoubted virulence, cardiac, neurological and other serious complications were exceptional and the majority of patients had only trivial symptoms. There were no deaths.

The mildness of the illness in general is itself of interest, as one might have expected from past experience of outbreaks of comparable size, to have had a number of seriously ill patients. Only one of the few patients with evidence of toxic diphtheria had been fully immunized whereas a majority of the carriers and those with trivial symptoms had been fully immunized. The immunization state cannot have been the only factor, however, as many unprotected or inadequately protected children also escaped without significant illness.

The suggestion was in fact made that many of the notified cases should in fact have been considered only to be carriers and that the investigations initiated as a result of the discovery of the earliest cases had simply revealed the presence of a previously existing and widespread carrier state in the community. Regardless of the exact differentiation between cases and carriers, the existence of such a generally high carrier rate is most unlikely for the reasons already discussed. Additional evidence against this view results from an investigation in two unaffected schools in Finsbury at the time of the 1959 outbreak. Swabs were taken from about 200 children at these schools and all were negative.

Schools A, C, D, E, F and H are infant and junior schools attended exclusively by local children whereas some of the pupils from schools B and G are drawn from a wider area. All the affected schools could be bounded by a circle with a radius of a mile and there were known possibilities of contact between staff and children at some of them although, except in the first two, no direct evidence of spread between one school and another could be obtained. Nevertheless, the sequence of a series of outbreaks by an identical organism in seven schools situated in a circumscribed area of London strongly suggests a connection.

On several occasions difficulty was encountered in eradicating organisms from the noses or throats of patients or carriers. Children who had two or more negative swabs after a course of tieatment might subsequently have positive swabs even when there appeared to be little possibility of their having been re-infected by other children. It seems likely that such undetected or recurrent carriers may have played a part in the spread of infection in the community. Now that diphtheria has been reduced to manageable proportions it is important that every effort should be made to detect, isolate and adequately treat such individuals in outbreaks which may occur in the future.

IIC

VACCINATION AGAINST POLIOMYELITIS

A report on vaccination against poliomyelitis has been made each year since 1955 and the progress made during 1959 is again worthy of comment.

It will be remembered that in 1958, as a result of the great efforts made by the local health authorities and general practitioners, over 10 million doses of vaccine were given. In 1959 it was fortunately possible to continue with the programme more regularly throughout the year, a course which had been impossible in 1958 because of the irregularity of supplies, but even so the fact that the work performed in 1959 considerably exceeded that in 1958 indicates another magnificent effort by all concerned in the scheme. Over 15 million doses of vaccine were given during the year.

At the end of 1958 about 6,400,000 people had received 2 or more doses of vaccine. Of these, 6,000,000 were children over 6 months of age who had been born on or after 1st January, 1943. These 6,000,000 children represented about 60 per cent. of the total population of the age group concerned. On the 2nd September, 1958, circular 20/58 had been sent to local health authorities outlining proposals for extending the use of vaccine to those born in 1933–42 inclusive and also for giving third injections. By the end of the year, 750,000 persons had received a third dose but the early response from the 1933–42 group had been disappointing, only some 350,000 having registered for vaccination. Of these, about 150,000 had already received their first two doses.

On 9th February, 1959, a letter was sent to local health authorities suggesting that local publicity might be intensified in an effort to get a better response from this and other groups, such as expectant mothers, where acceptance rates had been disappointingly low. Many local health authorities had in fact already adopted plans for publicising the availability of the vaccine and encouraging its use when, early in April, the death from acute poliomyelitis of a well-known footballer stimulated a sudden remarkable increase in demand for vaccination. This was particularly true for adolescents and young adults whose acceptance rate increased from about 8 per cent. at the end of February to 25 per cent. by the end of April and 36 per cent. by the end of June. Even among the younger group whose acceptance rate had already reached 63 per cent. at the end of February, there was a further increase of nearly 10 per cent. over this four month period.

This increased demand for vaccine, greater than anything that could have been expected, led to temporary shortages and difficulties for many local health authorities. Fortunately all three of the manufacturers producing British vaccine were able to provide regular issues of vaccine but even so it was necessary once again to buy additional supplies from Canada and the United States of America to meet the temporary shortage.

As has been mentioned, over 15 million injections of vaccine were given during 1959 and the position at the end of the year indicates the value of the hard work carried out over the whole of the period since vaccination began on a small scale in 1956. Over 11 million people had received 2 or more doses of vaccine, of whom 6·5 million had had 3 doses. Over 8 million of these born since 1943 had received 2 doses, representing about 75 per cent. of the total eligible population in the group. An additional 130,000 people had received a first dose. The progress made during the year is shown in the following table which relates only to those vaccinated with two injections.

Date	*No. who had completed two injections in millions*
31st December, 1958	6·4
28th February, 1959	7·0
30th April, 1959	7·7
30th June, 1959	9·7
31st August, 1959	10·6
31st October, 1959	11·0
31st December, 1959	12·7

Though the incidence of reactions attributed to the vaccine has been very low, there has always been the possibility that they might occur in persons sensitive to penicillin, as a result of the very small amounts of residual penicillin in the vaccine. Batches of vaccine made with other antibiotics have become available and in July I wrote to medical officers of health of local health authorities referring to the availability of penicillin-free vaccine for those known or believed to be penicillin-sensitive.

Safety and Efficacy of the Vaccine

In the 1958 Report, brief reference was made to the number of cases of poliomyelitis in that year among subjects who had previously been vaccinated against the disease. These cases have now been analyzed in some detail and the results, with some general conclusions, were published in 1960.[1] There were 1,994 cases of poliomyelitis notified in 1958 of which 1,419 were paralytic. 242 of these cases, 137 of them paralytic, were in vaccinated subjects. Study of the interval between the most recent inoculation and the onset of illness and of the sites of paralysis did not indicate either that paralysis affecting the inoculated arm had been provoked by injections of poliomyelitis vaccine or that cases of poliomyelitis had resulted from the use of the vaccine.

Poliomyelitis incidence rates in the vaccinated and unvaccinated population under 15 were calculated and these were 3·4 per 100,000 in those who had received 2 or more doses of vaccine and 21·4 per 100,000 in the unvaccinated. The two groups are not strictly comparable as an exact calculation of the size of the vaccinated population (which was increasing rapidly and irregularly during the year) is impossible. Furthermore, other factors such as accuracy of diagnosis and completeness of notification may affect the value of a comparison between the two incidence rates. Nevertheless the difference is too large to be accounted for except in small part by these factors and the analysis confirms the evidence for the efficacy of the vaccine published in other reports.[2, 3]

[1] Geffen, T. J. and Spicer, C. C., 1960. *Lancet*, ii, 87.
[2] Medical Research Council, 1957. *Brit. med. J.*, 1, 1271.
[3] Poliomyelitis Vaccine Evaluation Centre, 1955. *Amer. J. Pub. Hlth*, 45, No. 5, Pt. 2.

A further indication of the value of the vaccine is given by a comparison of the ratio of paralytic to non-paralytic cases among those who had received no vaccine, one dose or two or more doses.

Poliomyelitis cases in 1958 classified by presence or absence of paralysis and by vaccination state

No. of doses of vaccine	Paralytic	Non-paralytic	Ratio P/NP
Unvaccinated	829	326	2·5
One dose of vaccine	42	19	2·2
Two or more doses of vaccine.. ..	83	83	1·0

These figures suggest that some protection against paralysis is conferred by 2 or more doses of vaccine.

Comparable records for 1959 are not yet complete but according to the provisional figures there were 230 cases of poliomyelitis among vaccinated subjects, of which 148 were paralytic. Of those who developed paralytic illness, 33 had received one dose, 75 two doses and 40 three doses of vaccine. For the non-paralytic cases the numbers were 11, 39 and 32 after 1, 2 and 3 doses respectively. The inoculated limb was affected in 34 of the paralytic cases but in only 12 of these was the onset of illness within 28 days of inoculation. Altogether 46 cases, 34 of them paralytic, occurred within 28 days of the most recent inoculation.

Although it is not possible to make comparisons between the incidence rates among the vaccinated and the non-vaccinated, the ratio of paralytic to non-paralytic cases in patients who had received no vaccine or various amounts of vaccine are available and are of interest. The figures are set out below.

Poliomyelitis cases in 1959 classified by presence or absence of paralysis and by vaccination state

No. of doses of vaccine	Paralytic	Non-paralytic	Ratio P/NP
Unvaccinated	591	207	2·9
One dose of vaccine	33	11	3·0
Two doses of vaccine	75	39	1·9
Three doses of vaccine	40	32	1·25
Totals	739	289	2·6

These figures confirm that a useful measure of protection against paralysis is conferred by 2 or more doses of the vaccine and are in accordance with the comparable figures for 1958 already given.

II D

CONTROL OF INFECTION IN HOSPITALS

Most of the serious infectious diseases which formerly afflicted England and Wales have now been brought under control and, as causes either of illness or of death, have come to assume relatively minor importance. One of the consequences of this remarkable change has been to attract greater attention to those forms of infectious disease which have so far proved less amenable to the measures adopted for their prevention. Foremost among the present-day problems in this field of preventive medicine is the control of pyogenic infections in hospitals, a subject that was given some prominence in my report for the year 1956.[1] Awareness of the magnitude and complexity of this problem has grown steadily throughout the post-war period and, during recent years, has been followed by determined efforts, both individual and collective, to reach a practical solution.

In January, 1957, a symposium, arranged by the Association of Clinical Pathologists and the Medical Research Council's Committee on Control of Cross Infection, was held in London to discuss hospital coccal infections.[2] Numerous speakers contributed papers and it was evident that a lively interest in the topic was being taken in many parts of the country and that much original investigation of its technical aspects was being pursued. Similar impressions were gained at the various conferences on hospital infection which have taken place during the past few years under the auspices of some of the regional hospital boards. At these conferences professional and administrative hospital staff have met to exchange information and to report progress in their respective spheres of influence. The subject has engaged the attention not only of hospital authorities but also of public health administrators and of general medical practitioners. A symposium on hospital infection formed part of the proceedings at the Second Annual Clinical Meeting of the British Medical Association, which was held at Norwich in October, 1959.[3]

In 1958 the Standing Medical Advisory Committee of the Central Health Services Council set up a sub-committee, under the chairmanship of Lord Cohen of Birkenhead, to consider the control of staphylococcal infections in hospitals. A report, which was published early in 1959,[4] drew attention to the prevalence of staphylococcal disease, discussed the principles of prevention, summarized the measures of control currently accepted and indicated some of the problems which stood in need of further study. Although the terms of reference of the sub-committee were limited to staphylococcal infections many of its conclusions and recommendations were equally applicable to hospital sepsis in general and to other forms of communicable disease.

While it is true that hospital sepsis, on account both of its extent and of the gravity of its effects, merits special consideration, it would be unfortunate if excessive concentration on particular kinds of infection in hospitals should restrict the more general consideration which is necessitated by the variety of infective agents to which these communities may be exposed. During 1959 alone the Ministry was informed of no fewer than eight outbreaks of disease in general hospitals or maternity units due to organisms of the *Salmonella* group, including two outbreaks of paratyphoid fever. Several of these incidents were on a large scale, though fortunately the clinical effects were, on the whole, mild. In addition, an outbreak of dysentery and one of epidemic nausea and vomiting were reported, both in general hospitals. Diarrhoeal diseases have always been a source of trouble in residential institutions and have in the past proved a special hazard in mental and mental deficiency hospitals. There is good reason to believe that intestinal infections in hospitals generally are by no means infrequent and that relatively few outbreaks attract more than local attention. It is known also that respiratory tract infections may spread in hospitals and, during recent outbreaks of influenza and other respiratory virus diseases, have created grave difficulties especially in geriatric wards and chest units. Among the less common examples of hospital infection which came to notice during the year were an outbreak of infective hepatitis in a mental deficiency hospital and a small outbreak of poliomyelitis in a children's hospital.

The incidence of septic and other infections in many of our hospitals is at present a matter for conjecture, since the need for precise information is by no means universally recognized. The sub-committee on staphylococcal infections laid particular stress on this need and devoted an entire section of its report to the discovering and recording of cases. Systematic collection of relevant data is obviously an essential part of any comprehensive scheme of control and it is, perhaps, surprising that its value is so often overlooked. Lack of appreciation of the importance of maintaining continuity of observation and record may derive from an attitude of mind which regards infectious disease as an occasional, or even unwarrantable, disturbance of the normal working life of a hospital. It is more realistic to accept that infective agents of many kinds constitute an integral part of the hospital environment and that the aggregation of sick persons is inevitably accompanied by increased potentialities for the transmission of disease. From this viewpoint the organization of services to ascertain and record the occurrence of communicable disease may be seen, not as an exceptional activity, but as part of a necessarily permanent process of observation and preventive action.

Much of the progress which is at present being made in the control of communicable diseases in hospitals has been in the direction of improved techniques of asepsis and environmental sanitation, particularly as regards methods of sterilization and disinfection. The careful observance of aseptic precautions by doctors, nurses and all persons who come into close contact with patients has remained a fundamental principle of sound hospital practice. The introduction of chemotherapeutic and antibiotic agents capable of suppressing the clinical manifestations of a wide variety of infections led at first to some diminution in the relative weight attached to the importance of aseptic methods. The rapid emergence of drug-resistant strains of organisms, such as staphylococci, soon made it evident that asepsis must continue to be the basis of any successful scheme of control. The Medical Research Council's Memorandum on the Control of Cross Infection in Hospitals[5], which was last revised in 1951, contains much valuable guidance on this subject. Details of various nursing techniques have been summarized in memoranda on nursing procedures[6], which, together with procedural memoranda for hospitals[7], were prepared by the Standing Nursing Advisory Committee and issued to hospital authorities by the Ministry of Health. The general confirmation of asepsis as essential to the control of infection has been accompanied by a re-appraisal of the use made of antibiotic and chemotherapeutic agents. This has led to the adoption of voluntary measures to restrict too widespread, and possibly indiscriminate, administration of these valuable drugs and to secure the best possible results from their employment. The benefits which may be expected to follow from an agreed policy for the controlled use of antibiotics are well illustrated in a recent paper by Barber and her colleagues[8] of the Post-Graduate Medical School at Hammersmith.

The investigations of the Nuffield Provincial Hospitals Trust into present sterilizing practice in hospitals[9] exposed many weaknesses in existing facilities and techniques. In February, 1959, a report was published by the Medical Research Council's Working Party on Pressure-Steam Sterilizers[10]. The Minister of Health brought this report to the notice of hospital authorities and recommended that at each hospital one member of the medical staff should be charged with the responsibility of advising on the provision of suitable equipment and ensuring its proper use and control by specially trained operators. This recommendation had, in fact, already been implemented at a number of hospitals, where consideration had been given to the improvement of the standards and organization of sterile supply services. Some hospitals have established a central sterile supply department capable of handling many of the articles formerly sterilized in wards, operating theatres or elsewhere. The advantages of centralization include the possibility of providing efficient types of sterilizer at economical rates, both as regards capital expenditure and running costs, the greater ease of maintenance and supervision and the saving in time and labour of skilled staff, especially nurses, who can be usefully employed in other activities. Not all of the hospital equipment which needs to be sterilized is necessarily well adapted to central supply and one of the objects of organizational studies has been to define those items best handled centrally and those best dealt with elsewhere. Central syringe services have received almost universal approval wherever they have been instituted and considerable progress has been made in arrangements for the central supply of other sterile instruments, materials and accessories, including composite packs for use in surgical or obstetric operations or in the dressing of wounds.

The technical requirements for sterilization have been very fully investigated and there is a large measure of agreement among experts concerning the methods and standards which should be adopted. Greater diversity of opinion exists as regards the treatment of the many articles, used in hospitals, which it is impracticable to sterilize, and as regards the cleansing and disinfection of the various parts of the structure of the hospital itself. The need to disinfect all contaminated, or potentially contaminated, articles is a well-established principle but, in many instances, satisfactory and acceptable techniques are still the subject of investigation. Particular attention has been directed in recent years to the hazards presented by patients' bed-linen, blankets and mattresses, which in the past have seldom been submitted to regular disinfecting processes. The sub-committee on Staphylococcal Infections in Hospitals recommended[11] that blankets should be laundered, at least with each change of occupant of a hospital bed or cot, by a process which effectively reduces the bacterial load which they carry. A similar conclusion was reached by the Central Health Services Council's Committee on Hospital Laundry Arrangements whose report[12] was also published this year.

Much of the technical investigation of sterilizing and disinfecting processes has been concerned, rightly, with the quality of the end product. Of equal relevance is the organization of these processes in such a way as to minimize the dispersal of pathogenic organisms during the collection and transport of contaminated articles and to protect clean or sterile articles from subsequent contamination before use. The need to separate clean from dirty work was stressed by the Nuffield Provincial Hospitals Trust and University of Bristol's Investigation Team[13] and the application of this principle can be clearly discerned in the recommendations of the Committee on Hospital Laundry Arrangements. Similar considerations apply to many other hospital activities. It is essential that cleanliness of the environment should be achieved by means which avoid the uncontrolled dispersal of infective matter. Efforts on the part of hospital workers to ensure that this requirement was satisfied have led during recent years to a critical review of a wide range of accepted practices and of the materials and equipment involved. Considerable progress has been made in such matters as the disposal of soiled dressings and other waste; the use of new kinds of material, more readily adapted to disinfection, for blankets, bedspreads, curtains, mattress covers and the like; the design of vacuum cleaners; ventilation requirements; operating theatre practices and hygiene in hospital catering departments.

The problem of achieving a satisfactory degree of control over the hospital environment cannot be dissociated from the nature and volume of the work undertaken in the accommodation available. Standards of hygiene, which have proved adequate in a given set of circumstances, may fail to control the spread of infection under the stress of increased bed occupancy, more rapid turnover of patients or the introduction of virulent infective agents. To achieve a safe balance between the load of sources of infection in a hospital, the degree of aggregation of susceptible persons and the efficacy of the control measures in use is the ultimate objective. This involves organizational considerations, quite distinct from those involved in environmental sanitation *per se*, which may perhaps have received rather less attention than their importance merits. Overcrowding of patients is a well recognized evil and adequate spacing of beds is necessary to reduce the hazards of air-borne infection from person to person and to allow the staff enough room and time to perform their duties. The rate of admission and discharge of patients also influences the risks of cross-infection. Undue pressure of work may have consequences similar to those of overcrowding.

The facilities available for the isolation of patients suffering from an infectious condition need to be considered in relation to the nature of the infection. In the planning of new hospitals much thought has been given both to the size and design of isolation accommodation and to the types of infectious disease for which the accommodation is intended. Particular care is needed in the design and management of paediatric units, the more so if they are to be used for the treatment of any of the infectious fevers. Danger to other children in a paediatric unit arises not only from the presence of frank cases of specific infectious disease but also from undiagnosed cases unwittingly admitted to inappropriate accommodation. During the past five years three examples have been observed of spread of poliomyelitis in children's wards. In each instance the source of infection was a patient admitted to the ward and at the time of admission the provisional diagnoses were, respectively, virus meningitis, acute respiratory disease and pyrexia of undetermined origin. The need for adequate isolation of unexplained febrile illnesses is not, of course, confined to paediatric work but applies generally to all types of hospital practice.

The complexity of the problems associated with infections in hospitals involves many technical and administrative considerations. An outline of the administrative requirements for schemes of control is contained in the final section of the report of the sub-committee on Staphylococcal Infections in Hospitals. The responsibility for co-ordinating information and recommending preventive measures lies with the Control of Infection Officer, the value of whose contribution has now been amply demonstrated in many hospitals throughout the country. It is part of the function of this member of the medical staff, whether he be a clinician or bacteriologist, to think in terms of the effects of infection on the hospital community as a whole. The qualities of such a person have been admirably summarized by the Nuffield Professor of Surgery at the University of Oxford who, at a conference recently held in the Oxford Region, was reported to have said " There was a strong case for a new type of consultant —a man who is a bacteriologist and hygienist of good training, tactful and firm, who in a given hospital or hospital area would undertake active research into the way the hospital was run and the way the hospital staff performed their tasks ".

Support for the hospital Control of Infection Officer can be provided from within the hospital by a Control of Infection Committee composed of selected members of the medical, nursing and administrative staff. Help from outside the hospital, especially in the investigation and control of outbreaks of disease, is also available. The services of consultants in infectious diseases, medical officers of health and public health laboratories can often be used to great advantage. Assistance from these sources should not be considered as evidence of weakness in the hospital's control of infection organization, but simply as the intelligent use of existing specialist facilities. It is highly desirable that the local medical officer of health should be either a member of the control of infection committee or regularly represented at its meetings. At the regional level it may well prove desirable for a member of the regional medical staff to have as a principal function the provision of advice and assistance to hospital authorities on the investigation and control of infectious disease. In present circumstances there is ample scope for closer collaboration between hospital, public health and general practitioner services in dealing with a problem, which involves not hospitals alone but the community in which they are situated and, indirectly, the nation as a whole.

References

[1] Page 73.
[2] Hospital Coccal Infections (The Association of Clinical Pathologists), London, 1957.
[3] *Brit. med. J.*, 1959, *ii*, 880.
[4] Staphylococcal Infections in Hospitals (H.M.S.O.), 1959.
[5] Medical Research Council Memorandum No. 11. The Control of Cross Infection in Hospitals (H.M.S.O.), 1951.
[6] Standing Nursing Advisory Committee: Manual of Nursing Procedures.
[7] Standing Nursing Advisory Committee: Procedural Memoranda for Hospitals.
[8] Barber, M., *et al*, 1960, *Brit. med. J.*, *i*, 11.
[9] Present Sterilizing Practice in Six Hospitals (The Nuffield Provincial Hospitals Trust), London, 1958.
[10] *Lancet*, 1959, *ii*, 425.
[11] Staphylococcal Infections in Hospitals (H.M.S.O.), 1959, para. 137.
[12] Hospital Laundry Arrangements (H.M.S.O.), 1959.
[13] Studies in the Functions and Design of Hospitals (The Nuffield Provincial Hospitals Trust), O.U.P., 1955.

III

THE LABORATORY SERVICES

A. Public Health Laboratory Service (P.H.L.S.)

The last of the " associated " laboratories—that maintained by the Bristol University Department of Bacteriology—became a constituent unit of the P.H.L.S. on the 1st January, 1959. The laboratory will continue to be housed in the Department of Bacteriology until new quarters can be provided for it.

A joint pathological and bacteriological laboratory at Preston Royal Infirmary was formally opened in December 1958. The public health section, which is under the direction of Dr. L. Robertson, will be responsible for the work of Lancashire that is not covered by the laboratories at Manchester and Liverpool. Thanks are expressed to hospital pathologists in the county who were good enough between them to undertake the sanitary bacteriology of their areas until the Preston laboratory was completed. As the new laboratory becomes better known, it is hoped that this work will gradually be transferred to Preston.

The Central Tuberculosis Laboratory at Cardiff was transferred to the Service on the 1st April, 1959. It will be known in future as the Tuberculosis Reference Laboratory.

Sewage Contamination—Bathing Beaches

As mentioned in the report for 1953, a committee was set up to investigate the degree of sewage pollution of bathing beaches in England and Wales. There was at the time a widespread fear, which became increasingly vocal during the subsequent years, that some diseases, particularly poliomyelitis, were transmitted by sea water. Considering the heavy contamination of the sea at some bathing resorts with sewage, manifest even to the naked eye, such a fear did not seem unreasonable. It was plain, however, that nothing but a careful inquiry would enable the degree of danger to be assessed.

The Committee made a very thorough survey of forty beaches, carrying out a total of several thousand examinations of sea water. Technical problems presented some difficulties but these were in the main overcome successfully. The coliform count, which agreed well with the count of faecal coli organisms, varied greatly from one beach to another and even from one portion of the same beach to another. The purest water was free from coliform organisms; the most heavily contaminated water contained over 180 thousand per 100 ml. Several factors, such as wind, tide, and rain, were found to affect the coliform count and it gradually came to be realized that any attempt to establish a quantitative standard of bacteriological purity would be unrealistic. The main function of bacteriology was not to check the degree of pollution day by day, but rather to help in the conduct of surveys necessary for determining, for example, the best position for a new sewer outfall.

Besides the bacteriological investigation, epidemiological studies were made, particularly on typhoid and paratyphoid fever and on poliomyelitis. By studying the reported cases of enteric fever in relation to the bathing history it was possible to unearth only four cases of paratyphoid fever in recent years that could justifiably be attributed to bathing in sea water. Three of these cases occurred in children who had bathed on one beach and the fourth case in a child who had bathed on another beach. Both of these beaches were heavily contaminated and visibly objectionable. The Committee came to the conclusion that large numbers of paratyphoid bacilli would have to be ingested in order to give rise to disease and they were of the opinion that this could happen only as the result of contact with actual particles of faecal matter.

A comparison of patients suffering from paralytic poliomyelitis who had bathed in the sea within the previous three weeks with control children who had not suffered from poliomyelitis showed that the bathing history was practically identical in the two groups. There was no reason, therefore, to suggest that poliomyelitis had been contracted as the result of sea-bathing.

The general conclusions of the Committee were that, with the possible exception of a few aesthetically revolting beaches round the coast of England and Wales, the risk to health of bathing in sewage-contaminated sea water could for all practical purposes be ignored. This conclusion should, of course, not be considered a justification for complete inaction on the part of local authorities in coastal areas, but it does mean that no extensive general sewerage works are required. Obviously where a beach is visibly contaminated with sewage, steps should be taken to remedy the situation either by comminuting the sewage before it is discharged, or by carrying the sewer outfall some distance further into the sea, or by some other means. Complete biological purification of sewage before it is discharged does not seem to be necessary, and in any case purification does not result in the destruction of all pathogenic organisms. The Committee wisely drew attention to the fact that the mere presence of pathogenic organisms in sea water indicated the existence of infection in the town, and suggested that it would be more profitable on public health grounds to concentrate attention on the control of disease spread immediately by cases and carriers than on the very indirect risk of sea-bathing.

Typhoid carriers among Waterworks Employees

After the big outbreak of typhoid fever at Croydon in 1937 resulting from the use of drinking water contaminated by a typhoid carrier working in one of the wells, the Ministry issued a memorandum recommending water undertakers to exercise care in the selection of their workmen. It was suggested that the clinical history of each workman should be thoroughly investigated and that on every new employee a test should be made of the blood serum to ascertain whether or not he was likely to be a typhoid carrier. If a positive result was obtained that was not attributable to preventive inoculation, he should not be employed unless bacteriological examination of his excreta on at least three occasions failed to show pathogenic bacteria. On the whole this recommendation has worked well, but trouble has occasionally beeen caused by positive serological results which were not confirmed by examination of the faeces and urine. Suggestions were made from time to time by various bacteriologists that it might be better to rely on the bacteriological examination of the excreta rather than of the serum. To see how much truth there was in this proposal a committee was set up to study the distribution of antibodies to the typhoid bacillus in normal adults and in known carriers, and to compare the results with those obtained from the cultural examination of faeces and urine. Particular attention was paid to the so-called Vi antibodies, which at the time of issue of the Ministry's memorandum in 1939 had received very little study. The titration of these antibodies requires considerable care and experience, and the committee had reason to believe that some of the positive results that had been recorded in normal persons were due to insufficient skill on the part of the bacteriologist performing the test. Attention was also paid to the presence of antibodies to the O and H antigens of the typhoid bacillus.

It was found that in 268 sera from adults, mainly males, who had not been inoculated with typhoid vaccine only 4 (1·5 per cent.) contained Vi antibodies detectable in a dilution of 1/5 or over. Of 75 normal adults who had been inoculated not a single one contained Vi antibodies in the serum.

On the other hand Vi antibodies were found in 48 out of 67 known chronic carriers of the typhoid bacillus. The conclusion was therefore reached that the examination for Vi antibodies would detect about 70 per cent. of chronic typhoid carriers, and that the number of false positive results would probably not exceed 1–2 per cent.

A study of the O antibodies to the typhoid bacillus showed that they were present in a dilution of 1/50 or over in 16·4 per cent. of uninoculated and 36 per cent. of inoculated normal adults. In chronic typhoid carriers they were present in 80·5 per cent.

Antibodies to the H antigen were known to be useless in inoculated persons. They were, in fact, in this series, found in 86 per cent. of inoculated as against 2·7 per cent. of uninoculated persons.

Taking all these results together, the committee concluded that, if full use was made of the Vi and the O agglutinin tests, and in uninoculated persons of the H agglutinin test, something like 97 per cent. of chronic typhoid carriers would be detected by serological means, with practically no false positive reactions.

Analysis was then made of the results obtained by the bacteriological examination of the faeces of chronic typhoid carriers. On one series of ten carriers an examination of the faeces was carried out every week for 69 weeks. The proportion of positive results varied considerably, ranging from a minimum of 13 per cent. to a maximum of 96 per cent. In another series of ten carriers in which between 32 and 173 samples of faeces were examined per carrier, the proportion of positive results ranged from 1 per cent. to 96 per cent. In this series, eight of the carriers were detected at their first examination, one not until the thirteenth examination, and one not until the fiftieth examination. It is clear, therefore, that if three cultural examinations had been made according to routine procedure, two of these carriers would have been missed.

The Committee came to the conclusion that the serological method was better than the cultural method for the routine detection of chronic typhoid carriers. They suggested that the serum tests should aim at the detection of typhoid Vi, O, and H agglutinins. So long as the Vi test, in particular, was carried out by experienced bacteriologists, there was little risk of false positive results occurring. The final decision as to whether a man was a chronic typhoid carrier or not could of course be made only by the isolation of the typhoid bacillus from his excreta. These results not only confirm the Ministry's recommendation of 1939 to use the serological method as the basis for the detection of typhoid carriers, but greatly strengthen it by virtue of the information that has since been gained of the value of the Vi agglutinin test.

New Respiratory Viruses

The existence of three types of influenza virus—A, B and C—and of sub-types of Virus A has been recognized for many years. More recently, however, owing to the introduction of tissue culture methods, a number of new viruses unrelated to the influenza virus have been found associated with various forms of respiratory disease in man and animals. Of these viruses one of the largest groups is the so-called group of adenoviruses. This name was selected in 1956 to denote a group of viruses that had been found in human adenoid tissue. Once their cultivation had been effected numerous different types, now nineteen in number, were recognized. All of them have a common antigen detectable by the complement-fixation test, but can be distinguished from each other by a technique using neutralizing antibodies. At least six different clinically recognizable syndromes are caused by the adenoviruses, namely acute febrile pharyngitis, pharyngo-conjunctival fever, atypical pneumonia, febrile catarrh, acute follicular conjunctivitis, and epidemic keratoconjunctivitis. In this country most of the pharyngeal types of disease are caused by Types 3, 4 and 7. Type 8 is associated everywhere with epidemic keratoconjunctivitis. The diseases caused by adenoviruses have been found particularly in recruits. In the Royal Air Force, for example, infections of the respiratory tract with these viruses have caused not only considerable interference with the training routine, but have led to serious complications in the lungs which have necessitated the invaliding of quite a number of recruits from the service. The adenoviruses differ from influenza virus in that they appear to infect the upper respiratory tract first. That is why patients often complain of a cold beginning in the anterior portion of the nasal cavity and progressing down the respiratory tract leading to the development of a cough, laryngitis, and sometimes even bronchitis and pneumonia. In influenza the reverse sequence tends to occur.

Another virus called the Sendai virus was isolated from a pneumonic infection of new-born infants by Kuroya and his colleagues in Japan in 1952 by means of pernasal instillation of mice. Infection in this country with the Sendai virus was recognized by Gardner working at Colindale in collaboration with Bruce White and Hope-Simpson. Infection occurred among patients suffering from respiratory illness resembling influenza in a hospital for the chronic sick. Subsequent investigation by Gardner indicated that infection with the Sendai virus was not uncommon in this country. So far, however, diagnosis has rested on serological evidence alone; the virus itself has not been isolated.

In the United States Chanock and his colleagues, using a technique described by Vogel and Shelokov, isolated two viruses from infected infants and children suffering from acute upper respiratory illness and named them Haemadsorption virus 1 and 2 on account of their property of adsorbing red blood cells to infected tissue culture cells. Comparison later showed that the haemadsorption virus 2 was very closely related to the Sendai virus. Another virus, also isolated by Chanock from infants suffering from croup, was called the croup-associated, or C A virus. This is apparently identical with a similar virus isolated by Beale and his colleagues in Toronto. The three viruses—Sendai or haemadsorption virus 2, the croup-associated or acute laryngo-tracheitis, and the haemadsorption virus 1—are now named respectively parainfluenza 1, parainfluenza 2 and parainfluenza 3.

A further virus isolated more recently in this country is the so-called Coe virus which was originally described by Lennette and his colleagues in

California. Dr. Marguerite Pereira, working at Colindale in conjunction with Dr. H. G. Pereira at Mill Hill, isolated four strains of this virus in 1958 from throat swabs taken from members of the R.A.F. suffering from fever, sore throat, and cough. In a further investigation in 1959, 48 strains were isolated and serological evidence of infection was obtained in about 200 recruits. The virus differs from the parainfluenza viruses by growing in HeLa cells but not in monkey kidney cells. So far it has been isolated mainly from military establishments in the United States, Holland, and this country. In its epidemiological behaviour it resembles adenovirus Types 4 and 7.

Several other respiratory viruses not yet studied sufficiently have recently been described, and it is probable that when this subject is discussed again in these pages the picture will be considerably more complicated even than it is at present.

Collaboration with Veterinarians

It must be the aim of any national epidemiological service to know the topographical distribution in the country of every organism capable of causing infectious disease, together with the different types into which it can be divided. During the war and for some years afterwards such information as was available was received almost entirely from the public health laboratories themselves. The value of this limited information was, however, so great that it was decided to seek the co-operation of hospital pathologists and ask them to make a return each week of every infectious disease that had been diagnosed in the laboratory. Through the goodwill and help of Sir Samuel Bedson and of the Central Pathological Committee, of which he is Chairman, an excellent response was made to this request. For the last three or four years, weekly reports of positive findings have been received at headquarters from practically every hospital laboratory in the country. Though this greatly amplified our information on the distribution of pathogenic bacteria in the population, it was realized that a considerable gap in our knowledge still existed. Quite a number of human infections, including such diseases as tuberculosis, undulant fever, salmonella food poisoning, leptospiral jaundice, and Q fever, come partly or entirely from animal or agricultural sources. The organisms of these diseases may be isolated in the laboratory, but the prevention of further cases is possible only when the vehicle of infection and preferably the origin of the infection are known. In practice, this means the examination of animals on the farm or their products, such as milk and eggs. For this, the help of the veterinarian is required. In the opposite direction, the veterinarian is sometimes made aware of a disease in his flocks only by the occurrence of human cases of disease. Public health workers and veterinarians are so often interested in the same diseases, namely those carried from animals to man—the so-called zoonoses—that reason demands that they should work together.

With this object, a conference was called in June at the Ministry of Agriculture's main veterinary laboratory at Weybridge, at which a number of representatives of the veterinary and public health laboratories met together to discuss their common problems. As a result it was decided to try to bring the two sets of workers closer together over the whole country. To this end, five regional meetings were arranged and held during the autumn, at which the veterinary investigation officers met the directors of public health laboratories in their regions. It was decided to set up a joint committee to arrange for the co-ordination of field inquiries into human infections conveyed by animals.

Since a large number of organisms, particularly of the *Salmonella* group, are being introduced into the country in a variety of processed and unprocessed products—blood, bones, hides, meals, eggs—investigations will cover a wide field embracing both the health of the animals themselves and the feeding stuffs that are supplied to them. In addition, arrangements have been made for the exchange of information on pathogenic bacteria isolated in the public health laboratories on the one hand and the veterinary laboratories on the other. If good co-operation can be obtained with the veterinarians, then not only should our knowledge of the distribution of pathogenic organisms throughout the country be brought nearer to completion, but a great step forward will have been made on the road towards determining the origin of the multiple sporadic cases of human disease that at present are only suspected to be derived from animals.

Aseptic Meningitis

Before the general introduction of the tissue culture method for the isolation of viruses a high proportion of cases with symptoms of meningeal irritation were diagnosed as non-paralytic poliomyelitis. The routine examination of these cases by cultural and serological methods has now shown that only a comparatively small proportion can be attributed to the poliovirus.

Analysis of the returns of twelve of the larger laboratories in the Public Health Laboratory Service for the years 1958 and 1959 was undertaken to find out what other viruses were concerned. Cases diagnosed as aseptic meningitis, non-paralytic poliomyelitis, encephalitis and meningism were included. The results may be summarized as follows:

		Per cent.
Total number of cases	2,116	
Poliovirus	277	13·1
Mumps virus	94	4·4
Coxsackie virus A or B	38	1·8
Echo virus	28	1·3
Adenovirus	32	1·5
Lymphocytic choriomeningitis virus ..	7	0·3
Herpes simplex virus	7	0·3
Zoster virus	1	0·05
Influenza virus A, B or C	28	1·3
Parainfluenza virus 1	2	0·09
Psittacosis virus	5	0·2
Glandular fever	2	0·09
Leptospira canicola or *L. icterohaemorrhagiae*	13	0·6
Total number of cases in which a laboratory diagnosis was made..	534	25·2

These figures cannot be taken at their face value. In many cases only one specimen of faeces or of serum was sent for examination. In some a complete range of culture media was not inoculated or a complete range of antigens tested serologically. In others material was not injected into suckling mice, because these animals were not available, and in still others the final diagnosis of the clinician was not received. All the same, the results are sufficient to indicate that in only about a quarter of the cases of aseptic meningitis is a laboratory diagnosis reached at present. There seems to be room here for a deliberately planned investigation carried out jointly by clinicians and virologists.

B. The Hospital Laboratory Service

The disinfection reference unit

During the last year or so, the question of disinfection and sterilization, always of vital interest to our hospitals, has come into even greater prominence. This has been due largely to the insistent problem of cross infection, though the recent publication of reports by the Nuffield Provincial Hospitals Trust and by a Medical Research Council Working Party has served to focus attention on disinfection in its various aspects. Increasingly workers in this field are being asked not only for advice but also to carry out tests on new materials and methods. Advice is being sought both from hospitals and from trade sources.

Hospitals are asking about many matters concerning the planning and provision of Central Sterile Supply Departments; about ways to sterilize difficult apparatus, such as heart-lung machines and endoscopes; about the standardization of disinfectants used in hospitals; about terminal disinfection and the disinfection of blankets and about disposable articles now on the market which are pre-sterilized by non-traditional methods, such as ethylene oxide gas or irradiation.

The trade are concerned not only with the above problems but with many others in addition, such as the effect of heat on rubber gloves, the provision of apparatus for gaseous sterilization, the possible application of new fabrics for dressings or wraps for sterile packs, the evaluation of new disinfectants, new plastics for medical and surgical use and new types of air filter for sterilizers. And trade enquiries are often not only for advice but also for the organization of trials and laboratory tests.

Such requests are usually given the best attention possible but the facilities available are individually inadequate and collectively too diffuse to deal with the problem quickly, accurately, consistently, or economically. And in addition to these *ad hoc* problems, there is a need for continued research, both fundamental and developmental, especially in connection with newer methods of sterilization. For example, fundamental work is needed on the mode of action of ethylene oxide and irradiation and developmental work on their possible application to hospital requirements. An additional need is for machinery to control the many pre-sterilized medical and surgical products now becoming increasingly available. Already syringes sterilized by ethylene oxide and irradiated catheters are being sold to hospitals. It is possible that the sterility of such articles offered by reputable firms is very adequately controlled bacteriologically, but a number of new firms are entering this field and for some time, at least, they will need advice and help both in the techniques of sterilization and in the routine control of the sterility of their products.

At present these needs are being met by individuals using their own laboratory facilities, but this situation is far from satisfactory. There is variation in the advice given because of lack of liaison and of agreed results, and often wasteful duplication of practical work. It is not therefore surprising that both the advice given and the techniques commonly used vary widely and are often of very doubtful value. A further unsatisfactory aspect of the present situation is that highly technical procedures, such as sterility tests, are sometimes conducted by laboratory workers who do not have the necessary special experience and the results are unreliable if not positively misleading. Furthermore the initiation of research programmes designed to give urgently needed information is often subject to prolonged delay while grants are sought for special apparatus and staff, and the latter, when found, may only be available on a temporary basis with the result that the work, when at last begun, has to be interrupted or abandoned before completion.

Pathologists have felt a growing dissatisfaction with this state of affairs and this was voiced when, at its meeting in May of 1959, the Central Pathology Committee was considering the Medical Research Council's report on steam sterilization. It was decided then to look afresh at the whole question of disinfection, not so much with the object of drawing up a new code of practice—previous experience had shown that such things ran the risk of being still-born so rapid is the advance of knowledge—but rather with a view to setting up a service, some organization with continuity, capable of keeping practice in line with knowledge as well as dealing with the numerous day-to-day problems. A working party was appointed, under the leadership of Professor H. Knox, to look into the many aspects of this problem and a consideration of its report by the Central Pathology Committee at its next meeting resulted in the recommendation to create a central organization, a Disinfection Reference Unit, the functions of which would be to:

1. Provide expert and up-to-date information on innovations in the field of disinfection.
2. Advise on all problems concerned with sterilization and disinfection.
3. Provide facilities for having sterility tests made on:
   (*a*) specimens submitted by hospitals;
   (*b*) commercial products claiming to be sterile which are, or which it is proposed to put, on the market.
4. Conduct research in this field.

And to achieve this the Central Pathology Committee thought that this Disinfection Reference Unit should consist essentially of two parts:

(*a*) a small group of experts—not more than four or five—to advise on matters pertaining to this subject of disinfection and sterilization and to arrange for an information service to keep the hospitals in touch with up-to-date practice in this field;

(*b*) a laboratory in which pertinent research could be carried on and in which problems originating in the hospitals could be investigated and routine tests made on request.

It was considered that this laboratory would be best sited at the Central Public Health Laboratory, Colindale, and that the bacteriologist in charge of the laboratory should be a member of the advisory group.

C. The National Blood Transfusion Service

Three years ago the decline in the requests for blood in some regions led one to view with, admittedly qualified, optimism the prospect that a plateau on the curve of demands for transfusion fluid was gradually being attained. The succeeding years have shown that this optimism was misplaced and that the plateau is not yet in view.

The use made of the service by hospitals has again increased, some 6·8 per cent. more bottles of blood being provided to meet clinical needs in 1959 than in 1958 (increase of blood issued 1958–1957 = 5·5 per cent.; 1957–1956 = 4·6 per cent.). Although an increase occurred in each region, save one in which a small diminution was observed, there was a fairly wide variation between regions. In four the increase was above 10 per cent. (10·9 per cent., 11·0 per cent., 11·8 per cent. and 14·8 per cent.). The amount of dried plasma needed by hospitals was also greater in 1959 than in 1958. Issues rose by some 13 per cent., compared with the preceding year (increase of dried plasma issued 1958–1957 = 17·3 per cent.). As with blood, there was a wide regional variation, from a decrease of 5·2 per cent. in one region to increases of some 12 per cent., 13·3 per cent., 13·7 per cent. and 60 per cent. in four regions. Three of the latter regions are among the four regions showing rises of over 10 per cent. in the quantities of blood issued to hospitals.

The increasing number of heart-lung surgical teams being established in various centres through the country has had an effect on the work of the transfusion centres, although it should be noted that the practice of cardiac surgery has not yet started in the three regions, mentioned above, in which the increases in the issues of both blood and dried plasma exceeded 10 per cent. in 1959. In each of the latter regions it is intended to establish cardiac surgical teams in the future, so that a further increase in the use of blood in these regions may be expected. As was mentioned last year the blood that is used to prime the heart-lung machines and maintain the circulation during surgical operations on the heart is usually collected in specially prepared containers, using heparin as the anticoagulant, a few hours before the blood is needed. Heparinized blood does not remain fit for transfusion for more than a few days, so that it is necessary to gauge with some exactitude how much is needed for each operation or to have donors at hand who can be bled if more blood is needed than has been collected. An anticoagulant solution, suitable both for the preparation of blood for the heart-lung machine and for the preservation of blood for at least the usual life period of 21 days of acid-citric-dextrose(ACD) blood would be of great advantage, for blood would not then have to be collected within 12 hours or so of the operation and, if not used for the heart-lung machine, could be kept at 4° C. up to 21 days of age and so be available for transfusion of other patients. Such an anticoagulant solution has been devised in the United States of America and used to some extent in this country, but more experience of it must be acquired before the solution can be generally accepted for this work. The perfusion technique is constantly developing and changing as well as being put to new uses, such as limb perfusion. Much has still to be learned about the best ways of collecting and preparing blood for use in the heart-lung machine; consequently there is at present a wide variation in technical detail, but it is possible that a generally acceptable uniform method will gradually evolve in the same way as ACD solution was adopted internationally as the anticoagulant of choice for preserving blood for ordinary transfusion needs.

Following the analysis of blood used in hospital management groups in England and Wales in 1956 (see Report 1958) a retrospective pilot survey, in collaboration with the Ministry's statistical division, was carried out in the Regional Transfusion Centre, Birmingham. Information was collected retrospectively about the final use of a random sample of bottles of blood, the selection being based upon the bottle number allocated at the time when the blood was collected from the donor. Members of the Centre and hospital staffs were not aware that such a survey was in progress and the chance had therefore to be taken that all the clinical information desired would be readily available, since it was not possible to divert staff to perform a detailed local investigation in each hospital, reliance being placed upon the completion and return of the usual report cards attached to each bottle. The clinical information collected was:—sex, age, blood group of each patient; diagnosis and date of transfusion. The following information regarding each bottle was also available in the Regional Transfusion Centre: date of collection, use (i.e., issued to hospital, cross-matched for specific patient, used for preparation of plasma or grouping serum, etc.). The main objects of the survey were to discover what clinical conditions the blood was being used for; the extent of the use of group O blood for patients of ABO groups other than O and the age of the blood when used.

The information regarding diagnosis was found to be sufficient only to allow a broad departmental classification of patients as " Medical " (distinguishing cases of anaemia from the rest), " Surgical " (distinguishing accident cases from the rest), " Obstetrical and Gynaecological ".

The main observations were:—

(1) *Analysis by main diagnostic groups of 326 patients known to have been transfused.*

	Medical			Surgical			Obstetrical and Gynaecological	Un-defined	Total
	Anaemia	Other	Total	Accident	Other	Total			
Males ..	7	44	51	22	78	100	—	8	159
Females	13	24	37	8	52	60	51	19	167
Total ..	20	68	88	30	130	160	51	27	326

The distribution of the patients receiving treatment between the broad diagnostic groups reflects the case load of the hospitals served by the Birmingham Regional Transfusion Centre at the time of the survey. This is not necessarily similar to the national case load.

(2) *Compatibility and Frequency of ABO Blood Groups.*

Among the 326 patients the blood group of the patient was not ascertained in 4 cases. Of the remaining 322 patients, all save 5 received blood homologous within the ABO system; three group B and two Group A patients were given group O blood. In the Rh system 6 Rh-negative patients (five males aged 56, 61, 70, 77 and 90 and one female aged 84) were given Rh-positive blood, which was homologous within the ABO system. On the other hand 13 Rh-positive patients were given Rh-negative blood, homologous within the ABO system, save in the case of two patients of group A who received group O blood. Eight of these patients were females, 4 of whom were aged 50 or more; 5 were males, 4 of whom were aged 50 or more.

The observed frequency of the ABO blood groups of the bottles selected for survey accorded with the expected frequency; the frequency of the ABO groups of the patients transfused showed an excess of group O, but the sample is too small to assess the significance of this observation.

(3) *Age of 326 bottles of blood at time of transfusion.*

The date of transfusion was not known in 14 instances. Of the remaining 312 bottles, 29 were cross-matched at the regional transfusion centre and used within 7 days of collection and 283 were issued to hospitals. Of the latter, 29·7 per cent. were used within 7 days of collection, 40·6 per cent. between 8 and 14 days, 23·3 per cent. between 15 and 21 days and 6·4 per cent. more than 21 days after collection.

The experience gained in this pilot survey will be of value, should similar more extensive surveys be made in the National Blood Transfusion Service as a whole.

Equipment. During the year plastic disposable blood-giving sets were introduced into 3 more hospital regions, bringing the total of regions using disposable sets exclusively to 5; in addition in 4 other regions this equipment replaced a proportion of the glass-rubber sets hitherto used.

Accommodation. Progress was made during the year with the planning of the new transfusion centre at Liverpool, the building of which was authorised at the end of 1958. A site was selected and preliminary plans considered for a new regional transfusion centre at Birmingham. Both these centres will be close to the respective teaching hospitals and medical schools and provide the first examples of the fulfilment of the Ministry's policy that transfusion centres should, ideally, be physically close to the teaching units.

Donors.	*31st December, 1958*	*31st December, 1959*
Estimated effective civilian donor panel	715,911	784,312

During the year the net increase was 68,401; the number of new donors is greater than this, because of donors retiring on reaching the age limit of 65 years or for other reasons. The civilian donor panel at the end of 1959 was of such a size that approximately 1 person in every 34 of the population, aged between 20 and 65, was a donor and the amount of blood collected in 1959 was equivalent to 1 donation for every 28 of the population, aged between 20 and 65.

The thanks of all those who have been restored to health with the aid of blood transfusion or who have been treated with derivatives of human blood such as dried plasma and plasma fractions are due to the members of the donor panel, who have given such faithful and selfless service. The thanks of the National Blood Transfusion Service are also due to all those individuals and voluntary organizations who have helped to recruit donors and organize and assist at blood collecting sessions and also to those members of the British Armed Forces and the United States Air Force who have acted as donors.

The overall rejection rate was 8·1 per cent. (1958, 7·7 per cent.) and of the general public donors invited to give blood some 55·6 per cent. responded.

Although Table I shows a further decline in the amount of Group O, or so-called universal donor blood issued, Group O blood forms 50 per cent. or more of the total issued in several regions, indicating that homologous transfusion within the ABO system is probably not yet practised as widely as it might be.

Supplies of Whole Blood and Plasma

The main facts regarding the issues of blood and plasma are shown in Table I.

Table I

	1959	1958
Bottles of blood issued (including Rh-negative blood and packed red cells)*	828,594	775,792
Rh-negative blood issued expressed as a percentage of total number of bottles of blood issued ..	19·25	19·0
Packed red cells issued expressed as a percentage of total number of bottles of blood issued ..	0·9	1·1
Group O blood issued expressed as a percentage of total number of bottles of blood issued ..	47·9	48·2
Bottles of dried plasma issued†	59,562	52,715
Ratio blood issued/dried plasma issued	13·1 : 1	14·7 : 1
	1958	**1957**
Bottles of blood issued per hospital bed‡.. ..	3·98	3·77
,, ,, ,, ,, ,, ,, ,, §.. ..	1·61	1·52
Bottles of dried plasma issued per hospital bed‡ ..	0·27	0·23
,, ,, ,, ,, ,, ,, ,, ,, § ...	0·11	0·09
Bottles of blood issued per 100 patients discharged or dying	19·9	19·4
Bottles of dried plasma issued per 100 patients discharged or dying	1·35	1·18

* Each bottle contains about ¾ of a pint and is the gift of one donor.

† Each bottle contains the plasma from slightly more than 2 bottles of blood.

‡ Omitting staffed beds classified as infectious disease, chronic sick, mental deficiency, mental illness, pre-convalescent and convalescent.

§ Based upon total number of staffed beds in hospitals in England and Wales.

It has been customary since 1949 in this report to relate the amounts of blood and dried plasma issued each year to the number of staffed beds, as shown in Table I. This relation, however, does not take account of the number of patients treated in the beds available. In Table I this year have been included the amounts of blood and plasma issued per 100 patients discharged or dying during the years 1957–1958, and in Table II similar figures for the years 1949–1956 are shown.

Table II

	Bottles of blood issued per 100 patients discharged or dying	Bottles of dried plasma issued per 100 patients discharged or dying		Bottles of blood issued per 100 patients discharged or dying	Bottles of dried plasma issued per 100 patients discharged or dying
1949	12·6	1·54	1953	16·4	0·81
1950	14·8	1·28	1954	17·0	0·70
1951	15·7	0·95	1955	18·3	0·88
1952	16·3	0·87	1956	18·8	1·00

It is clear from these figures that the amount of blood requested by the hospitals per 100 patients discharged or dying each year has increased by about 50 per cent. over the ten years 1949 to 1958. The amounts of dried plasma diminished until 1954, since when they have increased again towards the figure prevailing in 1949.

The Blood Products Laboratory has continued to prepare dried plasma and certain plasma fractions from time-expired and, to a lesser extent, from fresh blood provided by the National Blood Transfusion Service.

The following fractions were prepared in 1959:—

Fibrinogen: 200 ml × 1·5 per cent. solution (dried)..	648 bottles
15 and 150 mg ampoules..	1,200 ampoules
Fibrin Foam	1,332 bottles
Gamma Globulin	26,547 ampoules
Thrombin	2,328 ampoules
Albumin	36,425 grammes

Homologous Serum Jaundice

During the year reports of 23 cases (1958: 26 cases) diagnosed as homologous serum jaundice were received by the Ministry from 7 of the 13 regional transfusion centres. That 13 of these cases were reported from 2 regions suggests that a number of cases of homologous serum jaundice do not come to the notice of the transfusion service. Eleven of the cases had received only whole blood, 9 had been given both blood and plasma, and 3 plasma only. Six of the 23 cases were fatal, 2 after transfusion of blood only, and 4 after the transfusion of both blood and plasma.

Ante-natal Testing. Some 457,855 specimens from ante-natal patients were grouped or examined for the presence of antibodies in the laboratories of the regional transfusion centres during the year.

IV

TUBERCULOSIS

In the report for 1958 the situation after the first ten years of the National Health Service showed how striking an advance in the control of tuberculosis had been made in that short time. A further improvement occurred during 1959. It is interesting at this time to look back a good deal further and compare with our earliest notification figures. On 18th December, 1908, an order issued by the Local Government Board provided for the notification to medical officers of health of cases of pulmonary tuberculosis occurring among the inmates of poor law institutions or amongst persons under the care of district medical officers. Notification of cases of pulmonary tuberculosis at hospitals and other institutions came into force on 1st May, 1911, and on 1st January, 1912, notification was extended to all cases of pulmonary tuberculosis coming under the care of a general practitioner. Finally, on 1st February, 1913, notification of all cases of non-pulmonary tuberculosis was begun. The first complete year of pulmonary tuberculosis notification was 1912 and the cases numbered 110,706. In 1959 the corresponding figure was 24,280.

How much tuberculosis is brought to light and notified depends very largely on the facilities provided for its detection. Fifty years ago there was no provision for radiological examination of the chest as we know it today and many early cases of pulmonary tuberculosis must have been unknown. With the wider detection services now provided some of these go to swell the notifications in the upper age groups of today. It is certain that we have a much more complete picture of the situation than was available fifty years ago but how accurate it is even now is not known. In early 1959 the highly successful Liverpool mass radiography campaign was carried out. In the report of the survey there were recorded, in addition to those reported through ordinary channels, 1,045 cases requiring close clinic supervision and 1,731 requiring occasional supervision. Campaigns of this magnitude are only practicable in closely knit communities such as Liverpool and it may be that the Liverpool campaign will be unique of its kind and magnitude in England and Wales. Nevertheless, apart from its undoubted value to Liverpool it has served to draw attention to the fact that much tuberculosis remains unknown to epidemiologists and physicians in spite of the increasing provision for radiological examination of the chest.

On a smaller scale but no less valuable to its community, the Exeter survey which followed soon after the Liverpool one brought to light 112 new cases of tuberculosis. These two examples of community surveys indicate how much can be done by the local authority in co-operation with the regional hospital board to discover unknown tuberculosis when a high proportion of the population is examined by X-rays. In a Departmental circular (7/59) the importance to the medical officer of health of maintaining a register of persons suffering from tuberculosis was discussed. It said: " Such a register would show the distribution and amount of the disease in the area and serve as a live record of the whereabouts of all known potential sources of infection. It should thus enable the medical officer of health to study the pattern of the incidence of the disease and take appropriate action when a significant grouping whether by residence, occupation or family is noted ".

As the number of cases of tuberculosis in the community declines still further the search for them whether by special localized surveys or intensive contact examination will need to be more and more intensive.

Mortality

In 1959 deaths from all forms of tuberculosis numbered 3,854, a decline of 14 per cent. on the previous year. Of these, 3,474 were due to the pulmonary form. Death rates for pulmonary and other forms of tuberculosis were respectively 77 and 8 persons per million living (89 and 11 for 1958). This represents a decline of 14 per cent. of the rate for all forms of the disease compared with 1958. Below is the table giving death rates from tuberculosis of the meninges and central nervous system. Although there has been a considerable improvement in recent years, as the four year averages show, the rates for 1959 are the same as for 1958 except in the 0–1 year age group where the rate has increased from 0·4 to 0·5.

Death Rates from Tuberculosis of the Meninges and Central Nervous System (010) by Age 1946–49, 1952–55, 1956–59, 1959

Age	1946–49 average per 100,000	1952–55 average per 100,000	1956–59 average per 100,000	1959 per 100,000
0–1	16	2·8	0·5	0·5
1–4	18	4·0	1·0	0·9
5–14	6	0·9	0·3	0·2
15–34	3	0·6	0·2	0·1
Over 35	0·5	0·2	0·1	0·1

Notification*

Under the Public Health (Tuberculosis) Regulations returns are made to the Ministry of Health and in 1959 the figure for all forms of tuberculosis was 27,100 (Males 16,447, Females 10,653). The figure for 1958 was 29,838, giving a fall of 2,738. Notifications of respiratory tuberculosis in 1959 were 24,280 (Males 15,207, Females 9,073), a decline of 1,213 in men and 898 in women despite the additional cases brought to light by the Liverpool campaign.

Among men, almost one-half of the 15,207 notifications of pulmonary tuberculosis occurred in those above the age of 45.

Number of Primary Notifications of New Cases of Respiratory Tuberculosis in England and Wales

Age Periods Years	0–	1–	2–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	Total (all ages)
Respiratory, Males	49	92	238	313	289	755	1,253	2,332	2,415	2,823	2,801	1,428	419	15,207
Respiratory, Females ..	32	81	260	298	329	990	1,379	2,018	1,554	963	620	388	161	9,073

* The revised (corrected) figures given in this section became available after the publication of Part I of the Ministry's Annual Report for 1959 and should therefore be substituted for those printed on page 29 (both in paragraph 1 and in table 18) of that Report.

The decline in notifications in those under twenty-five years of age continues and there was a modest fall in notification among both men and women above 45, the actual decreases being 1,213 and 898 respectively.

Percentage decline in respiratory notifications, 1958–59

0–14 years		15–24 years		25–44 years		45 years and over	
Male	Female	Male	Female	Male	Female	Male	Female
17	20	19	13	6	7	3	0·5

Chest Clinics

The numbers on the clinic registers of all forms of tuberculosis fell by nearly 6,000 to 339,107. New cases of tuberculosis (all forms) placed on the register during the last five years are:—

1955	35,000
1956	34,000
1957	32,000
1958	29,000
1959	26,000

Persons whose broncho-pulmonary secretion was found to be positive and who were not at the time in an institution fell from 14,102 in 1958 to 12,115 in 1959. Among the subsidiary data from the returns made by the chest clinics are total clinic attendances and persons examined for the first time by complete examination or by X-ray only. These figures relate to non-tuberculous as well as tuberculous patients and in each case there was a fall from the numbers of the previous year.

	1958	*1959*
Clinic attendances	2,311,337	2,205,604
Persons examined for first time by		
(*a*) Complete examination	403,105	366,035
(*b*) X-ray only	259,807	254,004

The unusually fine weather of 1959 may have contributed to this picture.

B.C.G. Vaccination

Circular 7/59, already mentioned, allows vaccination of schoolchildren of fourteen years of age and upwards who are still at school and also of students attending establishments of further education. It also allows vaccination of some children before the age of thirteen so that whole school classes can be included. The effect of this extension of the scheme is that every tuberculin-negative child can be given the opportunity by the local health authority to have the protection of B.C.G. vaccination before leaving school.

Among the 395,788 schoolchildren tuberculin-tested under the scheme for schoolchildren about 17 per cent. were found to be positive. 280,096 of these schoolchildren were vaccinated (1958: 241,434). A further 36,947 children were vaccinated under the older schoolchildren scheme making a total of 317,043 children vaccinated at school during 1959. By the end of 1959 a total of 1,605,413 persons had been vaccinated under local health authority arrangements of whom 466,154 persons were contacts.

Both liquid and freeze-dried vaccine is still issued by the Ministry and local health authorities have continued to have the choice between the two vaccines.

Tuberculosis in Local Health Authority Areas

Table XX gives the notification rates per 100,000 of the population by local health authority areas for 1959 and as an average for the five year period 1954-58. Comparing the average rates of 1954–58 with those for 1953–57, of the county authorities only three show a slight increase, a few are unchanged but most show a reduction. Among the county boroughs one only shows a slight increase. Of the 1959 rates compared with the averages for 1954–58, two counties only show a significant rise in 1959, and among the county boroughs six only. Of these six, the increase in three of them can be accounted for by special surveys made during the year. For the majority there are useful decreases.

Mass Radiography

Some of the pulmonary abnormalities discovered during the latter part of 1959 may need prolonged investigation before a firm diagnosis is possible and returns for 1959 must await the next annual report.

The story told here is for the year 1958 and the Mass Radiography tables in the appendix are for that year.

The total of those X-rayed by the Mass Radiography Service was approximately 3,324,000, a decline of 190,000 on 1957. In 1957 some of the units were lent for the Glasgow survey and some went to Edinburgh for the survey there in 1958. Rather more unit weeks were lost to England and Wales in 1957 than in 1958 so that the decline in the numbers X-rayed from the peak of some 3,600,000 in 1956 has continued. So, too, has the number of cases of pulmonary tuberculosis requiring treatment or close clinic supervision, 6,199 as against 6,481 in 1957, although the rate per 1,000 at 1·9 in 1958 was higher than the rate for 1957 which was 1·8. In the 1958 returns are listed cases of pulmonary tuberculosis requiring occasional supervision only; there were 6,648 such cases or 2·0 per 1,000 examined. It is the first time that this figure has been given but it is hoped it will make for a more complete picture of the situation.

There were 5,000 fewer general practitioners' referred cases X-rayed but among the 203,000 so examined the cases of tuberculosis requiring treatment or close clinic supervision had a case finding rate of 9·6 per 1,000, higher than that for 1957 (8·8). The age distribution was much as in previous years with the highest rates among men above 45 years of age.

The Interim Report of the Adrian Committee was not published until 1959 and the ban on the mass X-ray of schoolchildren had not yet been imposed in 1958. There were 215,850 schoolchildren examined among whom 113 cases of tuberculosis requiring treatment or close clinic supervision were brought to light: 162 others were found who needed occasional supervision only. These figures represent rates of only 0·5 and 0·8 per thousand.

Examinations of contacts numbered 58,700 with case finding rates for those requiring treatment or close clinic supervision, and those requiring occasional supervision, of 2·7 per 1,000 and 2·5 per 1,000 respectively. These examinations do not represent the whole of contact tracing since much of it is done by the chest clinic and not through the mass radiography unit. The combined rate of 5·2 per 1,000 illustrates, however, how rewarding is this work.

The greatest numbers of new cases of tuberculosis, other than those from general practitioner referrals, still occur among factory and office staffs and general public volunteers, about 3,400 requiring treatment or close supervision and 4,400 requiring occasional supervision. The highest rates are again among the older males, especially from the general public volunteers.

Since 1958 the returns made by units to the General Register Office have been in a simpler form and fewer non-tuberculous abnormalities have been included in the returns. This is not in any way to minimize the importance of this aspect of mass radiography but is because very full records are available over the last few years of the material brought to light. For the time being, at least, to lessen the burden on the units, a selection only of the diseases previously listed is to be recorded centrally. It is therefore difficult to compare some of these non-tuberculous findings for 1958 with previous years. There is a significant increase in the number of malignant neoplasms recorded. 1957, 1,776; 1958, 2,188. Males predominate: 1958 (Males, 1,895; Females, 293), 1957 (Males, 1,585; Females, 191), but the increase of cases among females is over one-half and for men about one-fifth.

As in previous years, by far the greatest number of these cases of malignant disease were referred by general practitioners and the remainder came to light principally during public sessions and visits to factories and offices.

The Mass Radiography Service continues to fulfil a most useful purpose mainly in detecting pulmonary tuberculosis and lung cancer. For the former it is the method of choice. Until means of detecting cancer in its very earliest stages are established radiology remains the most effective method at present available, although too often by the time radiological evidence is obtained the disease is well established. Early detection is equally important in tuberculosis and cancer of the lung and by scrupulous attention to technique and care in film interpretation mass radiography makes a most valuable contribution to this end.

V

THE RHEUMATIC DISEASES

Nothing could be more difficult or more likely to be upset by future events than a prediction of the probable course over the next decade of the prevalence and incidence of the baffling group of acute and chronic medical disorders known as the rheumatic diseases. This is a loosely constituted group which comprises a varied and, in some respects, still clinically undefined collection of disease entities, all of them primarily affecting the body's connective tissues with which, hitherto, the biological sciences basic to medicine have been but little concerned. Possibly it is for this reason that the aetiology of all the chronic rheumatic diseases continues to defy elucidation to an extent which prohibits the development either of logical measures for their prevention or of specific medicaments for their cure.

It is, perhaps, comforting to reflect that not many years ago the same prognostic uncertainty attended the diseases grouped as tuberculosis in which, although a specific causal agent had long been known, it would have been impossible to foresee with confidence the revolutionary curative effect of streptomycin or the firm endorsement eventually given by a British field trial, to the preventive value of B.C.G. vaccine.

It is, of course, mainly the complete unpredictability of the results of the clinical, laboratory and epidemiological investigation of the rheumatic diseases, either already in progress or likely to be started in the next year or two, which renders any attempt to look into their future more or less guess work. Even in a hypothetical situation as unlikely or as undesirable as that which would be created by a complete suspension of all such investigative activity for a long period any prophecy in this field of medicine would be made extremely vulnerable by the paucity and imperfections of the data currently available. Thus, quite apart from the as yet unknown factors likely to be introduced by research either already under way or about to be started, the figures given elsewhere in this chapter are hardly adequate to answer such limited and straightforward questions as the following:—(1) Will the clinical severity of rheumatic fever, as shown by the annual total of deaths attributed to it, continue to decline and, if so, will the rate of fall be greater or less than that of the last ten years? (2) Will the incidence of first attacks of acute rheumatism in children, as measured by the notification of this disease in certain areas, continue at the relatively low levels reported since 1955? (3) Will chronic rheumatic heart disease maintain its considerable importance as a cause of death in the middle and older age groups of the population of both sexes but especially among women? (4) Will "arthritis and rheumatism" continue to be the diagnosis made by general practitioners with a frequency which is second only to that of respiratory illness, such as influenza, and will it continue to be certified by them as a cause of long term incapacity for work second in importance only to bronchitis? Although, at present, these questions may be impossible to answer, it can be stated with considerable confidence that the medical research effort bearing on them in one way or another during the next ten years is certain to be much greater than at any time since the end of the last war.

Medical research is, of course, a term which covers investigational activities ranging widely from the elaborate and, often, mainly experimental laboratory studies of the biochemist and the pathologist through the direct observation of patients in ward or clinic to the survey of populations or occupational groups by a field unit. None of these lines of approach to the rheumatic diseases is likely to be neglected during the next ten years, a situation vastly different to that which has held good until very recently. Much of the credit for the increased attention now being paid to these diseases by medical research workers in this country is due to voluntary organizations such as the Empire Rheumatism Council and the Nuffield Foundation. The conquest of any disease cannot be guaranteed by the amount of money spent on it but progress towards that end can nearly always be made from known data and, although for true discovery we are nearly always indebted to the inspired exploitation of pure chance, in medical research, as in other walks of life, patience applied to planned observation is a virtue that is usually rewarded.

Acute Rheumatism

Mortality

The number of deaths classified by the Registrar General as due to rheumatic fever in 1959 was 126. Comparable annual figures from 1950 onwards are given in the following table:—

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Males	259	164	144	143	152	103	102	78	70	63
Females	310	214	184	167	147	114	106	96	61	63
Total ..	569	378	328	310	299	217	208	174	131	126

The total for 1959 differs little from that for 1958. The declining trend in deaths from this disease during the last six years has pursued a step-like course halting temporarily in 1954, 1956 and again in 1959.

Notification

Under the Acute Rheumatism (Amendment) Regulations, 1959, (S.I. 1959 No. 213) which came into force in February 1959, the notification of acute rheumatism in children under the age of 16 years previously operative in the counties of Cornwall and Lincoln (Parts of Lindsey) and in the county boroughs of Bristol, Sheffield, Kingston-upon-Hull, Salford, Grimsby and Lincoln was extended to the county of Lancaster and to the county boroughs of Cardiff, Manchester and Newcastle-upon-Tyne.

The total of cases notified in all twelve areas during 1959 was 180 (including two recurrences). For the eight areas which also notified in 1958, the total in 1959 was 75 (including two recurrences) as against 84 (including three recurrences) in 1958.

Cases Notified under Acute Rheumatism Regulations: January to December 1959

Notification Area	Registrar General's Estimate of Child Population 0–14 years June, 1959	Total Notified Cases	Acute Rheumatism	Recurrences	Chronic Rheumatic Heart Disease	Not Rheumatism
*Cornwall C.C.	72,200	4	4	—	—	—
Lancashire C.C.	487,600	56	51	—	4	1
*Lincolnshire C.C. (Parts of Lindsey)	78,500	3	3	—	—	—
*Bristol C.B.	100,300	27	19	2	—	6
Cardiff C.B.	62,600	15	15	—	—	—
Manchester C.B.	161,600	27	21	—	4	2
Newcastle-upon-Tyne C.B. ..	64,300	27	18	—	—	9
*Sheffield C.B.	103,000	18	16	—	—	2
*Kingston-upon-Hull C.B. ..	79,000	19	18	—	—	1
*Grimsby C.B.	24,700	5	4	—	—	1
*Lincoln C.B.	17,000	1	—	—	1	—
*Salford C.B...	37,400	12	9	—	1	2
Total	1,288,200	214	178	2	10	24

* Denotes the eight areas from which acute rheumatism was notified in 1958.

The total of English children under 15 years of age among whom acute rheumatism was notifiable in 1959 was 1,288,200. This is more than double the comparable number (513,700) among whom it was notifiable in 1958. In the following table annual rates for the notification of acute rheumatism (with heart disease) per 10,000 children under 15 years of age are given for eight English areas combined during the nine years 1950–58 and for twelve English areas combined during 1959.

Notified Cases Acute Rheumatism (with Heart Disease) per 10,000 children 0–15 years

	Eight English Areas Combined									Twelve English Areas Combined
	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Males ..	3·1 (1·6)*	1·9 (1·0)	2·4 (1·0)	2·9 (1·4)	2·0 (1·0)	1·4 (0·6)	1·6 (0·7)	1·3 (0·5)	1·4 (0·6)	1·4 (0·7)
Females ..	3·9 (2·3)	3·0 (1·6)	2·6 (1·3)	2·7 (1·4)	3·5 (1·5)	0·9 (0·6)	1·5 (0·7)	2·0 (0·5)	1·8 (1·4)	1·4 (0·7)

* Figures in parenthesis are the rates of notifications with heart disease.

It will be seen that, in general, these rates show a declining trend but that they are extremely variable; in consequence their interpretation is difficult. In 1959 the rate of notification of acute rheumatism among female children (1·4 per 10,000) was less than in any year since 1955. For neither sex do the 1959 rates show any evidence of an increased prevalence of rheumatic fever. In all years and in both sexes approximately half the total cases are found to have heart disease when first notified.

It is of interest to compare these rates for the incidence of notified acute rheumatism among English school children with the estimate made from a study* of the annual incidence of first attacks of rheumatic fever in the British Army during the years 1947–54 which was 5·9 per 10,000. Most of these first attacks were reported in young men during the initial months of their army service. It appears that susceptible young adults when exposed to the type of institutional living associated with service in the armed forces are at a substantially greater risk of rheumatic fever than are susceptible school children. Thus, to judge from recent figures, whereas only about 1 in 7,156 school children is likely to develop rheumatic fever annually, as many as 1 in 1,663 young soldiers may do so. On the other hand, heart disease associated with a first attack of rheumatic fever seems to be less prevalent in young soldiers (31 per cent.) than in school children (50 per cent.). Nevertheless, it seems likely that, at least in males, first attacks of rheumatic fever which occur after leaving school eventually make a substantial contribution to the considerable total of disability and mortality attributable to chronic rheumatic heart disease.

Chronic Rheumatic Heart Disease

Although a first attack of rheumatic fever is not necessarily associated with heart damage, subsequent attacks (i.e., recurrences) are believed to be extremely harmful in this respect. The annual number of deaths attributed to chronic rheumatic heart disease, although slowly declining, continues to be substantial as may be seen from the following table:—

Chronic Rheumatic Heart Disease: Mortality: England and Wales, 1949, 1958 and 1959

Year	Deaths all ages		Death rates per million living					
			0–34 years		35 years and over		All ages	
	Males	Females	Males	Females	Males	Females	Males	Females
1949	3,733	6,075	40·6	57·1	328·3	465·9	181·4	269·8
1958	2,567	4,867	15·5	22·9	224·7	369·0	118·1	208·3
1959	2,482	4,589	14·8	18·9	216·0	347·7	113·4	195·3

* Slater, J. D. H. and Rosenbaum, S. *Ann. rheum. Dis.*, 1959, **18**, 285.

Most deaths from this cause occur, as might be expected, at ages of 35 years and over. The prophylaxis of recurrences of rheumatic fever by means of the continuous administration of penicillin has not been practised in this country on a sufficient scale or for sufficient time for it to diminish long term mortality from rheumatic damage to the heart. The death rates from chronic rheumatic heart disease in women of the older age groups continue to be considerably higher than those in men. A sex difference of this sort is not noticeable in connexion with the incidence of first attacks of rheumatic fever where the rates are only slightly higher in female children. This suggests that in women there may be a clinically " silent " form of acute rheumatism leading eventually to chronic rheumatic heart disease. If this is so, continuous prophylaxis with penicillin against rheumatic fever recurrences may prove to be only a partial answer to the problem of preventing chronic rheumatic heart disease.

Chronic Arthritis and Allied Disorders

Included among diseases of the rheumatic group are rheumatoid arthritis and osteo-arthrosis, the most important chronic forms of joint disease. The only useful running index of the prevalence of these painful disorders of the joints is provided by the figures of incapacity for work available from the Ministry of Pensions and National Insurance. These are derived from certificates given by general practitioners in which, however, it is impossible to distinguish between the two main forms of chronic joint disorder in the disease certified as " arthritis " or to know precisely what clinical diagnosis is meant by that certified as " rheumatism ".

The table below covers a population extending over the whole of Great Britain comprising twenty million insured persons of whom more than fourteen million are men and nearly six million are women:—

Days of Incapacity per 1,000 at Risk (standardized for age) from all Causes and from Arthritis and Rheumatism; also such Days from Arthritis and Rheumatism as a percentage from all Causes and according to Sex for the period 1951–58

Year	Males			Females		
	Days of Incapacity		Arthritis and Rheumatism per cent. of all Incapacity	Days of Incapacity		Arthritis and Rheumatism per cent. of all Incapacity
	All Causes	Arthritis and Rheumatism		All Causes	Arthritis and Rheumatism	
1951 ..	12,943	968	7·5	17,099	1,583	9·3
1954–55	12,850	914	7·1	16,949	1,547	9·1
1955–56	12,725	872	6·9	16,696	1,514	9·1
1956–57	12,031	859	7·1	15,977	1,506	9·4
1957–58	13,397	824	6·2	17,422	1,430	8·2

It will be seen that arthritis and rheumatism, taken together, consistently accounted for a substantial proportion of the incapacity for work among insured persons of both sexes during the period 1951–58. In the year 1957–58, owing to the epidemic of Asian influenza, the total days of incapacity from all causes in both sexes were substantially higher than for previous years. On the other hand, the days of incapacity attributed to arthritis and rheumatism were slightly lower for both sexes in the year 1957–58 than in any previous year. Expressed as a percentage of all incapacity the figures for the lessened prevalence of arthritis and rheumatism in the year 1957–58, when compared with the years back to 1951, are, however, to some extent misleading because, in 1957–58, total days of incapacity rose by as much as 11 per cent. over the previous years.

For the incapacity covered by the figures in the above table, arthritis and rheumatism among males during 1957–58, as during 1956–57, was second only to bronchitis as a cause of absence from work; among women during 1955–56, arthritis and rheumatism exceeded respiratory tuberculosis as the leading cause of long term incapacity and every year since then has maintained that position.

Specific causes either of rheumatoid arthritis or of osteo-arthrosis have not yet been discovered. A substance known as the " rheumatoid factor " can be shown to be present in the blood of 70 per cent. or more cases of rheumatoid arthritis. This substance has also been found in the blood of 5 per cent. of samples of the total population and this proportion increases in frequency with age so that in some areas it is present in 14 per cent. of persons aged 65 years. The close relatives of persons found to have this factor appear more likely to have it in their blood than the relatives of those who do not, but the husbands and wives of those who have it do not differ in this respect from samples of the general population. It follows that the tendency to develop this factor in the blood is probably inherited and that, if this tendency determines susceptibility to clinical rheumatoid arthritis, then about one person in seven of the whole population may be at risk. In the areas so far studied not more than one person in twenty shows clinical evidence of rheumatoid arthritis. The conclusion is that other factors, most probably environmental, must play an important part in the incidence of the clinical disease.

Much of the data on the blood factor associated with susceptibility to rheumatoid arthritis have been collected in this country by the mobile laboratory of the Empire Rheumatism Council Field Survey Unit which is based on the Department of Rheumatology at Manchester University. Similar studies are being undertaken in Holland and also in Finland. The data from this further work, when collated, will give useful information about the rheumatoid arthritis prevalent in countries with a so-called " temperate " climate; it would be valuable if similar surveys could be made among European and non-European populations living in areas with a tropical climate where this disease appears clinically to be less important.

Another finding of considerable interest and, moreover, an unexpected one, has emerged from the field population surveys* conducted in Lancashire and elsewhere between 1956 and 1959. This was the demonstration of the existence of a relatively benign form of polyarthritis affecting some 5 per cent. of both sexes usually between the ages of 5 and 25 years. Attacks of this disease seem to occur mainly in the winter months with a peak between January and March. The duration was usually two to three months. Although commonly diagnosed

* Lawrence, J. S. and Bennett, P. H., 1960. *Ann. rheum. Dis.*, **19**, 20.

as subacute rheumatism, as rheumatic fever or, sometimes, as rheumatoid arthritis, neither rheumatic heart disease nor the rheumatoid blood factor was found to be present in patients who had a history of these attacks which had usually kept them away from work but only very rarely had led to their admission to hospital. As with other joint diseases in the rheumatic group, the evidence available does not permit the expression of any definite view of causation. Perhaps the most likely hypothesis is that this benign but nevertheless temporarily disabling and relatively common disease is associated with the viral infections almost invariably prevalent in this country during the winter months and, especially, in the first quarter of the year. Certainly, in many ways, it resembles the polyarthritis which has frequently been described in connexion with epidemics of rubella.

VI

THE CANCERS

The Development of Radiotherapy for Malignant Disease in England and Wales

The use of ionizing radiations in the diagnosis and treatment of disease began in the last decade of the nineteenth century with three great discoveries—X-rays in 1895 by Röntgen, natural radio-activity in 1896 by Becquerel, and radium in 1898 by the Curies.

X-rays for diagnostic use spread with remarkable rapidity and it was not long before it was realized that these penetrating rays were capable of causing biological change in living tissues. The epilatory effects of the rays paved the way for experiments on superficial skin lesions and in 1899 a cancerous growth of the skin was reported cured by the rays.

The enthusiasm with which the healing properties of X-rays was received hid for long their damaging power until the mounting toll of disaster forced attention by its magnitude. X-rays could cause as well as cure cancer. It is estimated that by 1922 one hundred radiologists had died from cancer caused by radiations.

The rays given off by radium were found to have similar effects to X-rays on human tissue—a fact graphically demonstrated in 1901 by Becquerel himself when he suffered a burn of the skin of the abdomen through carrying a tiny piece of radium in his waistcoat pocket. Radioactive substances had an added hazard in that in certain forms they could be swallowed or inspired and so continue to irradiate the body internally sometimes for long periods. A tragic example of this was the fate of the girls who were in the habit of licking their brushes whilst engaged in painting the dials of watches with luminous radium paint. Many developed necrosis of the jaw and some died of cancer of various bones.

The use of X-rays and radium was developed on parallel but separate lines, the former by radiologists and the latter by surgeons and gynaecologists. Meantime physicists were busy enquiring into the nature of the rays. It was found that radium gave off three types of rays which were called alpha particles, beta particles or rays and gamma rays. All these types of rays as well as X-rays can cause ionization in their track and their biological effects on the tissues are due to this property. Alpha particles lack penetrating power and are not used in radiotherapy.

The object of radiotherapy of cancerous tissues is to produce an effect on the irradiated malignant cell which will eradicate it and at the same time do minimal damage to normal cells.

The empirical era, 1900–1927

The employment of X-rays and radium in the treatment of cancer increased rapidly. Cures were described; extravagant hopes were entertained and clinical enthusiasm outstripped scientific discretion. Dose measurement was crude and for a long time was based on the minimum quantity of radiation required to produce a standard reddening of the skin, the so-called erythema dose. Disasters both to patients and doctors were numerous. The Ministry of Health in a circular[1] dated 1924 stated, " the astonishing point is, not that there have been failures to repeat results, but that the evidence for a beneficial value of radiotherapy in cancer is as great as it is ".

At first the same X-ray machines were used for diagnosis and therapy and by the same personnel. By the end of the first world war separate therapy machines up to 200 kilovolts were in use, and radiologists and physicists were striving to produce harder, more penetrating rays. Meantime, the use of radium was expanding, albeit slowly, due to its scarcity and high cost.

The London Radium Institute was opened in 1909 and the Manchester Radium Institute in 1914. In 1920, the Medical Research Council were entrusted by the Government with two and a half grams of radium, valued at £72,500, and fractions of this were lent to nine selected national radium centres. Middlesex Hospital acquired half a gram as a source of supply of radon, the short lived radioactive gas of radium which was found useful when encapsulated as gold or platinum seeds for implanting into tumours. The first recorded insertion of radium into a tumour was in 1912.

The necessity for instructions to ensure the safe use of these rays was recognized by the formation of the British X-ray and Radium Protection Committee in 1921 and this committee played a large part in the first issue in 1928 of the International Recommendations for X-Ray and Radium Protection.

By 1928, 25 grams of radium were available in this country, mostly as tubes, needles and plaques and a beam or teletherapy unit was in use with a 4-gram radium source.

Meantime the physicists had made great strides in their knowledge of the structure and properties of the atom, isotopes had been named and defined and nuclear physics was a rapidly expanding science which was to have a strong influence on radiotherapy.

The deep X-ray and Radium Commission era, 1928–1945

Two events opened a new chapter in British radiotherapy. In 1928 the "röntgen" or "r" was established as a unit of measure of radiation. It related dosage to the energy imparted by the radiation beam and so allowed of scientific dose measurement in place of the hit and miss methods of the past. Improved measuring apparatus made it possible by 1957 to adapt the röntgen for the gamma rays of radium as well as for X-rays and the accuracy and speed of radiation dose measurement increased greatly.

In 1929 the Radium Commission started its activities[2]. This was an independent non-governmental body whose primary object was to secure the proper distribution and use of radium for medical purposes. From the outset it demanded high standards of clinical practice and of record keeping and it advocated a policy of concentration of radiotherapeutic facilities in a few fully equipped national centres. By 1936, twenty-two such centres were functioning. It urged the appointment of full time salaried radiotherapists and whole time physicists, and the separation of radiotherapy from diagnostic radiology was gradually enforced. The Commission extended its activities to include the purchase and distribution of X-ray apparatus in addition to radium.

[1] Ministry if Health, Circular 476, 1924, H.M.S.O.
[2] Spear and Griffiths. The Radium Commission, 1951, London, H.M.S.O.

France, Sweden, other continental countries and the United States of America were, in some respects, in advance of Britain in their techniques for the treatment of cancer by radium but with the encouragement and guidance of the Radium Commission British radiotherapy became second to none in technique and precision. On the inception of the National Health Service in 1948 the Commission ceased to exist and its place was taken to some extent by a Standing Advisory Committee of the Central Health Services Council on cancer and radiotherapy.

Increased knowledge of dose distribution led to advances in techniques aimed at ensuring an adequate dose of radiation to the whole tumour with minimum damage to surrounding tissues. Multiple field therapy, arc therapy and rotation therapy were evolved to reduce skin reaction and to improve the poor depth dose characteristics of conventional deep X-ray beams. But planning, however careful, could not improve radiation distribution beyond the properties of the X-ray beam used and the need was felt for more penetrating rays from machines of higher voltage than the conventional ones of 200–250 kilovolts. It was found impracticable to develop this conventional type of X-ray apparatus for tensions up to millions of volts. New technical ideas evolved, stimulated by the needs of World War II and by the advances in nuclear physics. New X-ray machines, which speeded electrons not by high voltages across X-ray tubes but by a series of electro-magnetic kicks, were invented and almost simultaneously there appeared betatrons, synchrotrons and linear accelerators. These were all built originally to serve nuclear physics and later adapted for medical use.

Meantime beam units using 10 grams of radium had been developed and the total amount of radium increased to 170 grams of which 91 were in beam units (by 1954 most of these were converted into small cobalt units). Radium needles and tubes were standardized and improved. In 1934, Paterson and Parker* published their well known work on radium dosage which put radium techniques on a rational basis.

The Megavoltage and Isotope Era, 1945 onwards

St. Bartholomew's Hospital, London, in 1938, developed and installed a 1-million volt X-ray generator but it was not until 1949 that the first of the new type of machines in this country generating X-rays at over 1-million volts, the 2-million volt Van de Graaff accelerator, was in operation. Three of these are still in use at Sheffield, at Westminster and at the Royal Marsden Hospitals. Next, two 30-MeV. (million electron volts) synchrotrons were erected at Cambridge and at the Royal Marsden, but their low output made them unsuitable for routine radiotherapy. In 1947 a group of the Atomic Energy Research Establishment developed and operated a 3·5 MeV. travelling wave linear accelerator and from this evolved the 8 MeV. linear accelerator installed at the Medical Research Council's unit at Hammersmith Hospital in 1951. The next stage was the more flexible 4 MeV. linear accelerators sponsored by the Ministry of Health. Four of these are in operation at Newcastle, Mount Vernon (Middlesex), Manchester and Liverpool, and several more will be installed in the next few years. These accelerators are looked on as one of the finest pieces of apparatus at present available for radiotherapy.

With the development of the nuclear atomic reactor and the cyclotron it was possible to produce new radioactive isotopes in quantities immeasurably greater

* *Brit. J. Radiology*, 1924, 7, 82.

than all the available radium supplies and at a fraction of the cost. Some of these emit gamma rays, some beta, and some both. They vary in the intensity and quality of the rays emitted and they differ widely in the length of their radioactive lives (the time a radioactive isotope takes to lose half its intensity is called its " half-life ".

All these varying qualities are made use of by radiotherapists with the result that a considerably increased range of techniques is at their command.

Radioactive isotopes are used (1) for external radiotherapy in beam units (telecurietherapy), (2) for local application to skin or eye as plaques, applicators or paints, (3) for implantation into tumours in the form of seeds, grains, or wire, (4) for injection into cavities as solutions, and (5) for systemic use orally or parenterally as unsealed isotopes.

Two isotopes have qualities suitable for beam therapy in addition to radium, Cobalt-60, an artificial reactor product, and Caesium-137, a fission bye-product of the reactor. Cobalt-60 has a half-life of five years and emits a powerful beam of gamma rays equivalent in energy to the X-radiation from a 3-million volt X-ray tube. It was first used in this country for telecurietherapy at University College Hospital, London, in 1950, when a 6 curie Cobalt-60 source was substituted for a 10-gram radium source. There are now some 20 units operating in hospitals in this country with sources of 1,000 or more curies, and at least as many more units are contemplated.

The development of Caesium-137 has been slower for various technical and clinical reasons, but there are now seven major units in operation. The gamma beam it emits is equivalent in energy to the radiation from a 1·5 MeV. X-ray tube. Caesium therapy has considerable clinical advantages over that provided by conventional X-rays in the 200–250 K.V. range, and the long half-life of Caesium-137, approximately 30 years, makes it an economical source of therapeutic rays.

Other gamma-ray isotopes in common use are Gold-198 as seeds or colloidal solutions and Tantalum-182 as wire. The beta ray emitters Strontium-90 and Phosphorus-32 are used for superficial lesions and Yttrium-89 for radiological destruction of the pituitary gland. Radium in the form of plaques is used for its beta rays, as is also its short lived gas, radon, enclosed in " seeds ".

The systemic use of radioactive isotopes has been disappointing and only Iodine-131 and -132 and Phosphorus-32 have shown any degree of specific concentration in tissue. The former is used for the treatment of thyrotoxicosis and rare forms of thyroid carcinoma and the latter for polycythaemia vera and a few bone tumours.

The benefits of megavoltage

Apparatus producing ionizing radiation with energies of 2 million electron volts and over can deliver an adequate dose to any tumour in the human body, however deep-seated. The maximum dose is built up below the skin, and is more uniformly distributed between the soft tissues and the harder bony structures; the total energy absorption in the body is proportionately less than from conventional X-rays so that the three great drawbacks of conventional deep X-ray therapy—skin reaction, bone and cartilage necrosis and radiation sickness—are largely eliminated. The reduction of skin reaction is in itself a major contribution to radiotherapy. Telangiectases, fibrosis and atrophy of the skin, so common after conventional X-rays, no longer occur.

The greater expense of the apparatus is partly offset by the larger number of patients that can be treated in a given time, and this form of treatment causes so much less discomfort to patients that a smaller proportion require in-patient treatment.

The advantages are so considerable that megavoltage is now considered essential for the treatment of many types of cancer. The policy in this country is to provide every centre engaged in the radio-therapy of malignant disease with at least one megavoltage unit. In order to make full use of such apparatus a suitable degree of concentration of radiotherapy will be necessary.

Future developments

Whilst the techniques of delivering an adequate radiation dose to malignant tissues with the minimum of discomfort to the patient are being solved, attention is being directed to means of enhancing the effects of radiotherapy.

Substances designed to increase the radio-sensitivity of malignant tissues are being sought. One technique which is receiving considerable attention lies in increasing the level of the dissolved oxygen in the tissues during irradiation. The benefit in certain cases of combining the use of cyto-toxic drugs with radiotherapy is being followed up.

Neutron and proton beams have been experimented with and may be of some value in a few special cases but it is unlikely that they will have a place in routine radiotherapy.

High energy electron beam therapy offers substantial theoretical advantages but for deep-seated tumours in certain situations accelerators developing energies of 35 million electron volts and over may be required. Expense and technical difficulties will tend to restrict expansion of this form of therapy but its potentialities justify further exploration.

TABLE I

Mortality from Cancer (140–205), England and Wales, 1947–59*

Year	No. of Deaths			Crude death rate per million living		†Standardized mortality ratio (base years 1950–1952 taken as 100)	
	Males	Females	Persons	Males	Females	Males	Females
1947 ..	39,927	39,857	79,784	2,036	1,797	94	102
1948 ..	41,302	40,353	81,655	2,028	1,803	95	101
1949 ..	42,196	41,008	83,204	2,050	1,821	96	101
1950 ..	43,570	41,700	85,270	2,058	1,840	98	101
1951 ..	44 632	41,448	86,080	2,121	1,820	101	99
1952 ..	45,429	42,213	87,642	2,152	1,848	101	99
1953 ..	45,935	41,989	87,924	2,166	1,833	102	98
1954 ..	47,313	42,782	90,095	2,223	1,861	103	98
1955 ..	48,160	43,180	91,340	2,252	1,873	104	98
1956 ..	48,935	43,775	92,710	2,274	1,891	105	97
1957 ..	50,056	43,961	94,017	2,312	1,890	106	96
1958 ..	50,735	45,069	95,804	2,333	1,929	106	97
1959 ..	51,783	45,334	97,117	2,366	1,929	107	97

* Civilians only, 1947 to 1949.

† The "Standardized mortality ratio" replaces the "Comparative mortality index" used prior to 1958.

TABLE II

Deaths from Cancer of certain sites, England and Wales, 1959

International Statistical Classification No.	Sites	No. of deaths registered		Rate per million living		Proportion per 1,000 total cancer deaths	
		M.	F.	M.	F.	M.	F.
140–159	*Total digestive system* ..	20,409	19,198	933	817	394	423
140	Lip..	74	10	3	0	1	0
141	Tongue	363	152	17	6	7	3
143–148	Buccal cavity and pharynx	745	374	34	16	14	8
150	Oesophagus	1,369	955	63	41	26	21
151	Stomach	7,930	6,146	362	262	153	136
152, 153	Intestine (except rectum)	3,715	5,646	170	240	72	125
154	Rectum	3,059	2,602	140	111	59	57
157	Pancreas	2,081	1,851	95	79	40	41
160–165	*Total respiratory system* ..	19,026	3,202	869	136	367	71
161	Larynx	643	180	29	8	12	4
162, 163	Lung, bronchus, pleura and trachea	18,181	2,882	831	123	351	64
170–179	*Total breast and genital organs*	3,988	16,180	182	688	77	357
170	Breast	62	8,708	3	371	1	192
171	Cervix uteri	—	2,555	—	109	—	56
172–174	Uterus (other than cervix)	—	1,448	—	62	—	32
175	Ovary	—	2,939	—	125	—	65
177	Prostate	3,590	—	164	—	69	—
179·0	Penis	106	—	5	—	2	—
180, 181	*Total urinary system* .	2,716	1,413	124	60	52	31
180	Kidney	704	459	32	20	14	10
181·0, ·8	Bladder	1,992	932	91	40	38	21
190, 191	Skin	426	448	19	19	8	10
192, 193	Eye, brain and nervous system	1,107	893	51	38	21	20
194	Thyroid	100	280	5	12	2	6
196, 197	Bone and connective tissue	440	358	20	15	8	8
195, 198, 199	All other and unspecified ..	780	973	36	41	15	21
200–205	*Total Lymphatic and Haematopoietic tissues*	2,791	2,389	128	102	54	53
201	Hodgkin's disease ..	543	332	25	14	10	7
204	Leukaemia and aleukaemia	1,315	1,219	60	52	25	27
140–205	*Total Cancer*	51,783	45,334	2,366	1,929	1,000	1,000

TABLE III

Mortality from Cancer—England and Wales
Number of deaths in main sites in 1959 compared with 1958

Sites	Decreases		Increases	
	Males	Females	Males	Females
All cancers	—	—	1,048	265
Oesophagus	—	38	69	—
Stomach	4	32	—	—
Intestine	93	—	—	107
Rectum	73	—	—	101
Pancreas	—	—	101	104
Lip	9	—	—	6
Tongue	—	—	4	9
Larynx	19	—	—	9
Buccal cavity and pharynx	—	60	10	—
Breast	11	241	—	—
Lung	—	—	1,141	102
Cervix uteri	—	147	—	—
Uterus excluding cervix	—	—	—	35
Ovary	—	—	—	49
Prostate	24	—	—	—
Lymphatic and Haematopoietic tissue	—	—	84	178
Bladder	5	—	—	83
Leukaemia and Aleukaemia	—	—	14	134

Morbidity and Mortality in Cancer

It is not difficult to compile data on mortality. Death is a clearly defined occasion and the legal requirement of medical certification of the cause has provided a wealth of statistics. Unfortunately they give little information as to the prevalence of any disease or the chances of recovery. In cancer, for example, they give neither information of medical successes such as cure or prolongation of life, nor of the true incidence of the disease. Cancer registration was designed, in part, to provide this information but the diagnosis of a disease cannot be recorded in such a simple fashion as the diagnosis of a death. Registration involves not only recording cases of cancer as and when they are diagnosed but details of the stage to which the disease has advanced, the treatment given and the length of survival. For many understandable reasons cancer registration has been maintained on a voluntary basis and is requested only from hospitals and treatment clinics, thus cases tend to remain unregistered where the patients have not attended hospital or the diagnosis was made too late for effective treatment.

Since 1954 the death certificates of all persons resident in the South Western hospital board region (where registration of hospitalized cases is nearly complete) who died with mention of cancer on the certificate have been examined by the Regional Cancer Records Bureau and those not registered during life have been included in their returns, which should thus include as far as possible all known cases of cancer in the region and form the best available basis for estimating the incidence. Rates calculated from these figures will be known here as incidence rates. From the data for the years 1954–57 figures have been calculated and these, after adjustment for local variations (by Standardized Mortality Ratios) applied to the population of England and Wales as a whole to give an approximation, for the majority of cancer sites, of the national age-incidence rates.

It was found that the proportion of unregistered cases varied very much from site to site and was, in general, higher among the less accessible sites of cancer and among the older groups of patients and that a somewhat larger proportion of women than of men remained unregistered.

TABLE IV

Cancer of various sites. Proportion of cases, discovered from Death Certificates, per 100 total cases at various age groups in each site, by sex, South Western Hospital Region, 1954–57

Site and I.C.D. No.	Sex	Age group			All ages
		0–	55–	75 and over	
Lip, tongue and rest of mouth (140–144)	M.	2·5		8·7	4·2
	F.	1·6		21·5	6·9
Stomach (151)	M.	12·8	22·8	54·9	30·0
	F.	12·4	31·4	64·4	42·8
Breast (170)	F.	3·7	9·2	33·8	12·4
Cervix uteri (171)	F.	2·5	8·5	27·0	7·5
Prostate (177)	M.	17·2		30·9	24·0
All sites (140–205)	M.	7·8	14·7	30·8	17·3
	F.	5·4	15·1	41·5	19·5

RATES

Comparison of incidence and mortality rates reveals some interesting differences. In the case of highly lethal forms of cancer with a short survival period such as lung, or gastric cancer, the mortality rate in each age group is only slightly less than the incidence rate while in a relatively curable condition with a long survival period such as cancer of the mouth and tongue, the rate of mortality is small compared with the rate of incidence. These points are illustrated in Diagram III where the mortality and incidence of prostatic cancer which occupies a median position are also shown. It will be noted here that the shape of the curve of incidence conforms closely to that of mortality though they tend to approach each other more closely towards the older age groups and in the oldest age groups the mortality, probably owing to some deficiency in registration at these ages, may actually exceed the incidence rate.

In the case of cancer at certain other sites, particularly those connected with the generative system, the forms of the curves of incidence and mortality differ in many important respects. The most remarkable difference is seen in cancer of the uterus, both of the cervix and of the corpus. Here the rate of mortality increases in every older age group but the incidence rate reaches a peak between ages 55 and 65 and thereafter declines, suggesting that the severity of the disease varies considerably with age.

NUMBERS

Estimates of the numbers of new cases of cancer occurring in England and Wales in 1956 (obtained by applying the estimated age-incidence rates to the total population) and the numbers of deaths reported for these sites are given in Table V with the deaths for that year as a percentage of the estimated new cases and the 5-year age corrected survival rate of cases registered in 1951-52.

TABLE V

Cancer of various sites. Morbidity and Mortality, 1956: 5-year survival rates, 1951–52

Site	I.C.D. No.	Estimated new cases occurring in 1956	No. of deaths reported in 1956	Deaths as a percentage of new cases 1956	5 year survival rates of all cases registered in 1951–52 (age corrected)
				Per cent.	Per cent.
All sites	140–205	M. 68,500 F. 72,800	48,935 43,775	71 60	
Lip, tongue and rest of mouth	140–144	M. 2,031 F. 1,190	794 338	39 28	53 54
Stomach	151	M. 8,220 F. 6,550	7,747 6,206	94 95	6 5
Rectum	154	M. 4,800 F. 3,600	3,166 2,384	66 66	27 29
Lung and bronchus ..	162–163	M. 17,400* F. 3,110*	15,615 2,571	90 83	4 3
Bladder	181	M. 3,380 F. 1,540	2,005 833	59 54	32 32
Prostate	177	M. 3,554	3,554	66	30
Breast	170	F. 15,100	8,580	57	43
Cervix uteri	171	F. 4,470	2,511	56	40
Corpus uteri	172	F. 2,660	1,184	45	59

* Owing to certain difficulties peculiar to this site this estimate is less reliable than others; it is probably too high.

The estimated number of new cancer cases occurring in 1956 was 141,300, the number of deaths recorded being 92,710. These figures suggest that approximately one-third of those diagnosed as suffering from cancer of one form or another do not die from that disease. At those sites, such as cancer of the stomach and lung where survival rates are low (6 per cent. and under) the proportion of deaths to new cases is high (90 per cent. or more), while, especially among the more accessible sites, such as tongue and mouth where the survival rates are high, deaths amount to but one-third of the new cases. These percentages must be used only as approximate indications of the present position of cancer therapy and mortality since they are influenced by many factors, such as the average age of onset, whether there is a rising or falling trend in incidence and the average duration of the disease from diagnosis to death both in treated and untreated cases. They do, however, give a more comprehensive and up to date picture of the general cancer situation than can be obtained from a consideration of mortality records alone, while survival data suffer from inherent delay of up to five years that must follow treatment.

CANCER OF THE LUNG. RECENT TRENDS IN MORTALITY

The death rate from cancer of the lung and bronchus is still rising though not to the same extent in each age group. In men aged 65 and over the rate of increase has been comparatively uniform since about 1930, but below that age the rate has progressively slowed from the older to the younger age groups until in men under the age of 50 mortality became stabilized about 1948 and in men of 50–54 some six years later. This is shown graphically in Diagram I where the rates since 1936 have been plotted on a logarithmic scale so that the steepness of slope of each line at any point is a direct measure of the rate of increase in mortality, a horizontal line indicating a constant mortality. It is seen that during the past ten years the lines indicating the rates for those under 50 years of age have become practically horizontal while those for the next decade have assumed a downward directed convexity. It seems probable that cancer mortality will soon cease to increase at these ages as it has already done in the earlier decades and that a similar change may soon affect those of still greater age. Diagram II shows the mortality trends in females for the same period and in the same age groups.

Diagram 1

Cancer of Lung and Bronchus: Death rates per million living by age, 1936 to 1959, England and Wales

Males

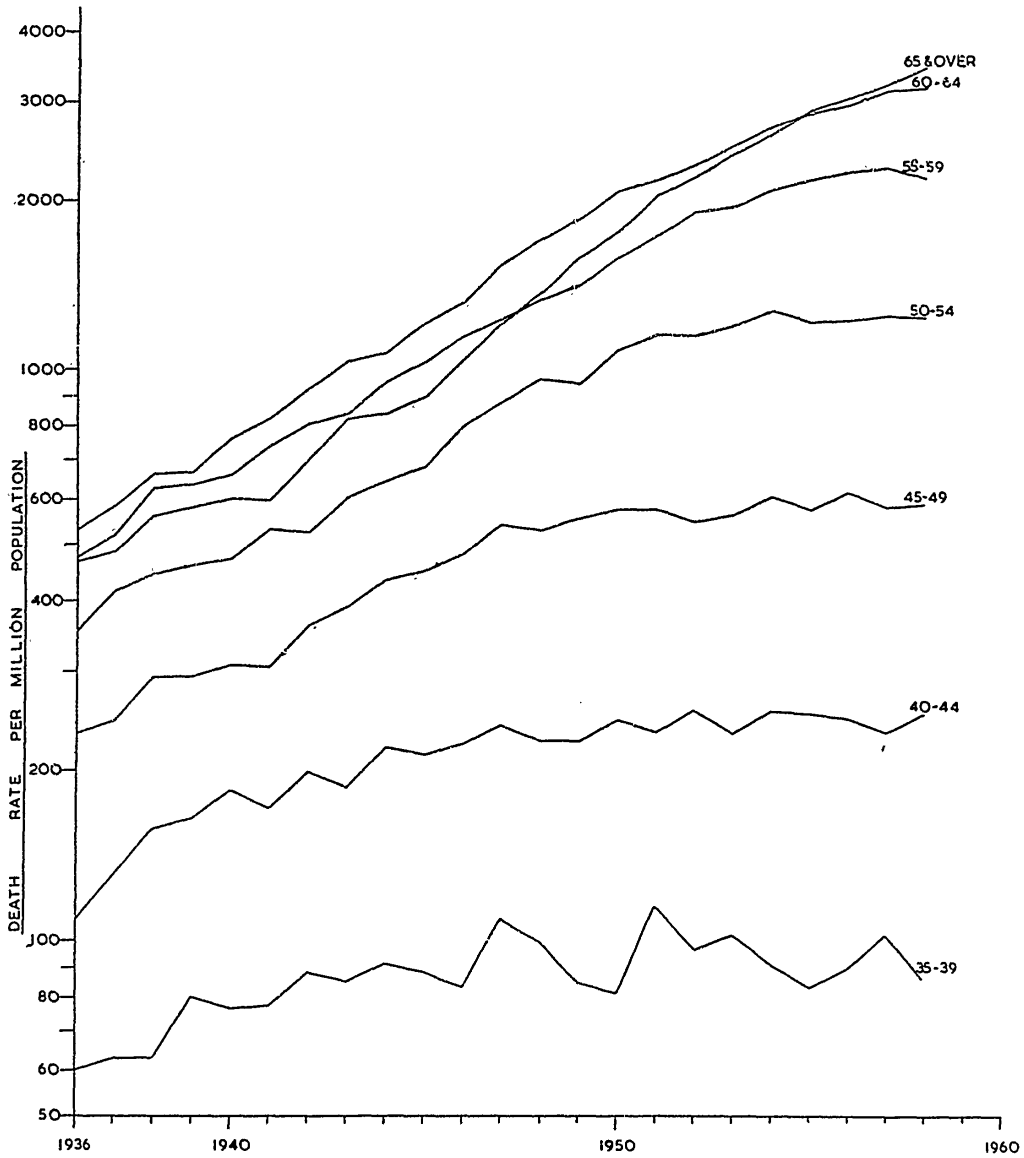
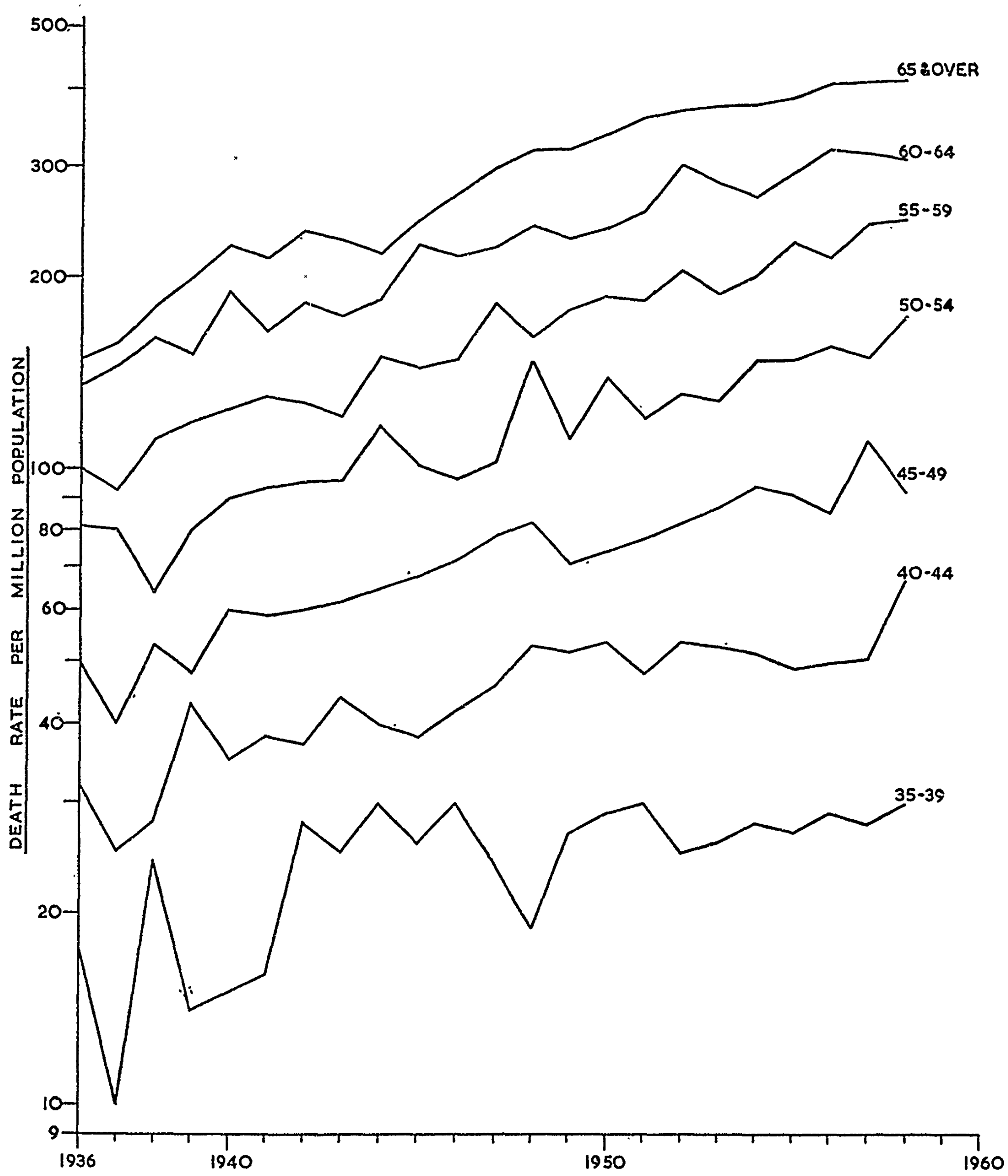


Diagram 2

Cancer of Lung and Bronchus: Death rates per million living by age, 1936 to 1959, England and Wales

Females

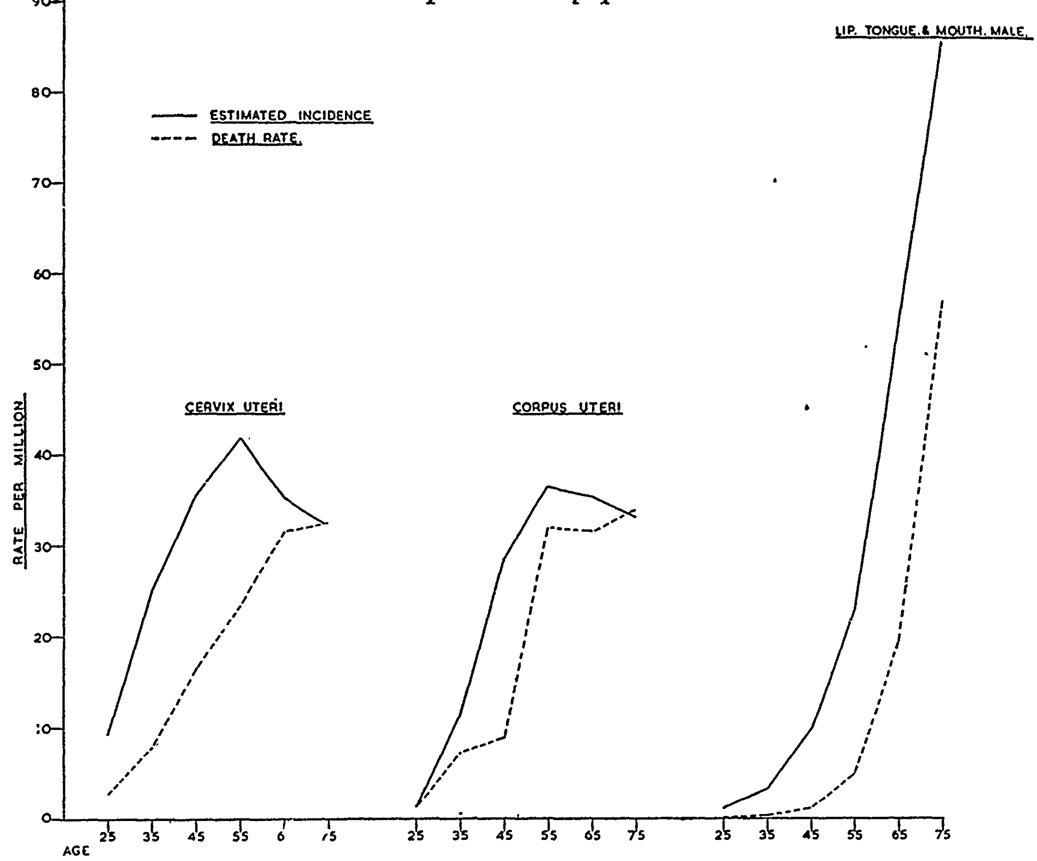


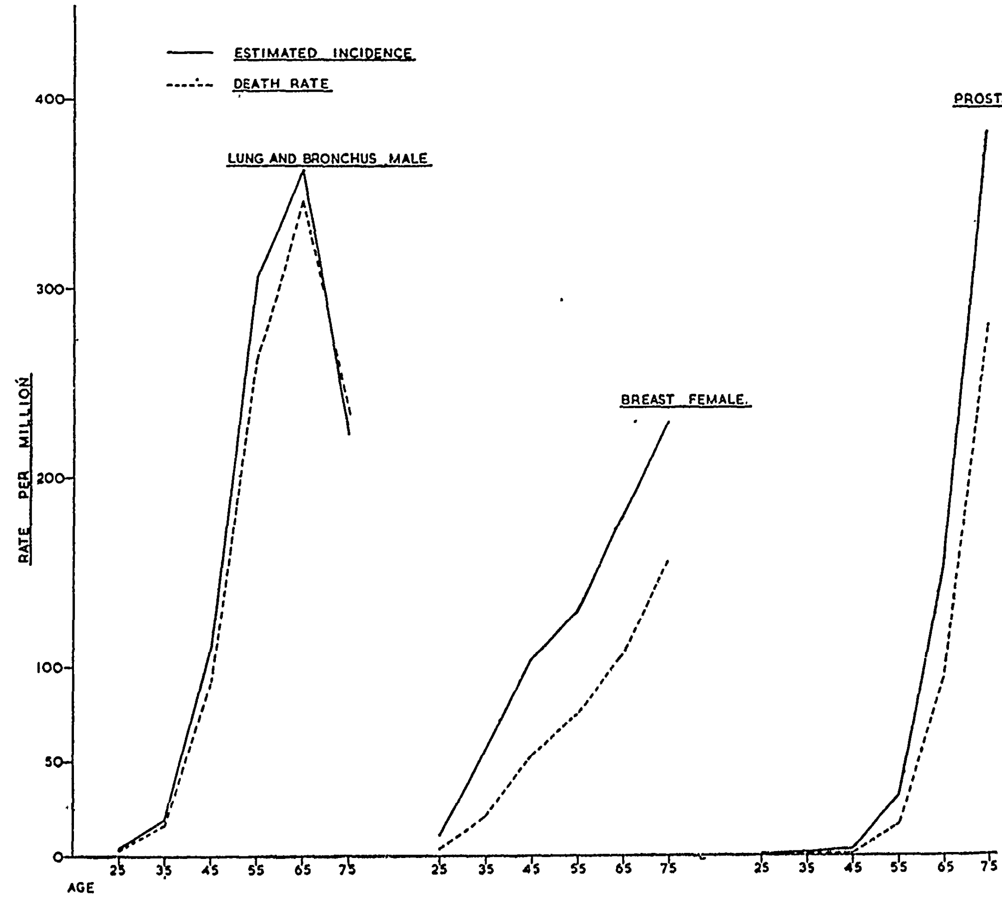
(80926) E 3

Diagram 3

Cancer of various sites: Morbidity and Mortality by age groups

Rates per million population





VII

MENTAL HEALTH

Statistics

The number of statutory patients under care in mental hospitals vested in the Minister and designated under the Lunacy and Mental Treatment Acts (other than accommodation designated for the reception of observation cases under sections 20 and 21 of the Lunacy Act, 1890) was 43,064 fewer at the end of 1959 compared with 1949. In the main this drop is due to the fact that from 1st October, 1959, it has been permissible to admit patients to this accommodation without legal formality. At the end of 1959 there were 34,173 such "informal" patients, including some remaining in hospital after regrading from " voluntary", " temporary " or " certified ". At the same time the use of non-designated accommodation has increased, in 1954 there were 2,753 beds available in such accommodation and by the end of 1959 it had increased to 9,312. During this period of ten years the number of patients admitted each year to the designated accommodation has risen by 74 per cent. (1949, 54,921; 1959, 95,350) and the number who were discharged or died is up by 89 per cent. (1949, 53,099; 1959, 100,319); of the 1959 admissions, 17 per cent. were admitted informally and 71 per cent. on a voluntary basis compared with 61 per cent. voluntarily in 1949. Adults attending as out-patients for the first time have increased by 54 per cent. (1949, 93,754; 1959, 144,267) and children at child guidance clinics by 433 per cent. (1949, 3,139; 1959, 16,735). There are more than 40 day hospitals with places for about 1,000 patients.

In 1949 there were 405 consultant psychiatrists, in 1959 the number was 648. Each year about 50 doctors start their first year as senior registrars in psychiatry (i.e., some two-thirds more than in general medicine or surgery and almost one-fifth of all senior registrars).

Clinical psychologists were 100 in number in 1949 and 148 in 1959, the corresponding numbers for psychiatric social workers or other social workers performing similar duties are 293 and 395.

Even nursing staff, despite the difficulties of recruitment, have risen from 26,660 whole-time and 8,770 part-time nurses in 1949 to 31,140 whole-time and 9,540 part-time in 1959.

The Mental Health Act, 1959

It is clear that the wind of change has been blowing through psychiatry. The change started with the Mental Treatment Act of 1930. It was accelerated by the National Health Service Act of 1946, which created a single national health service for the promotion of both the physical and mental health of the people of England and Wales. In doing so it repealed large portions of the Lunacy and Mental Treatment Acts, 1890–1930, and of the Mental Deficiency Acts 1913–1938, particularly the parts relating to the administration of hospital and community services for mental patients.

In 1957 the Royal Commission on the Law relating to Mental Illness and Mental Deficiency published its report. The report itself followed in spirit the trends in psychiatry which have been becoming evident in Britain in recent years and many of its recommendations are being put into effect.

The Mental Health Act, 1959, enables those recommendations which require fresh legislation to be implemented as well. The Act clears away a mass of confusing legislation including the Lunacy and Mental Treatment Acts, 1890–1930, and the M.D. Acts, 1913–1938. In all it repeals 15 Acts in their entirety and 37 Acts in part. It contains 9 parts, 153 sections and 8 schedules.

The Mental Health Act itself makes no major change in the powers of the hospital authorities and local health authorities to provide services for mental patients, though it contains one important section (Section 6) which clarified the extent of local health authorities' powers under the National Health Service Act, about which some doubts had been felt. But the passing of the Act coincides with important developments in the general pattern of hospital and local authority services, particularly the shift of emphasis to services for patients living outside hospital. It is interesting that this change itself depends on the changes which have been going on in the hospital service. The changing technology of psychiatric practice had led to a radical alteration in the task of the local health authorities and their ability to be of effective use to the people of their community.

Present trends in the Hospital Service and their effect on future planning

Perhaps the most important change has been the realization that most of the restraints and restrictions used in mental hospitals in the past are now unnecessary and that if the psychological atmosphere of the hospital is appropriate to the emotional needs of the patients then remarkable improvement occurs and the deteriorated, hostile, aggressive, dirty, frightened, distraught patients largely disappear. The other factor which has been of great value has been the introduction of the modern physical treatments and the new tranquillizing and stimulating drugs. These have made early treatment more effective and more rapid and have enabled rehabilitation of the chronic patients to be much more successful. They explain why with a rising admission rate the number in residence now has dropped each year since 1955.

This has led to a study of the need for mental hospital accommodation.

The prime function of medical administration in the curative services is to facilitate treatment. Staff, buildings, and equipment must not only be suited to the various forms of clinical practice but must also take account of its effects; for the quantity of care needed is governed by its quality. Even in general medicine where the effects of treatment can be scientifically checked and measured, it is seldom possible to anticipate the changes that new treatments will produce. In psychiatry, where treatment is still mainly empirical, the time lag between therapeutic advances and the appropriate administrative changes is inevitably greater.

There is no doubt whatever that the practice of psychiatry has undergone a revolution in the past ten years and that active and effective treatment has been the primary cause. A result of the introduction and the manifest success of the physical treatments some twenty years ago was an increased demand for psychiatric attention. This led to a proliferation of out-patient work which was mainly diagnostic and a steady increase in the admission rate to the mental hospitals.

Although the number of patients resident in the mental hospitals increased year by year, leading to overcrowding, a precarious balance was eventually achieved by concentrating on the recent admissions who were found to respond to treatment in a relatively short time. The wave of therapeutic optimism led later to a loosening of the traditional custodial attitude, which in turn made a proportion of the longer-stay patients amenable to the new treatments.

During the period of therapeutic flux administrative attention was focussed on the mental hospitals: new admission and treatment units were provided to meet the demand of short-stay patients; long-stay wards were modernized and new occupational units of various kinds were built; and, most important of all, more doctors and nursing staff were recruited. But the greatest need was for the relief of overcrowding, for 17,000 more patients were admitted in 1954 than in 1949 and the number of patients resident at the end of 1954 had risen by 6,000 to what turned out to be a peak figure of 148,000. Although this represented almost four mental hospital beds per 1,000 of the population, it seemed at the time that even more would be needed and many large schemes for new mental hospitals were already under consideration. Fortunately, as it happened, these were times of financial stringency and no large-scale building could be undertaken.

By the end of 1955 there were indications that the tide was turning, for in that year, although admissions rose by nearly 7,000, the resident population dropped by about 1,000. A variety of medical and social measures contributed to this improvement: outside the hospitals, out-patient work not only reduced the number of admissions but by stimulating public confidence in psychiatry led to earlier recognition of the need for attention and correspondingly better therapeutic results; the use of day hospitals and domiciliary care produced similar effects. Within the hospitals the relaxation of tensions induced by unlocking the doors, improved occupations, and the introduction of industrial work gave new life to the long-stay sections and enabled some patients to leave. Then, too, by the end of 1955, the so-called "tranquillizers" which had been introduced in the spring of the previous year had gained a firm foothold.

This small but steady reduction in the resident mental hospital population has continued in spite of a steadily increasing admission and re-admission rate. The annual census shows that, irrespective of artificial losses due to changes in statutory grade, there were some 15,000 fewer patients resident in mental hospitals in 1959 than in 1955. It is clearly important to know how this change is being brought about, what effects it may have, and what administrative measures will be needed to turn it to the best advantage.

The measurement of change

In order to predict future needs with any accuracy it is essential to have not only a cross-sectional picture of the present but also a longitudinal view of the past which will enable trends that may affect the future to be identified and measured. This is best done by earmarking a population and observing it over a period of time. A scheme for tracing patients admitted to mental hospitals was started by the General Register Office in 1954 and a cohort of all the patients first admitted to the mental hospitals of England and Wales in that year was built up by means of the index cards supplied by the hospitals. The movements of the patients in this cohort were recorded and correlated with various other factors such as sex, age, and diagnosis. By keeping track of these patients it was possible to determine the average length of stay in hospital, the re-admission rate and the number who remained in hospital after various periods of time. Similar cohorts were started in 1955 and 1956 and are still under observation; by comparing the three cohorts it should be possible to detect and measure the trends responsible for the characteristics they show. For example, the mean bed requirements of the 1955 cohort were 500 less than for the 1954 cohort.

For administrative purposes two separate but inter-related sets of statistics are needed in order to plan the future of the curative part of the mental health service. First, it is necessary to know how the hospital service is being used at present and what changes in its function can be foreseen. Secondly, what effects are such changes likely to bring about in the future? More specifically, what is happening to the various types of patient admitted to mental hospitals at the present time, and what use are they making of the facilities provided for them? This first question involves an analysis of patients admitted to hospital by sex, age and length of stay, for these factors more than any others determine the kind of care that should be provided. The second question is concerned with the effects of treatment and the passage of time: what proportion of patients now admitted to hospital are going to need long-term care and what will be the rate of reduction by death or discharge in the number of long-stay patients already in hospital?

Psychiatric patients who require in-patient care fall into three main groups according to their length of stay in hospital and the kind of treatment they need. Most hospitals admit all new patients to a special unit or group of wards for investigation and treatment and almost three-quarters of these patients of all ages are now discharged within three months; these constitute the short-stay group. Those who do not respond to treatment in the admission unit or who are, from the start, considered to need more prolonged treatment of a different kind are transferred to wards usually situated in the main section of the hospital where 80 per cent. of the resident population are housed. The majority of these patients are able to leave hospital within two years of admission, a proportion of the remainder will need permanent hospital care, but it must not be forgotten that four per cent. of all discharges occur after the fifth year in hospital.

In order to assist planning the General Register Office have undertaken an analysis of all patients admitted to mental hospitals in 1956 and 1958 and these cohorts have been followed up by applying the current discharge rates. From this information the number of beds required for groups of patients staying varying lengths of time will be estimated.

It should be understood that these estimates, when available, will be based on the patients actually admitted to hospital during 1956 and 1958. Since then more effective treatments have been introduced, the number of patients treated in out-patient clinics has increased and it is likely that more are being treated in their homes by their family doctors. Moreover, between 1955 and 1958 the number of patients who were discharged after periods of five years and over in hospital increased by 54 per cent. It must also be remembered that 21 per cent. of the patients in these cohorts were aged 65 or over and it is hoped that future planning will enable some at least of these to avoid admission to purely psychiatric beds.

The future of the long-stay hospital population

As was stated earlier the resident population of the mental hospitals of England and Wales decreased by 15,000 between 1955 and 1959 and this is accounted for by three factors: out-patient treatment reducing the need for admission, earlier and more effective treatment in hospital lessening the need for prolonged care, and active rehabilitation of the long-stay patients making an increasing number of them either self-supporting or fit for care in the community.

It is unlikely that any of these favourable factors is producing its maximum effect: the existing mental hospitals are far from ideal for the purposes of modern treatment, there are still too few trained doctors and nurses and the community services on modern lines are only just starting to develop. While the correction of these defects can only tend to increase the efficiency of the service and reduce the need for hospital beds it is necessary to take note of trends that may have a reverse effect and these mainly concern the long-stay patients. Firstly, it seems inevitable that increasing longevity will lead to a rise in the number of old people with unmodifiable cerebral deterioration who will need hospital care because of their behaviour. Secondly, the rate of rehabilitation and discharge from the long-stay wards is likely to decline as the hard core of organically deteriorated patients is reached. Thirdly, there is no guarantee that the social atmosphere that tolerates eccentrics and an economy that enables them to be largely self-supporting will continue indefinitely.

In 1901 it was only one in twenty of the population that was over 65. In 1975 it will be one in seven. At the present time over 30 per cent. of residents and 21 per cent. of admissions to mental hospitals are over 65. There were formerly three women to two men in this age group, now the proportion is two to one. There is need for more assessment units at geriatric units, where these patients can be screened rather than in the psychiatric unit of the general hospital. At these assessment units it will be possible to decide what is needed, whether it is home care, out-patient attendance, a day hospital, short stay admission to a geriatric unit, admission to a mental hospital long-stay annexe or admission to a local authority home. If this were done, the admissions to mental hospitals would be cut down. In the Oxford region, for instance, where geriatric patients are assessed at the Cowley Road hospital there was a drop from 25 per cent. to 10 per cent. of admissions of old people to Littlemore mental hospital. In dealing with the problems of the aged, close contact and collaboration between the hospital on one hand and the relatives, the general practitioner and local health authority on the other, is essential.

"Mental Deficiency"

The same general principles which apply to the mentally ill apply also to various types of patients hitherto covered by the term "mental defectives" except that almost all of them are medium-stay or long-stay patients, apart from those admitted for diagnosis only or as a temporary measure of relief to their families.

Under the Mental Health Act, 1959, the term mental defective will cease to be used in England and Wales, and the patients hitherto covered by this single term will be known as "*severely subnormal*", "*subnormal*" or "*psychopathic*".

The Act uses these terms only in connection with compulsory admission to hospital or guardianship, but it seems likely that they will come into general use in the administration of the mental health services. These three forms of mental disorder are defined in the Act as follows:—

(*a*) " Severe subnormality " means a state of arrested or incomplete development of mind which includes subnormality of intelligence and is of such a nature or degree that the patient is incapable of living an independent life or of guarding himself against serious exploitation, or will be so incapable when of an age to do so.

(*b*) " Subnormality " means a state of arrested or incomplete development of mind (not amounting to severe subnormality) which includes subnormality of intelligence and is of a nature or degree which requires or is susceptible to medical treatment or other special care or training of the patient.

(*c*) " Psychopathic disorder " means a persistent disorder or disability of mind (whether or not including subnormality of intelligence) which results in abnormally aggressive or seriously irresponsible conduct on the part of the patient, and requires or is susceptible to medical treatment.

The psychopathic group as defined in the Act will include some patients hitherto classified as mental defectives and others suffering from similar forms of mental disorder who have not been covered by the legal definition of mental deficiency.

Smaller and more specialized hospital units are likely to be favoured in future for all these patients. The most severely disabled among the severely subnormal, who are mentally and often also physically crippled from birth, need life-long custodial care and nursing. But provided that there is proper assessment, these patients, children or adults, might suitably be accommodated in special units attached to children's or general hospitals not necessarily staffed by psychiatrically trained doctors, or to a psychiatric hospital. Occupational facilities and grounds for recreation are needed for those who are ambulant.

Less severely disabled patients, who, nevertheless, come within the definition of severe subnormality in that they are unlikely ever to be able to live an independent life, may be able to live in the general community (sometimes after a period of training in hospital), provided that they have a certain amount of help and supervision, including residential accommodation if they cannot live with relatives. The number of such patients in the hospitals may, therefore, be expected to fall as the local health authority services extend. Recreational and training facilities are needed for these patients, but it should be possible to provide these in reasonably small units not too far removed from centres of population, so that the patients do not become too much cut off from the community to which some of them may ultimately return, and so as to facilitate visits by friends and relatives.

The patients who will be classified in future as subnormal or psychopathic also need specialized treatment. Those classified as subnormal will be intellectually dull, but their main trouble is often emotional instability, and many of them need psychiatric treatment as well as training. From this point of view, it may be more suitable to accommodate them in units associated with hospitals for medium-stay mentally ill patients, or in entirely separate units, rather than in the same hospitals as severely subnormal patients.

These various units must not be thought of as separate independent entities, but as part of a single service. It is essential, for example, that the medical staff of the psychiatric hospitals should take part in the activities of the out-patient and in-patient work at the general hospitals and psycho-geriatric units. Only in this way can continuity of treatment and sustained interest in the various aspects of psychiatric work and training be achieved.

This is, of course, only a broad outline of a possible pattern of development which could only take place gradually, partly because of the cost of the new capital development or redevelopment it would involve and partly because all plans must be subject to modification in the light of experience, particularly in a field of medicine which is changing as rapidly as psychiatry is to-day. For some years to come we must continue to rely largely on our existing hospital buildings and it will be some while before we can, for example, consider any large-scale replacement or abandonment of the big psychiatric hospitals. But even with the existing buildings and the amount of new building now taking place, a good deal can be done towards the grouping of patients on the lines described.

A start has already been made in some areas towards this new pattern of psychiatric hospital services, but its full development depends on the abolition of the " designation " of hospitals by the new Mental Health Act. When the Act is in force, any hospital will be legally free to receive mental disordered patients, and there will be no legal barrier between hospitals receiving mentally ill patients and those receiving other mentally disordered patients. The removal of these legal restrictions will not result in the mixing together of all types of patients. Far from it. There is likely to be more rather than less specialization of units for particular types of patients, on the lines described above. But the arrangements will be a matter for administrative planning which can be adjusted to meet the needs of a rapidly changing service. This freedom to plan psychiatric hospital services to suit changing needs is one of the greatest benefits conferred by the new Act.

Severely Subnormal

These will include both helpless and bedridden patients and those who are ambulant; in both groups there will be some who can hardly be trained at all beyond perhaps some simple training in feeding and toilet, and others who can respond to training in the usual subjects of " training and occupation centres ". They may be cared for at home; the " cot and chair " patients may be in hospital, at home with or without the special care units of the training centres provided by local health authorities; the more able bodied may also be in hospital, or may attend training centres, according to circumstances. How far such patients will leave hospital and come to be cared for in the community is not yet clear; the first move towards community care will probably be by keeping in their own areas those who have never been to hospital. This means development of centres for training or occupation including as necessary the provision of residential accommodation. The severely subnormal make a serious problem, both in their demands on the home and the family, and by their hospitalization needs.

The Subnormal may likewise remain at home, become absorbed in simple normal employment or attend training centres or sheltered workshops. The kind of care they require is conditioned not only by their intelligence but also by their emotional state; some will need hospital because of their instability, and a few, who are very seriously disturbed in behaviour, may need the special hospitals for dangerous and violent patients. Many stabilized subnormal patients are fit for community care, but there has already been a considerable exodus of patients of this type from mental deficiency hospitals in recent years, and many psychiatrists report that most of those who are fit to leave, have left. There remain some elderly patients who, though fit to leave, are in fact happier and better in the hospitals which they know and where they have an acknowledged place. Again, it is a lessening of admissions rather than an increase of discharges, which seems likely to shift the emphasis from hospital to community care, for under the Mental Health Act it will not be possible to admit such patients compulsorily over the age of 21, except on a court order. It is to be remembered, too, that the state of employment affects the possibility of community care, for when there is trade recession the subnormal patients are among the first to fall out of work.

Psychopaths

It seems probable that the provision for psychopaths will start on an experimental basis. They will, for instance, undoubtedly be hospital patients; but whether, as at Balderton Hospital, without being specially labelled, or in special hospitals to be provided for the purpose, and how far their needs will be met by new developments within the prison service remains to be seen. For those among them who need conditions of special security, there is now provision at Rampton and Moss Side State Institutions and to some extent at Broadmoor.

Bed Needs

One of the surprising features of the mental deficiency service is that despite a substantial increase in beds, there is still an increase in waiting lists. This may be exemplified by the figures from Essex. In 1949, the waiting list amounted to 222; in 1959 it was 353, in spite of the fact that, during the same period, no fewer than 563 additional beds had been opened in this Region.

What are the causes of the demand for beds? Certainly one cause which is difficult to estimate is the increased confidence of the public in the hospitals, emphasized by the spread of informal admission. Those who suggest that patients should at all costs be kept out of hospital seem to overlook this very great demand for their admission.

Severely subnormal patients are, as has been said, a heavy burden at home. It seems probable that there is an absolute increase in their numbers. This has been suggested by Carter (Carter, G. O. A life table for Mongols with causes of death (J.Ment.Def. Res.2.64)) and by Tizard (Tizard. Public Health Aspects of severe mental subnormality (Royal Society of Health, 1960)). Tizard suggests that the reason for the increase is (1) the live birth of children who in the past would have been stillborn, and (2) the survival of weakly or handicapped children who last century would have died from disease or from their own inherent defects. That this increase is real is suggested by the remarks which come from hospitals all over the country that " We do not get many high-grade patients now; our admissions are mostly of the lower grade ". Figures from the Manchester Regional Hospital Board are illuminating.

On the Waiting Lists:	*1954*	*1959*
Active high grade male adults	82	32
Cot and chair male adults	37	40
Active high grade male children	22	7
Cot and chair male children	75	86
Active high grade female adults	72	53
Cot and chair female adults	36	39
Active high grade female children	2	2
Cot and chair female children	118	168

It may be that the effect of this lengthened survival has not yet been fully appreciated. When the patients in hospital are cot and chair invalids of little intelligence, there is rarely a vacancy till one of them dies.

Trends in Local Health Authority Mental Health Developments

The year has been one of great activity by local health authorities working out the lines of development of their mental health services. Rather than describe action taken by a few authorities in such a rapidly changing field, it seems better to mention some of the medical problems which have been prominent in their discussions.

Children of School age

For obvious reasons the needs of subnormal and severely subnormal children of school age are in the foreground. New junior training centres are being planned; where that need is already met, training centres for adults come early on the programme, while for both, residential hostels are under consideration.

A too seriously subnormal child, or one restless and demanding, can absorb a disproportionate amount of the time of the staff of an ordinary training centre, so medically it is not a good plan to mix these types. Where provision is to be made for physically helpless severely subnormal children in a special unit, it should be so sited as not to disturb the other activities of the centre.

For these, as for other children, modern work on deafness, blindness, spasticity and epilepsy is important, and the severely subnormal will benefit from the provisions which local health authorities are increasingly making in collaboration with the hospital services for screening and testing.

Home Care

Family care, comfort and stimulus are important to all children. It is recognized that the touch, the voice, the sight of the mother and father and other relatives and friends, can all contribute to the child's mental development: to the use of his hearing, of his eyesight, of his hands and feet, and, above all, to his confidence in and understanding of the world around him. If he does not get them at a very early age he may only with great difficulty, and perhaps not at all, make up for the loss. This in itself poses two problems in relation to subnormal and severly subnormal children. Firstly, whether any child should remain at home for his own good, or whether he should be sent to hospital or provided with residential accommodation for the relief of his family. The second problem concerns training centres and residential homes. Should the residential home for children attending a training centre be in or attached to that centre for the sake of economy in site, building and catering, or should it be at a distance in order to give the children the same experience as the ordinary school child, namely the daily journey to school, with all the experiences which that gives to him? In some circumstances a hostel child may be restricted to a narrower environment than the hospital child. Again, how big should the residential home be? For a dozen children, a home can be very like a family; for a hundred, it can be institutional, though not inevitably so.

In practice these problems can only be solved by balancing the important needs of the child against the necessity of keeping within the available budget. Many discussions have covered such ground, and there is no single answer. In any given area the location, whether in a large city, small town, or country area, the availability and nature of sites, houses, transport, or the possibility of getting staff point the way to the best practicable solution. It is obvious that if the residential hostel is to provide anything like a home life for the children, the care in " out-of-school " hours cannot rightly be left to what remains of the time and energy of staff already occupied all day, in training. It should be mentioned, that in hostels it is only right to separate adults from juniors. It is one thing for normal people of different ages to mix at home, or elsewhere in the community, but if men are underdeveloped in mind, and being trained, it is unkind to allow them to feel themselves classed as subnormal children; they need all the adulthood that they can get.

This of course is not to say that adult subnormal people cannot rightly help in the care of the severely subnormal; they can and do, but need to be selected, and to be regarded and treated as workers and helpers, not merely as patients under care.

Next in priority after children of school age, are the adult subnormal, for whom more training centres and some hostels are envisaged. It seems likely that increase in the numbers of such patients needing help in the community will come rather from keeping in the community those already there, rather than in the transfer of any considerable number, from mental deficiency hospitals. The development of local health authority facilities for the training and employment of such persons will in a year or two show how best the hospital and the community can share the task of caring for them.

Rehabilitation in Mental Disorder

The Mental Health Act of 1959 brought together the two categories " mental illness " and " subnormality and severe subnormality " under the comprehensive term " mental disorder " but they are better considered apart when dealing with rehabilitation. Nevertheless for both, rehabilitation may be divided into that provided in hospitals, and that in the community including care after discharge from hospital.

Rehabilitation of the Mentally Ill in Hospitals

There are still in psychiatric hospitals far too many patients who are " Institutionalized ", most of them elderly or old. For many the most that can be done by way of rehabilitation is rescue from a bed-ridden vegetative existence by modern geriatric methods. It has been shown however that some of these apparently hopeless cases can be restored to normal mental health and discharged from hospital to lead an independent or only partly dependent life.

Of those who remain, a number die rapidly and the others will be permanent invalids, many with organic brain changes, the so-called senile dementias. A proportion even of these can still be employed; at St. George's Hospital, Stafford, for instance, a number of elderly bed-ridden patients are engaged in simple industrial work for which they earn a small reward.

One of the most urgent problems of the moment is the treatment and rehabilitation of elderly patients to whom reference has already been made. It involves the resources of psychiatrists, geriatricians, general practitioners, and the local authorities. The aim of a modern psychiatric hospital should be to be left with no " chronic " patients, young or old. That ideal will probably never be fully realized but some hospitals are moving in this direction.

For younger patients the hospital should provide:—

(1) Opportunities for work and recreation.

(2) Planned rehabilitation for in-patients within the hospital and in the community.

(3) An organization for discharge to employment or to home life.

1. All psychiatric hospitals of any size provide opportunities for work and recreation as a matter of course. In fact the traditional employments which have been available for very many years may have encouraged " institutionalization " in the past and may now hinder the development of more modern methods of rehabilitation. Such employments range from formal " Occupational Therapy " to work on the land, in wards, kitchens, laundries, sewing-rooms, carpentry, tailoring, boot-making shops and the like. Occupational therapy though vigorous and imaginative in some hospitals is all too often limited to teaching a few patients to produce articles of high quality rather than to concentrate on the essential, the rehabilitation of many.

2. Planned rehabilitation, except in some progressive hospitals, is a fairly modern concept. It may be mainly psychotherapeutic or mainly occupational and social in character.

An example of psychotherapeutic rehabilitation is at Park Prewett Hospital. Two villas, one for men and one for women, combine for psychotherapy, group treatment, discussions, occupations, meals and recreation. Quite severely psychotic patients, many of whom have been in hospital for a long time, are treated. The result has been striking improvement in behaviour and a significant rise in the discharge rate of long-stay patients. Netherne hospital has a similar grouping of villas for men and women for psychotherapeutic rehabilitation.

A different technique is to be found at Long Grove hospital. Here a large ward is equipped for teaching building, house-decorating and painting, motor-car repairing, cookery and household management and other essentially practical activities.

In the early part of the 19th century there were many examples of well planned occupation for patients but later in the century they had largely disappeared, and it was not until about 1938 that Warlingham Park Hospital started the concept of " group rehabilitation and habit training ". The worst and most degraded patients were concentrated in one ward. They were divided into groups of 10 to 12, each controlled by a nurse who remained permanently in charge of his group. Their personal habits and table-manners were trained and they were taught to care for their clothing which was a personal issue, a rare thing in those days. Their ward was well decorated and comfortably furnished. During the day each group was kept busily employed. The result of this regime was a rapid improvement in behaviour. Violence, noise, seclusion, and the use of sedatives were reduced to a minimum, and patients who had been regarded as hopeless began to lead useful lives in the hospital and some progressed to discharge. This was probably the first attempt in recent times to deal with the chronic institutionalized psychiatric patient. In the last ten years this form of rehabilitation has spread rapidly to other hospitals, and it has been one of the major causes of the profound change which has taken place in British psychiatric hospitals in recent years. It has led to a rapid increase in the amount of freedom allowed, unlocked wards, liberal parole, and finally informal admission on a large scale. The change has been accelerated by the success of modern methods of physical treatment such as E.C.T., insulin, leucotomy, and more recently, by the use of the new tranquillizing drugs. television has also had a most salutory effect. At the same time there has been a radical change in outlook on mental disorder by psychiatrists, nurses, the public, and indeed by the patients themselves. The distinction between cause and effect among these and other factors is difficult.

Rather later in time industrial work has spread in psychiatric hospitals. There was a small abortive start in the 1920–30 period and there was a small revival during the second world war. A few hospitals have taken in work from outside firms for several years (Three Counties hospital, Arlesey, started in 1944) but until recently it was used mainly as a supplement to occupational therapy. Only recently has it spread widely and been planned and used for rehabilitation. In September 1959, 74 of the major mental hospitals were engaged in this work and the number is increasing.

Industrial work is used in three ways. Firstly to provide stimulating occupation for patients who are not likely to leave hospital. Secondly to inculcate or regain the habit of work. Thirdly to give training in trades which flourish locally with a view to employment in these or similar trades after discharge. All three methods may be in use in one hospital.

The work is of a very varied character. Dismantling, assembly, and salvage of waste for commercial firms, accounts for a lot of it; the General Post Office providing work for many hospitals. Some hospitals concentrate on the production of a single article and others favour a diversity. Most of the work is provided by commercial concerns on contract and is paid for at Trades Union "piece-work" rates. A few hospitals manufacture their own articles and sell them on the open market.

Cheadle Royal Hospital started a small industrial unit a few years ago. It began by employing 10 patients and now the number has grown to over 50. It designs, makes, and markets paper hats and other paper novelties, and has sold some 300,000 in its second year. The patients employed have been mainly long-stay cases with an average period in hospital of 11 years. The level of productivity is from one-quarter to one-half of that of the normal worker. A second workshop is proposed to which will be drafted the more successful of the long-stay patients, more recent admissions, and a larger number of day-patients. A higher level of productivity is expected.

Banstead Hospital after the late war found itself, like most other mental hospitals, grossly overcrowded with chronic patients. As part of a drive to treat and rehabilitate these patients an industrial unit was started in collaboration with the Social Psychiatry Unit of the Medical Research Council. A local factory expert was called in to advise on the choice of site and the organization of the work. An industrial unit was started with men doing piece work for a motor-car firm and women assembling cardboard boxes. As the unit has developed, the variety of work has expanded. Surprisingly good results were obtained with these long-stay patients and it has been a major factor in eliminating overcrowding; in fact it was suggested that chronic patients might well be discharged at the rate of 100 yearly.

Industrial work at Netherne Hospital is now very highly organized. Members of the staff of Waddon Industrial Rehabilitation Unit visit the hospital regularly and have advised on the lay-out of workshops and the organization of the work. This is now graded from the simplest tasks to skilled work, and patients are able to progress from one to the other. About 10 different types of work are carried out, and there is a background of salvage work for the G.P.O. when other contracts fail. The need is now felt for an Industrial Officer to take charge of the organization.

Two interesting experimental schemes may be described.

St. Matthews, Lichfield, has an excellent general occupational organization and has taken in industrial work for several years. It has recently received a grant from the Nuffield Trust to build an industrial rehabilitation and research department in which methods of training, types of patient suitable for training, and the kind of work producing the best results can be studied. A supervisor from a local factory has been appointed together with a psychologist.

At Fishponds Hospital, Bristol, industrial work has gone on spasmodically for several years, but in 1958 a local firm undertook to supply work regularly. From a start of seven patients employed the number had grown to 400 by March 1960. Meanwhile, leaders of industry, trades unions, churches, civic authorities, and members of the medical profession joined together and agreed to start a non-profit making organization to provide premises outside the hospital which should be akin to factory conditions. On 7th March, 1960, Industrial Therapy Organization (Bristol) Ltd. opened in premises in Bristol. The work is almost all of one type, assembling ball-pointed pens. Patients attend daily for factory hours, with the usual breaks for meals and are paid according to their achievements. As few technical staff as possible are to be employed and supervision will be mainly by nurses of the hospitals and other bodies sending the patients. Most patients come from Fishponds hospital but some are day-patients.

The chief interest in this venture is the attempt to achieve something approaching ordinary factory conditions. As with other sheltered workshops, it does not seem likely that the concern will ever be self-supporting, but there is a concealed profit in every patient discharged.

The forms of rehabilitation which have been discussed have usually been easier to start and more successful with men than with women in psychiatric hospitals. Examples of hospitals which have succeeded in developing rehabilitation schemes for women are Fulbourn, Chartham, Knowle, Banstead and Rainhill.

In the past, mental hospitals dealt almost entirely with psychotic patients but now they admit and treat many psychoneurotics. There are, however, a few hospitals which admit only these patients. The largest is Belmont with 400 beds. This has an industrial rehabilitation unit admitting patients with very bad employment records. Many of whom have histories of serious anti-social or criminal behaviour. Many are cases which have been adjudged hopeless by psychiatrists and employment exchange officials. Group therapy is employed and the co-operation of the Ministry of Labour training unit at Sutton has been secured. Local employers have provided employment to test them in real life situations. On the basis of a rather short follow-up, 55 per cent. of those discharged are claimed to be in full employment and 67 per cent. to have made a fair adjustment to life. Roffey Park was started in 1944 to deal with patients who, though in employment, showed maladjustment.

3. In placing patients on discharge hospitals in the past have relied upon their own social machinery or that of the local authority. This work was largely done by the psychiatric social workers or health or welfare organizations. Such bodies as the Mental After-care Association rendered valuable help and still do so. The field is far wider now that special attention is being paid to rehabilitation and resettlement. Psychiatrists, psychiatric social workers, other social workers, D.R.O., and local authority officials may all play their part.

For many years hospitals for " mental defectives " have had hostels from which patients could go out to work daily, but hospitals for the mentally ill have only recently felt the need for them in their rehabilitation plans. Several have tried to find suitable premises but for various reasons few have been successful. Mapperley opened one hostel for women and one for men in 1958. Bootham and Naburn Hospital has two hostels for women. One is for trial prior to discharge and one is used for patients who go out daily to work. Coney Hill Hospital, Gloucester, has three houses in the city in which patients live for a time prior to discharge, but here the patients are usually elderly. Fulbourn Hospital, Cambridge, has recently had the use of Winston House, a hostel of 23 beds which is run by a voluntary association. Surprisingly only about 16 patients a year are found by Fulbourn to be likely to profit by admission here. This may be some indication that local authorities are not likely to have big demands made upon them for hostels for this class of patient.

Voluntary organizations have made provision for a long time for those who are fit for discharge from hospital but not yet fit to make their way in the world, or those who have been in hospital and still need some form of protection.

The oldest of these is the Mental After Care Association. This was formed in 1879 by a group of doctors who noted the high readmission rate of those discharged into " A cold and unsympathetic world ". Originally it placed women in quiet homes in the country, but it expanded rapidly in size and type of cases, taking men, patients " on trial " and, later still, holiday patients. It now has homes for younger patients with a view to employment at Cheam, Dartford, and Chiswick and homes for longer-stay older patients at Esher and Sandgate, and 20 other houses owned by matrons. Others are the Ex-Services Mental Welfare Society; the S.O.S. Society; the Cheshire Foundation and the East Grinstead Association for mental health, to which may be added the National Association for Mental Health.

Rehabilitation in Hospitals for the subnormal and severely subnormal

Rehabilitation follows the same general pattern but from the nature of the disability it must necessarily be slower and less spectacular results are likely. Moreover the percentage of patients in these hospitals of a level of intelligence which permits of rehabilitation in the fullest sense is falling rapidly.

Training, occupation and recreation for those who are not likely to leave hospital is provided. The larger colonies have a range of workshops in which are taught such trades as shoemaking, tailoring, carpentry, metal-work, and basket and mat making. Nowadays, however, very few patients can be trained in these departments to the point where they can be found and keep employment in these industries. The supply of patients suitable for such training is falling and many of these shops are closing. Farming now plays a less important part than it did in the past in providing employment after discharge as it has become progressively more scientific and mechanized. There is still, however, a good flow through the agricultural hostels in the country. Little Plumstead keeps a small farm entirely for training. It is equipped with mechanical milking and other machinery of the type used on local farms, and all boys who have been trained successfully in their use find employment easily. Women of a similar type work traditionally in laundries, kitchens, sewing-rooms and ward work.

Most of the larger hospitals for the subnormal have their own hostels to which patients are sent on trial with a view to discharge. They begin by going out to daily work and living out. The women are mostly employed in domestic work, many of them in general hospitals, but some in trade and industry. Some of the men work as house-boys in private homes or hotels; others in agriculture, trades, or industries.

Special training with a view to discharge is of comparatively recent origin. For suitable women the traditional employments have given way to training in domestic cookery, laundry, and in simple household management and dress-making.

Darenth Park hospital has been used as an industrial training centre for a very long time, and for years manufactured articles on a large scale for use in other London County Council hospitals and institutions and produced stationery and printed matter for them and for County Hall. During the last war difficulties about supplies were met, but the large supplies department of the L.C.C. was generally able to cope with this. In answer to a request large scale breeding of guinea pigs for pathological purposes was started. On the introduction of the National Health Service orders from the L.C.C. gradually diminished.

Beginning in 1942, patients started working outside on daily licence. Today about 100 patients go out to work earning around £17,000 and contributing some £7,150 per annum for their maintenance. In addition an average of 60 work in local hospitals.

Owing to the difficulties of supply and the competition with mass produced goods new industries were needed to maintain training so experiments were made in making toys, Christmas crackers, coffee tables, lamps and rubber mats. In 1950 the hospital was asked to co-operate with the Medical Research Council in an experiment run to test the capacity for industrial employment of the subnormal. Two firms were approached and they supplied egg-boxes for assembly and plastic mouldings for finishing and assembly. Later the assembly of cables, relays, etc., for electronic organs was undertaken. This has now developed into a permanent industrial unit, the " Social Adjustment Centre ". Starting with 12 patients it reached a maximum of 140 and now employs 60–70. In addition some simple work is sent to wards for more severely retarded patients. About £2,400 per annum is earned in this way. A similar scheme has been introduced in recent years at the Manor Hospital, Epsom, where attention has been given to teaching patients normal workshop behaviour, time-keeping, courtesy to staff and workers and care of tools, as well as standards of work.

Monyhull Hall hospital has had for years an industrial unit in which the work is of graded difficulty, a patient starting with simple tasks and progressing to those of greater complexity. By breaking down work into its components and by the extensive use of jigs surprisingly advanced work is accomplished by patients of comparatively low intelligence. Again a large number of patients go out to daily work.

It is of interest that so far little attempt has been made to employ and rehabilitate subnormal women in this way although it is well known that women adapt themselves easily to repetitive work.

To try to teach patients of low intelligence to read and write in the ordinary way would delay their discharge and so they are taught at Monyhull instead to recognize and understand some hundreds of key-words such as Danger, Stop, Go, Ladies, Gentlemen, Bus Stop, Poison, progressing to more difficult ones, National Insurance, Income Tax, Labour Exchange. They are taught the value of money and are taken on visits to post-offices and shops and go on train journeys.

Such special training for discharge into the community is increasing but is still all too infrequent. It is a most promising field of rehabilitation.

VIII

GENERAL PUBLIC HEALTH

Community Health

Since the ultimate well-being of any nation depends in large measure on the physical and social standards of health of its people, one of the foremost responsibilities of government is the creation and the development of effective community health and social welfare services.

While in this country the community health services include the services for which the regional hospital boards, the teaching hospital boards and the executive councils are responsible they are based on the treatment of the individual, whereas the organization of the environmental, the personal and the welfare health services provided by the various local authorities are based on group arrangements. The local authority community health services, therefore, are not only complementary to their companion services: they also possess a special function in relation to the national problem of the promotion and preservation of health. From their very nature they are a communal not an individual responsibility. Thus the personal health services came into being when it was realised that to combat the then high incidence of disease and defect in the spheres of maternal and child and school health, and to cope more successfully with the ravages of tuberculosis and the many effects of venereal disease, co-ordinated and organized effort had become a plain necessity. Still later the application of this same principle was extended to the welfare of special groups of the population; the aged, the blind, the crippled and the problem family. At the present time efforts are being directed by all local health authorities to the organized domiciliary care of the mentally ill and retarded.

However much the hospital and the family doctor may be concerned with the treatment of individual cases of disease and injury, this is but one aspect of the contribution which medicine has to make to the national health service of these days. The practice of medicine is not wholly a matter of the diagnosis and treatment of diseases as they occur in individual patients; its field extends into the world of everyday life. Basically it is a branch of human biology; the physician is one who is concerned with the study of man in his relation to nature, that is with his relation to his whole environment.

It must not be thought, therefore, that the attainment of still better mental and physical health in the nation generally, rests with the appearance of more specific and more powerful methods of clinical treatment, however much these may contribute to the restoration of health and to a diminution of present mortalities. Behind all the various improvements in the national health standards, clinical medicine has certainly played its part, but, in addition, the biological effects of the cleansing of the environment, the introduction of higher levels of feeding and nutrition, the disappearance of foul and overcrowded slums, the diminution of long and exhausting hours of work and employment, in short, the effects of a more abundant life have, none the less, amply justified the efforts which have gone to this achievement. The public health services have always been based on a conception of collective action; indeed, as their scope and influence increase they might, perhaps, be more accurately described as community health services, since they are concerned with the group health of the community, that is with man as he lives in his physical and social environment.

Once a disease is actually established, specific treatment on an individual basis may be indicated, but the problem of the creation and the preservation of human health is a separate issue requiring a wider and less individualistic approach and demanding a training, outlook and even a philosophy of its own. The community health officer, therefore, although initially trained in the concepts of disease and of medical and surgical treatment, must extend his frontiers of thought and of action from the patient with his specific illness to the environment from which he came and to his way of life. More and more must it be realised that, in essence, the health officer is fundamentally a social biologist; his task is to study, not disease as simply an isolated phenomenon demanding an appropriate remedy, but the whole question of health and of disease in its relation to human ways of life, into its biological and sociological background, in its reflection as an index of the standards of community life.

The science and art of medicine has been described by Lord Percy of Newcastle as the most liberal of the sciences and the most humane of the technologies; and although this philosophical percept should influence the minds and thoughts of all engaged in the many medical spheres of action, it has a particular significance for those concerned with the practice of community medicine, in all types of local authorities. The science and art of medicine, has, throughout its history, been subjected to a continuous evolutionary process as knowledge of the causation of disease and of the meaning of health became ever clearer. That process shows no cessation and health officers, in particular, should not fail to be alive to the fact that the concepts of preventive medicine must be continually adapted if the full results of their application to human needs are to be achieved. A danger of any organized service is the fixation of routine, the continuation of practices and methods, mechanically employed, based on ideas and assumptions no longer compatible with modern ways of thought. It is a particular and special responsibility of those concerned with the leadership of the several branches of the public health service to see that their colleagues are indeed being kept informed of the wider knowledge and the new ideas which should influence their attitude to their individual tasks.

Health departments, like all organizations, have their place in a changing world, and just as the true clinician seeks to adapt his methods of diagnosis and of treatment to an increasing understanding of the etiology and background of disease not only in its purely scientific but also in its social sense, the health officer faced with the necessity of thinking and acting in terms of community health problems must maintain an alert and forward-looking attitude towards his task as a community physician, as did the early pioneers of a century ago.

The desirability for improved hospital and other clinical facilities whereby the efficiency of the national health service may be furthered is universally accepted. But it is plain that concurrently with this aim is the unceasing attention which must be given to the maintenance of health and to the improvement of healthy ways of life in all communities. The right of the individual to competent medical and surgical treatment, as and when necessity arises, must not be allowed to overshadow his need for the protection and the preservation of his health by the employment of every method which a national health service can devise. In these days, thanks in large measure to the health and social services which have been developed within comparatively recent times, the great majority of infants would appear to be born healthy; it is the fundamental task of preventive medicine, therefore, to see that this state of well-being continues insofar as is humanly possible, that is, to be concerned with the organization and the application of the primarily protective purpose of the environmental, the personal, the social and the mental health services.

The Medical Officer of Health

Any assumption that the function of the medical officer of health is likely to diminish in scope and value is based on an unimaginative approach to plain reality, and is less than a compliment to those of the past whose vision and labours have contributed so much to the striking improvements in the nation's health within a lifetime. Not only have these enhanced standards to be sustained, but still further advances to deal with existing ill-health demand much thought, study and attention.

The medical officer of health, who should increasingly regard himself as the community physician, occupies a special place of vantage. As the leader of the public health team, he is something more than a departmental organiser; indeed in the larger areas much of the day-to-day procedure is the function of his senior medical and administrative staff. With his background of training and experience in general and in social medicine it is the medical officer of health's responsibility to maintain an overall, strategical survey of the business of his department. Avoiding undue preoccupation with details which should more properly be left to others he should ensure that he is in effect keeping a careful watch on the course which his department as a whole is following and of the relationships which are being maintained between the various members of his staff. No health department, therefore, should be without its frequent staff conferences and discussions. In addition, the medical officer of health should avail himself of the opportunity to have individual contact with each member of his staff as occasion may arise.

The environmental, the personal, the welfare and the mental health services, are integral parts of one community health service, collectively devoted to and concerned with the general health and well-being of the population they serve. Many of the individual problems of these services impinge upon each other, thus emphasising the necessity for their working together in an atmosphere of co-operation and mutual understanding. All this clearly demonstrates the function of the medical officer of health in these days. Viewed in the background of the national health service as a whole, he occupies, as a community physician, a key-position; for not only is he co-ordinator and director of the services under his immediate charge, but he should also act as a link between them and the hospital and the practitioner services. However much these latter services may have acted in varying degrees of isolation in the past the lessons which the precepts of social medicine have to teach will inevitably show how great, in the interests of the sick or injured patient, is the need for closer integration between those concerned with hospital, family or personal, and community medicine.

" The main future tasks of the health department are to improve emotional and social health; to preserve the health and well-being of veterans; to support and rehabilitate persons handicapped by physical, mental or social disability; to reduce non-infectious diseases; and to continue to eliminate environmental hazards. For these tasks we need knowledge of—child psychology and social psychology; health education skills; discussion techniques and methods; physiology and disease processes; sociology; epidemiological techniques; hygiene and sanitation; and (since departments are large) staff management and administration."[1]

This able enunciation of the scope, function and responsibility of the community physician demands consideration and acceptance, for it indicates what public health administration has come to mean in modern times. The medical officer of health, in particular, is under an obligation, therefore, to see that he attains a wide and comprehensive grasp of what community health really means, that by a process of wise delegation to others he avoids an inability to see the wood for trees, and that, above all, he exercises a stimulating and encouraging influence on his departmental colleagues.

The Public Health Department

Various as the affairs of the individual groups of a large health department may be, it should be made clear to medical and non-medical workers alike that they are united in one common purpose, the protection and care of community health and that to this end it is essential that the whole staff should act and think together as a team. The ultimate responsibility for such action undoubtedly rests with the medical officer of health. Nevertheless, the contribution of his divisional supervisors should not be overlooked, for they, too, have their part to play in influencing the general efficiency of the department. And it should be equally clear that such leaders should be kept in close touch with all matters affecting general departmental policy, rather than that they should suffer the restrictions of any feeling of isolation.

The Annual Report

No business or industrial concern would survive without a regular assessment of its affairs, and its possible future developments. The medical officer of health's annual report is in essence a similar form of accountancy; it is, or should be, an articulate expression of all that has been happening during the previous year in the various sections of the public health department. Indeed, it should be viewed, not merely as a statistical ledger, but as a valuable social document in which due regard is given to the interpretation of the many figures and facts which have been so laboriously collected.

The Public Health Officers Regulations, 1959, make it quite clear that this annual intimation on the state of the public health in each local authority area is a personal contribution of the medical officer of health in which it is for him to comment on any matter relating to the health of the community which he serves. Even if sections of the report are composed by others, the ultimate responsibility for the contents, as a whole, is his, for one of the most valuable features of such reports is the general picture which the medical officer of health should present in his introductory observations.

[1] MacQueen, I. A. G., 1960, *Public Health*, lxxiv, No. 7, 244.

The necessity and usefulness of these reports should not be underestimated, nor must they be regarded as merely an inescapable statutory enforcement. Indeed, in a circular (1160) to all local authorities asking councils to give directions for the preparation of the annual report of the medical officer of health for the year 1959, it was stated that the Minister regarded such reports as essential and valuable appraisals of the state of the public health in each area throughout the country. Nevertheless it has to be noted that some of these records do not yet do justice to the activities of the department while, regarding others, it is clear that much attention and thought has been given by the medical officer of health and his co-workers to the preparation of a report which is attractively presented and is intended to give its reader an intelligent and lively account of the health circumstances of the area concerned. Not a few of these commendable publications emanate from small rural areas, as well as from counties and county and metropolitan boroughs, thus proving that a department principally limited to the environmental health services is not necessarily compelled to issue a formal document consisting for the most part of vital and other statistics and little else, as the annual account of its stewardship.

If those concerned with the operation of the public health services are rightly conscious of the contribution they are making to community health, they must say so; and, year by year, the annual report of the medical officer of health affords an opportunity for such expression which can be of undoubted value. In the large health departments it might be of advantage to appoint a member of the staff to act as the general editor. For the annual report is something more than an official requirement of The Public Health Officers Regulations; it is concerned with the daily activities of men and women trained in the many fields of community health and can be made a living social document.

Conclusion

To think of the medical officer of health as a community physician and to refer to his department as the community health department is no new and modern conception. In a Ministry of Health Memorandum on the Duties of Medical Officers of Health in England and Wales, published in 1925, it is stated that his chief function is to safeguard the health of his area and to advise his authority how knowledge of public health and preventive medicine can be made available and utilized for the benefit of the community. It is, therefore, his consequent responsibility to acquire an accurate knowledge of the influences which may operate prejudicially to health in the area, and that while he has special duties for the prevention of infectious diseases, all morbid conditions contributing to a high sickness rate or mortality in the area from these or other causes should be studied with a view to their prevention or control. The terms of his commission are wide, as they have always been, and it is indeed difficult to understand how anyone could imagine that because of the legislative changes of the past decade the need for his services would become increasingly lessened.

Clean Air Administration

The National Society for Clean Air held a three-day International Conference in London, in October, 1959. This was attended by 1,250 delegates including 180 from overseas, and some 78 papers were submitted dealing with the administrative, scientific, medical and industrial aspects of atmospheric pollution. The number of papers was an indication of the wide field over which research is now proceeding, and although many of the contributions dealt with highly technical branches of the subject, it was of some consequence to note that most of the delegates and many of the speakers during the discussions were members and officers of local authorities concerned with the practical applications of the subject—a clear indication of the interest and enthusiasm now being displayed throughout the country.

In the introduction to their Report in 1954, the members of the Beaver Committee said: "We are confident that our proposals, if carried out, will secure happier and more healthy living conditions for millions of people and that on all counts the cost of the cure will be far less than the national loss in allowing the evil to continue." It is increasingly apparent that it is the national policy to see that the Committee's recommendations are fulfilled at an early date. Early in 1959, in order to stimulate progress, the Minister of Housing and Local Government asked all local authorities situated in districts exposed to serious atmospheric pollution, to consider their domestic smoke problem and to submit to him a five-year programme for establishing smoke-control areas. By the end of the year, 199 authorities had submitted programmes, and reports had been received from a further 95 dealing with difficulties encountered in drawing up their programmes. Under the Clean Air Act, 195 orders establishing smoke-control areas had been confirmed by the end of 1959, in addition to the smokeless zones already established under local Acts and a number of local authority housing estates made smokeless by tenancy agreements. Very considerable progress is thus seen to have been made since the coming into force of the Clean Air Act, and the ensuing years should see a radical change in the atmospheric conditions, of our urban areas. The effects of the cleaner conditions in many towns are already becoming obvious.

Fog and Atmospheric Pollution

The winter of 1958–59 was characterized by an excessive number of foggy days, each accompanied by an increase in atmospheric pollution. During the period 1st November, 1958 to 28th February, 1959, there occurred six particularly serious periods of fog in Greater London; each being accompanied by raised atmospheric pollution and by an immediate increase in the numbers of deaths. Many of the peaks were followed by a few days during which the numbers of deaths fell below the expected level, suggesting that the effect of fog and high atmospheric pollution was frequently to determine the time of death in persons already seriously ill. In this respect the fog of 18th to 20th February is of particular interest since it coincided with the peak of an influenza epidemic. 19th February, the day of maximum pollution in London was also the day of highest influenzal mortality.

A special tabulation of the numbers of deaths in Greater London, classified according to the day of occurrence, was undertaken by the General Register Office. An examination of these deaths* indicated that in addition to the more serious fog incidents already mentioned, there was a small increase in mortality on a high proportion of the days of poor visibility and raised atmospheric pollution. The association was sufficiently consistent to permit of mathematical analyses by the calculation of correlation coefficients. Three indices of mortality

* Martin, A. E. and Bradley, W. H., 1960. *Mon. Bull. Min. Hlth.*, **19**, 56.

were used based on the daily numbers of deaths from all causes, and on the daily numbers of deaths from bronchitis and pneumonia. A statistically significant degree of association was shown to exist between each of these indices and visibility, atmospheric pollution by black suspended matter, and by sulphur dioxide. A significant association was also demonstrated between these atmospheric conditions and a morbidity index based on the daily numbers of requests for hospital admission made to the Emergency Bed Service Bureau of the King Edward's Hospital Fund. It is apparent from this investigation that a much closer association than had previously been suspected exists between mortality, morbidity and relatively small variations in atmospheric conditions.

Many provincial cities, particularly those in the North of England, were also severely affected by fog during the winter of 1958–59, and levels of atmospheric pollution even higher than those in Greater London were at times recorded in Newcastle upon Tyne, Leeds, Manchester, Salford and Sheffield. In contrast to the winter of 1958–59, that of 1959–60 was comparatively free from serious fog incidents both in London and the provinces.

The Public Health Officers Regulations, 1959

One of the consequences of the Local Government Act, 1958, was the abolition of county council grants to county districts and metropolitan borough authorities towards the salaries of their medical officers of health and public health inspectors. As certain of the provisions in the Sanitary Officers Regulations, 1935, relating to county district health officials, were dependent for their compliance on the acceptance of these payments it became essential that Regulations in question should be revised and consolidated. Thus in June of the year under review, The Public Health Officers Regulations, 1959, came into operation, together with separate Regulations for port health authorities.

The new Regulations are obligatory on all local authorities, including those of county boroughs. One provision in particular, the requirement that a public health inspector shall, as regards the district for which he is appointed perform his duties under the general direction of the medical officer of health, is of special significance, since hitherto this administrative principle did not, technically at all events, apply to county boroughs as such. This anomalous and illogical circumstance has now been remedied. And in Circular 17/59, relating to The Public Health Officers Regulations, 1959, it was stated that while the Minister did not consider it necessary for the medical officer of health to exercise close supervision and control over the detailed day-to-day work of the public health inspectorate, it was important, in his opinion, that they should at all times keep him fully informed and that they should carry out their duties under his general direction in any matters which require a medical officer's training in medicine and hygiene for their proper assessment in relation to public health.

Ever since the earliest days of the public health service, the association between the medical officer of health and the public health inspector has been close and interdependent, and rightly so, for the fundamental purpose of environmental hygiene is the protection and the preservation of human health. In other words, environmental hygiene is not an end in itself, it is a means to an end, it is a single and not a divided discipline, and ultimately its effective practice depends on the interpretation and the application of physiological and pathological teachings and principles. It should not, therefore, be imagined that the public health inspector can function in virtual independence, consulting the medical officer of health only on some unusual issue " requiring his training in medicine and hygiene ". That would be a negation of sound public health administration, with all its attendant dangers; and it is for this reason that The Public Health Officers Regulations, 1959, have confirmed and enlarged the requirement that the public health inspector shall carry out his responsibilities to the community under the continuing direction and guidance of the medical officer of health.

Seaport and Airport Health Administration

The regular routine of health control at seaports and airports functioned satisfactorily throughout the year and no outstanding incidents were reported.

As from 1st April, 1959, various functions in connection with health control, the medical inspection of aliens, the inspection of shellfish and the inspection of imported foods at ports in Wales were delegated to the Welsh Board of Health.

One case of smallpox occurred in Liverpool. In spite of long and detailed enquiries the source of infection was not discovered. No other cases occurred.

Cases of Infectious Diseases reported by ships arriving from foreign ports during 1959

Cerebro-spinal meningitis	1
Chickenpox	73
Dysentery	18
Enteric fever	7
Erysipelas	1
Food poisoning	24
Gastro-enteritis	26
German measles	6
Glandular fever	2
Infective hepatitis	13
Influenza	140
Malaria	20
Measles	70
Mumps	30
Pneumonia	40
Poliomyelitis	1
Pyrexia of unknown origin	13
Scarlet fever	3
Tonsillitis	12
	500

At London Airport there were two occasions when it was necessary to place under surveillance passengers who had been in contact with a case of smallpox at an earlier stage of their journey. In March a passenger on a flight from Rangoon was landed at Karachi with a rash subsequently confirmed as due to smallpox. Other occupants of the aircraft who reached London Airport were warned of the incident and placed under surveillance. In April three passengers who had been in contact with a case of smallpox on a flight from Prague to East Berlin were also placed under surveillance. No smallpox occurred in these passengers.

Soon after arrival in this country five air travellers and five sea travellers came under suspicion as possible cases of smallpox. They were seen by members of the panel of smallpox consultants. In none was the diagnosis confirmed. These incidents illustrate the constant vigilance which is required and which continues to be carried out in an unspectacular manner to guard against the importation of infectious disease.

During the year, 500 cases of communicable diseases were landed from 367 ships arriving from foreign ports. The pattern of distribution of the various diseases was very similar to that of the previous year.

International De-ratting and De-ratting Exemption Certificates

During the year, 251 de-ratting and 4,884 de-ratting exemption certificates were issued at 35 designated and approved ports in England and Wales.

The following table shows the numbers of certificates issued in recent years:—

Year	De-ratting Certificates	Exemption Certificates	Total
1953	446	4,090	4,536
1954	350	4,061	4,411
1955	337	4,522	4,859
1956	336	4,935	5,271
1957	332	4,905	5,237
1958	287	4,882	5,169
1959	251	4,884	5,135

Two large ports use sodium fluoroacetate extensively and 131 ships were de-ratted by this means but at most ports fumigation by hydrocyanic acid (HCN) is still the method of choice for de-ratting before the issue of certificates. It was used in 96 ships at twelve ports. Sulphur was used in 4 ships at one port. Methyl bromide was used in 4 ships at four ports. Warfarin was used in 3 ships at three ports and trapping and poisoning was carried out in 13 ships at three ports.

Airports

During the year, 115,610 aircraft carrying 2,714,354 passengers arrived at customs airports. Of these passengers, 1,748,255 came from territories within the " excepted area "[1] and were free from health control on arrival except where there were special epidemiological considerations to be taken into account.

[1] Belgium, France, Federal Republic of Germany, Irish Republic, Italy, Luxembourg and the Netherlands.

London Airport

A total of 1,398,988 passengers arrived from all parts of the world in 38,743 aircraft at this large international airport. The following table shows their areas of origin :—

From	*Number of Aircraft*	*Number of Passengers*
Europe (Excepted Area)	17,856	648,132
Rest of Europe	10,283	355,120
North America	4,506	189,294
Central and South America	371	15,108
Africa	2,257	83,968
Asia	3,470	107,366
	38,743	1,398,988

The number of aircraft arriving was only 272 more than in the previous year but the average size of aircraft now in operation is greater and there was an impressive rise of 203,171 in the number of passengers carried. The increases between 1957 and 1958 were 854 aircraft and 15,876 passengers respectively. The increases were fairly evenly distributed among the services from the various continents, except that the number of aircraft from Europe outside the "excepted area" fell from 11,785 in 1958 to 10,283 in 1959, although the number of passengers carried on these services rose slightly from 350,626 to 355,120. 1,857 aircraft going to India and Pakistan were disinsected.

Medical Examination of Aliens

The following table gives the numbers of aliens arriving during the year and the numbers examined and reported on by medical inspectors. The figures in parentheses are those for 1958.

	Number of aliens	Number medically examined	Number of medical reports made	Refused permission to land for medical reasons
Seaports ..	717,668 (685,865)	29,657 (30,346)	431 (467)	98 (85)
Airports ..	688,501 (569,362)	2,233 (2,540)	77 (860)	23 (22)
Total ..	1,406,169 (1,255,227)	31,890 (32,886)	508 (1,327)	121 (107)

IX

MATERNAL AND CHILD CARE

Vital Statistics

The total number of live births in 1959 was 748,501 which was 7,786 more than in 1958 and the highest number since 1948. The birth rate per 1,000 population of 16·5 was the highest since 1949.

The birth rate of 16·5 shows little change from last year but there is a tendency for the rate of increase to slow down and it is expected that a stable figure will be attained soon.

During the year 16,629 deaths occurred in children under one year of age giving an infant mortality rate of 22·2 per 1,000 live births. This is the lowest rate ever to be recorded for this country.

The still birth rate of 20·8 per 1,000 live and still births is another low record. It is possible that improved standards of ante-natal and maternal care and the selection of hospital admissions for a greater proportion of the high risk group of expectant mothers may be contributing factors.

As the recent downward trends of these figures and rates are encouraging they have been set out in the following table:—

Year	Live births		Still births		Deaths		Deaths of Infants under 1 year	
	Number	Per 1,000 population	Number	Per 1,000 total live and still births	Number	Per 1,000 population	Number	Per 1,000 live births*
1949	730,518	16·7	16,947	22·7	510,736	11·8	23,882	32·4
1956	700,335	15·7	16,405	22·9	521,331	11·7	16,554	23·7
1957	723,381	16·1	16,615	22·5	514,870	11·5	16,720	23·1
1958	740,715	16·4	16,288	21·5	526,843	11·7	16,685	22·5
1959	748,501	16·5	15,901	20·8	527,651	11·6	16,629	22·2

* Prior to 1957, figures based on " related " live births.

The neonatal mortality rate is again slightly lower than in previous years, 15·9 per 1,000 live births as against 16·2 in 1958 and 16·5 in 1957. The perinatal rate shows a reduction to 34·1 per 1,000 live and still births comparing favourably with the rates of 35·0 in 1958 and 36·2 in 1957.

It is satisfactory to report a continued fall in the number of maternal deaths as shown in the following table which gives comparable figures for 1958:—

Maternal Deaths 1958 and 1959

	Number of deaths		Rate per 1,000 total live and still births	
	1958	1959	1958	1959
Maternal causes, excluding abortion	265	243	0·35	0·32
Due to abortion	63	47	0·08	0·06
Total maternal mortality	328	290	0·43	0·38

Maternity Services Committee

The Guillebaud Committee, when they reported in November, 1955, considered that the maternity services of the country were in a state of confusion and recommended that an inquiry should be made to evaluate the work being done and to arrive at some conclusions as to the most efficient forms of provision. As a result the Maternity Services Committee was appointed by the Minister of Health in April, 1956, under the chairmanship of the Earl of Cranbrook, " to review the present organization of the maternity services in England and Wales, to consider what should be their content and to make recommendations ". The report of the Committee was published in February, 1959.

From a very large amount of evidence both written and oral, the Committee came to the conclusion that the maternity services were not in any serious state of confusion. The Committee was not inclined to say that the tri-partite structure of the health service had of itself proved more detrimental to the efficiency of the maternity service than to that of the other branches. They carefully considered whether there was still a place for a domiciliary service in this country and whether there should be introduced a system whereby all confinements should be conducted in hospitals. The evidence confirmed, however, that there was a continuing, though small demand for home confinement and that the present domiciliary midwifery service should be continued.

Hospital Maternity Service

The Committee suggested that sufficient hospital lying-in beds to provide a national average of 70 per cent. of all confinements to take place in hospital should be adequate to meet the needs of all women in whose case the balance of advantage appeared to favour hospital confinement. The number of lying-in beds should be planned on the basis of a normal length of stay of 10 days after delivery. The Committee recommended that the extra lying-in beds provided should, whenever possible, be general practitioner beds which were best situated within or very close to consultant maternity departments, a consultant having overall responsibility. In addition to the lying-in beds, the Committee estimated that ante-natal beds would be needed for 20 to 25 per cent. of all confinements.

In July, 1959, a circular, HM(59)69 was sent to regional hospital boards, hospital management committees and boards of governors, commending the Report and subject to a small number of reservations, asking them to give early consideration to the recommendations concerning the hospital maternity service. The circular emphasized the need to select patients for hospital confinement and asked the regional hospital boards to review in conjunction with boards of governors, local health authorities, executive councils and local medical committees in their area, the existing provisions and to work out the amount of accommodation needed in the light of the recommendations of the Cranbrook committee. It was suggested that the chairmen of local hospital management committees should take the initiative in convening local maternity liaison committee meetings and to do what they could to facilitate clinical meetings in hospital.

Local Health Authority Maternity Services

The Committee considered that the domiciliary midwifery service should remain under the control of the local health authorities. They recommended, however, that general practitioner obstetricians should ultimately replace the local authority medical officers in the ante-natal clinics. They suggested that local health authorities should provide health education in their own clinics, in the surgeries of general practitioner obstetricians and hospital clinics. While they considered the home help service should continue to be available to mothers on the same financial basis as provided for other users, the Committee suggested that it should be substantially increased.

Circular 21/59 was sent to all local health authorities in July, 1959, asking them to give early consideration to the recommendations in the Report, subject to certain reservations which included the recommendation about the gradual replacement of the local authority medical officers by general practitioner obstetricians in the ante-natal clinic. The Minister drew special attention to the need for good ante-natal care and particularly commended the advice given by the Cranbrook Committee on co-ordination.

General Practitioner Maternity Medical Services

It was with regard to the maternity medical services that the Maternity Services Committee made the most controversial recommendations. They came to the conclusion that the practice of midwifery required special skill and experience, and that there were not enough domiciliary maternity cases available to allow every general practitioner to obtain and maintain this skill. They, therefore, advised that not only should the obstetric list be retained, but that criteria for admission and retention should be enforced. They considered that only a practitioner who had had a six months' resident appointment in an obstetric unit under the control of a consultant obstetrician should be admitted to the list. Furthermore, to be retained on the list, he should during the preceding period of three years have had at least 60 complete booked cases, of which he should have attended the deliveries of at least half. The Committee considered that the payment for maternity medical services should be for the exercise of special skill and experience, as recognized by the doctors' inclusion in the list, and such payment should be made only to doctors on the obstetric list.

In Circular E.C.N.304 (E.C.L.44/59) sent to all Executive Councils, it was stated that further consultation was needed on these points. Subsequently discussions were arranged with the British Medical Association. Executive councils were, however, asked to consider the other recommendations of the Cranbrook committee, general practitioners were reminded in particular of the vital importance of maintaining a good domiciliary maternity service and of ensuring more uniformly high standards of care throughout pregnancy and of the endorsement by the committee of the advice given by the Standing Maternity and Midwifery Advisory Committee in their memorandum "Ante-natal Care Related to Toxaemia". The Circular also emphasized the need for co-operation and co-ordination between the branches of the service.

Midwives

A chapter of the report is devoted to the work of the midwives. The committee did not consider it practical to suggest that the work of domiciliary and hospital midwives should be interchangeable. The committee considered that it was important that every woman who proposed to have her baby at home should book both a midwife and a doctor. At the earliest reasonable time they should arrange that all necessary maternity care would be given and that it would be shared between them.

The committee suggested that the Central Midwives Board should consider two revisions to their Rules, firstly, that the minimum lying-in period should be reduced from 14 to 10 days, and, secondly, that the term "maternity nurse" in so far as it applied to certified midwives, should be reserved solely for a midwife who had notified her intention to practise as a maternity nurse only. Both revisions are being considered by the Central Midwives Board.

Use of Emergency Bed Service in London for Obstetric Admissions to Hospital

A most unsatisfactory situation developed in the London area and in some of the surrounding districts. Despite the fact that around 80 per cent. of births were taking place in hospital it was becoming increasingly difficult to book beds for women needing hospital confinement on social rather than on medical grounds, especially when application was made in the later months of pregnancy. In these cases, when labour commenced, recourse was had to the Emergency Bed Service, resulting in a significant increase in the number of requests for urgent obstetric admissions. Up to 1955 such requests, mainly because of real obstetric emergencies, ranged from 150 to 300 during a three-month period; by 1959 there were more than 800 requests, the increase being due mainly to the failure of general practitioners and the staff of ante-natal clinics to find beds for women whose homes were unsuitable for delivery. The disadvantages of such circumstances were obvious to all concerned, in particular the expectant mother, who, with no fixed arrangements for her confinement, was subjected to unwarrantable anxiety and to the possibility of eventually having her baby in unsuitable surroundings or even of failing to get into hospital in time, should a medical complication arise.

Although these circumstances were known to prevail, and were the subject of discussions at local medical meetings and at meetings with senior administrative medical officers in the Ministry of Health the demands on the Emergency Bed Service continued to increase. The Minister became so concerned that a conference of representatives of regional hospital boards, boards of governors in the Metropolitan Areas, the London County Council, the local medical committee and the Emergency Bed Service was held on 5th November at the Ministry of Health to discuss appropriate ways of dealing with the problem.

Those present at the meeting recognized the urgency of the problem and that the provision of additional beds could not provide an immediate solution even if they were found to be necessary having regard to the fact that in the London area as a whole over 80 per cent. of all confinements were now taking place in hospital. It was agreed that the immediate problem could, and should, be met by adhering to these principles in regard to the booking of maternity patients:

(1) Patients requiring hospital confinement on medical grounds in accordance with the criteria in the Cranbrook report (para. 70) should continue to be booked when application was made.

(2) Patients under 35 years of age expecting a second, third or fourth confinement and presenting no medical evidence of existing or anticipated abnormality (including such patients as may be referred direct to hospitals by general practitioners) should not be booked until the local health authority had advised that there was a need on social grounds for hospital confinement. (Cranbrook report, para. 224.)

(3) To allow an adequate margin of beds for obstetric and extreme social emergencies and other unforeseen contingencies not more than 80 per cent. of the lying-in beds in a maternity unit should be booked.

Hospital and Home Births Related to Age and Parity of Mother

The table on page 159 shows that 764,402 total births occurred in 1959 compared with 757,003 births in 1958. 63·97 per cent. of all births took place in hospital and 36·03 per cent. at home in 1959, compared with 63·93 per cent. in hospital and 36·07 per cent. at home in 1958. The institutional and home confinement rates of notified births from the returns given by local health authorities were 64·4 per cent. and 35·6 per cent. for 1959, and 64·3 per cent. and 35·7 per cent. for 1958.

Distribution of all births according to age and parity[1] of mother

During the year, 279,319 or 36·5 per cent. of all births were to women under 25 years of age, compared with 270,031 or 35·7 per cent. in 1958; 383,954 or 50·2 per cent. of all births were to women aged 25–34 years, compared with 383,503 births or 50·9 per cent. in 1958; 99,559 or 13·0 per cent. of births were to women 35 years and over, compared with 99,873 or 13·2 per cent. in 1958. Among 1,570 or 0·2 per cent. of all births the age of the mother was not stated, compared with 0·2 per cent. in 1958.

316,955 or 41·5 per cent. of all births were to primigravidae[2] compared with 316,012 births or 41·7 per cent. in 1958. 388,118 or 50·8 per cent. of births were to women who had one, two or three previous liveborn children, compared with 382,637 or 50·5 per cent. in 1958. 59,329 or 7·8 per cent. of all births were to women who had four or more previous liveborn children, compared with 58,354 or 7·7 per cent. in 1958. There is therefore a slight shift of childbearing to the younger age groups and, although the actual number of births to primigravidae was greater than in 1958, the proportion of births to primigravidae fell slightly from 41·7 per cent. in 1958 to 41·5 per cent. in 1959. There were more births to women who had four or more previous liveborn children in 1959 than in 1958.

[1] Parity in this instance means no previous liveborn children.
[2] Primigravidae in this instance means no previous liveborn children.

Distribution of hospital births according to age and parity of mother

Of the 488,985 births in hospital in 1959, 195,570 or 40·0 per cent. were to women under 25 years (189,381 or 39·1 per cent. in 1958), representing 70 per cent. of all women under 25 years (70 per cent. in 1958); 229,408 births or 46·9 per cent. were to women 25–34 years (231,714 or 47·9 per cent. in 1958), representing 59·7 per cent. of all women in this age group (60·1 per cent. in 1958); 63,141 births or 12·9 per cent. of all hospital births were to women 35 years of age and over (61,960 or 12·8 per cent. in 1958), representing 63·4 per cent. of all women in this age group (62·0 per cent. in 1958). 866 or 0·2 per cent. of hospital births were to women whose age was not stated, compared with 916 or 0·2 per cent. the previous year, representing 55·2 per cent. of births in this category (57·4 per cent. in 1958).

Of the 488,985 births in hospital in 1959, 259,945 or 53·2 per cent. of births were to primigravidae (259,265 or 53·6 per cent. in 1958), representing 82·01 per cent. of all primigravidae (82·04 per cent. in 1958). 200,023 or 40·9 per cent. of hospital births were to women who had one, two or three previous liveborn children (197,588 or 40·8 per cent. in 1958), representing 51·5 per cent. of all births to women in this category (51·64 per cent. in 1958). 29,017 births or 5·9 per cent. of hospital births were to women who had four or more previous liveborn children (27,118 or 5·6 per cent. in 1958), representing 48·9 per cent. of all births to women in this category (46·5 in 1958).

There has been little change in the age distribution of hospital patients. The proportion of hospital births to primigravidae in 1959 has remained almost the same, while there has been a slight increase in the proportion of hospital births to women who had four or more previous liveborn children.

Selection of cases for hospital confinement

In 1951 a memorandum from the Standing Maternity and Midwifery Advisory Council advising about the selection of cases for admission to hospital was sent to all hospital authorities. It suggested that priority should include: (*a*) all cases with medical and obstetric reasons, not necessarily all primigravidae but unquestionably most multiparae who had borne four or more children; (*b*) adverse social circumstances, especially bad housing.

The Maternity Services Committee 1959[1] recommended that sufficient maternity beds to provide for a national average of 70 per cent. of all confinements should be adequate to meet the needs of all women in whose case the balance of advantage appears to favour confinement in hospital. They include all women with a history of or suffering from a medical or obstetric abnormality, including multiple pregnancy; any women in whom an abnormality might be anticipated, such as primigravidae, all women over 35 years, and women who have borne four or more children; also women who require hospital admission on social grounds.

The table shows that a high proportion of births at home in 1959 were to women who had borne four or more previous liveborn children. Only 55·24 per cent. of births to women over the age of 35 who had four or more previous liveborn children took place in hospital. There is therefore clear need for an improved selection of cases for hospital confinement to ensure that women in the vulnerable groups have all the resources of modern medicine immediately available to them and their infants if required.

[1] Ministry of Health, 1959, *Report of the Maternity Services Committee.* London, H.M.S.O.

Births (including still births) which occurred (together with their Percentage Distribution) in England and Wales 1958–59

Analysis of births in hospital and at home[1] by age and parity[2] of mother

Age Group	Year	Total		Number of previous liveborn children					
				0		1–2–3		4+	
		Hospital	Home	Hospital	Home	Hospital	Home	Hospital	Home
All ages	1958	483,971	273,032	259,265	56,747	197,588	185,049	27,118	31,236
		(63·93)	(36·07)	(82·04)	(17·96)	(51·64)	(48·36)	(46·47)	(53·53)
	1959	488,985	275,417	259,945	57,010	200,023	188,095	29,017	30,312
		(63·97)	(36·03)	(82·01)	(17·99)	(51·54)	(48·46)	(48·91)	(51·09)
Under 25	1958	189,381	80,650	143,347	34,041	45,443	45,807	591	802
		(70·13)	(29·87)	(80·81)	(19·19)	(49·80)	(50·20)	(42·43)	(57·57)
	1959	195,570	83,749	146,548	33,971	48,420	49,014	602	764
		(70·02)	(29·98)	(81·18)	(18·82)	(49·70)	(50·30)	(44·07)	(55·93)
25–34	1958	231,714	153,789	100,755	19,771	118,109	116,301	12,850	17,717
		(60·11)	(39·89)	(83·60)	(16·40)	(50·39)	(49·61)	(42·04)	(57·96)
	1959	229,408	154,546	98,081	19,864	117,342	116,849	13,985	17,833
		(59·75)	(40·25)	(83·16)	(16·84)	(50·11)	(49·89)	(43·95)	(56·05)
35 and over	1958	61,960	37,913	14,583	2,679	33,762	22,591	13,615	12,643
		(62·04)	(37·96)	(84·48)	(15·52)	(59·91)	(40·09)	(51·85)	(48·15)
	1959	63,141	36,418	14,810	2,915	33,969	21,865	14,362	11,638
		(63·42)	(36·58)	(83·55)	(16·45)	(60·84)	(39·16)	(55·24)	(44·76)
Not stated	1958	916	680	580	256	274	350	62	74
		(57·39)	(42·61)	(69·38)	(30·62)	(43·91)	(56·09)	(45·59)	(54·41)
	1959	866	704	506	260	292	367	68	77
		(55·16)	(44·84)	(66·06)	(33·94)	(44·31)	(55·69)	(46·90)	(53·10)

[1] The figures for births in hospital include those in non-N.H.S. hospitals, many of which are maternity homes. The columns headed " Home " include births occurring in homes for unmarried mothers, remand homes, reception centres, etc.

[2] Parity in this instance means the number of previous liveborn children.

(80926) F 4

(A set of tables is available for reference at the General Register Office showing numbers of live and still births with a breakdown for individual county boroughs and administrative Counties within England and Wales. A copy of these tables, or a table for a particular area, can also be obtained from the General Register Office on payment.)

Confidential Enquiry into Maternal Deaths

The analysis of the confidential reports has continued during the year. A report for the years 1955 to 1957 is being prepared. This report will be a continuation of the " Report on Confidential Enquiries into Maternal Deaths in England and Wales for the years 1952 to 1954 ", which was published in 1957.

Survey on the Shortage of Midwives

A survey on the Shortage of Midwives in England and Wales was begun during 1959. Establishment deficiencies amounting to 1,000 midwives in the hospital service and 400 in the domiciliary service were found. Wastage was highest among pupils and younger midwives and was due to emigration, the return to other forms of nursing, and marriage. Pressure of work, unsatisfactory conditions, the training system and the lack of opportunities allowing for social life were the major causes of dissatisfaction. Many of these complaints are matters for consideration of regional hospital boards acting through their hospital management committees. Local difficulties are rarely confined to the maternity department and a closer co-operation with local health authority and general practitioner services is recommended. (Report of the Maternity Services Committee, 1959.) Conditions of work in maternity departments should be made sufficiently elastic to attract part-time midwives and to make more use of auxiliary nursing staff.

Marked discrepancies exist between local health authorities in their range of provision of housing and transport for the domiciliary midwife. Where these are inadequate they are a source of much dissatisfaction and an obstacle in the recruitment of midwives to a particular area. The demand for some form of relief from the 24-hour on-call system is increasing. " Night rota " arrangements where operated have been found of considerable value particularly in areas where high case-loads are a feature.

Premature Births

Information relating to premature births, institutional and domiciliary, is provided by local health authorities on forms L.H.S. 27. According to international definition a premature infant is one which weighs at birth 5½ lbs. (2,500 gm.) or less irrespective of the estimated period of gestation.

Number of Premature Infants and Percentage Distribution in Weight Groups

In 1959, 58,648 premature infants, which included 50,310 premature live births and 8,338 premature still births, were notified. Of the 50,310 notified premature live births 50·7 per cent. weighted from 4 lb. 15 oz. to 5 lb. 8 oz.,*

* Over 4 lb. 15 oz. and up to and including 5 lb. 8 oz., and so on.

20·3 per cent. weighed from 4 lb. 6 oz. to 4 lb. 15 oz., 17·5 per cent. from 3 lb. 4 oz. to 4 lb. 6 oz. and 11·5 per cent. weighed 3 lb. 4 oz. or less. Of the 8,338 notified premature still births 27 per cent. weighed from 4 lb. 6 oz. to 5 lb. 8 oz., 73 per cent. weighed 4 lb. 6 oz. or less and 45 per cent. 3 lb. 4 oz. or less.

Incidence and Place of Birth

Table I shows that there has been little change in the incidence of premature births. 6·7 per cent. of notified live births, 54·1 per cent. of notified still births, and 7·7 per cent. of all notified births were premature. Of the notified premature live births 77 per cent. occurred in institutions and 23 per cent. at home. Of the notified premature still births 86 per cent. occurred in institutions and 14 per cent. at home. It is known that 2,335 premature infants born at home and 61 premature infants born in nursing homes were transferred to hospitals for care.

TABLE I

Distribution of notified births by place of birth and comparison between premature and all births for the years 1953–57, 1958 and 1959

	Born in institutions			Born at home			All births		
	Total	Pre-mature*	Per cent.	Total	Pre-mature	Per cent.	Total	Pre-mature	Per cent.
Live Births									
1953–57	2,210,206	175,277	7·9	1,233,922	60,018	4·9	3,444,128	235,295	6·8
1958 ..	473,936	38,815	8·2	267,428	11,927	4·5	741,364	50,742	6·8
1959 ..	480,272	38,742	8·1	267,619	11,568	4·3	747,891	50,310	6·7
Still Births									
1953–57	62,526	33,643	53·8	16,432	6,963	42·4	78,958	40,606	51·4
1958 ..	13,080	7,408	56·6	2,946	1,257	42·7	16,026	8,665	54·1
1959 ..	12,720	7,176	56·4	2,683	1,162	43·3	15,403	8,338	54·1
All Births									
1953–57	2,272,732	208,920	9·2	1,250,354	66,981	5·4	3,523,086	275,901	7·8
1958 ..	487,016	46,223	9·5	270,374	13,184	4·9	757,390	59,407	7·8
1959 ..	492,992	45,918	9·3	270,302	12,730	4·7	763,294	58,648	7·7

* Includes 727 premature births in private nursing homes.

Mortality in Premature Infants

Table II shows that 26·4 per cent. of all notified premature births result in still birth or death in the first four weeks of life. The mortality is greatest in the lowest weight groups; 66·3 per cent. of infants weighing 3 lb. 4 oz. or less died within 28 days of birth, compared with 3·8 per cent of infants weighing 4 lb. 15 oz. to 5 lb. 8 oz. The neonatal mortality rate of notified premature infants was nine times the general neonatal mortality rate of 15·8 per 1,000. Even in the highest weight group which accounts for 51 per cent. of all premature live births the neonatal mortality rate is more than twice the general neonatal mortality rate.

TABLE II

Wastage of infant life associated with premature birth —analysis by birth weight groups

Birth Weight Groups	Premature live births	Deaths within 24 hours of birth	Deaths within 28 days of birth	Deaths within 28 days per 1,000 live premature births	Premature still births	Still births per 1,000 live and still births
All babies of 5 lb. 8 oz. or less (2,500 gm. or less)						
1953–57 ..	235,295	19,384	35,071	149	40,606	147
1958	50,742	4,124	7,224	142	8,665	146
1959	50,310	4,269	7,147	142	8,338	142
– 3 lb. 4 oz. (or – 1,500 gm.)						
1953–1957 ..	27,156	12,088	18,377	677	18,027	399
1958	5,661	2,543	3,785	669	3,928	410
1959	5,789	2,672	3,836	663	3,756	394
– 4 lb. 6 oz. (or – 2,000 gm.)						
1953–1957 ..	43,335	4,029	8,222	190	11,174	205
1958	9,228	862	1,686	183	2,326	201
1959	8,783	877	1,613	184	2,314	209
– 4 lb. 15 oz. (or – 2,250 gm.)						
1953–1957 ..	46,938	1,496	3,650	78	4,733	92
1958	10,160	319	704	69	1,039	93
1959	10,197	320	728	71	976	87
– 5 lb. 8 oz. (or – 2,500 gm.)						
1953–1957 ..	117,866	1,771	4,822	41	6,672	54
1958	25,693	400	1,049	41	1,372	51
1959	25,541	400	970	38	1,292	48

The minus sign of the weight group is to be interpreted as follows:—
" – 3 lb. 4 oz." means up to and including 3 lb. 4 oz.,
"– 4 lb. 6 oz." means over 3 lb. 4 oz. and up to and including 4 lb. 6 oz. and so on.

In some cases approximate estimates of birth weight are given in the notifications which provide the basis for this table.

Hospital and Domiciliary Care of Premature Infants

In the Annual Report for 1957 reference was made to the findings of a national enquiry into the facilities available for the hospital and domiciliary care of premature infants. A special joint sub-committee of the Standing Maternity and Midwifery Advisory Committee and the Standing Medical Advisory Committee of the Central Health Services Council met during 1959 to consider the care of premature infants and ways in which mortality and morbidity among these infants may be reduced. A memorandum, embodying the advice of the sub-committee, for the guidance of those responsible for the care of premature infants was referred to the Central Health Services Council.

Haemolytic Disease of the Newborn

There were 360 deaths under 1 year attributed to haemolytic disease of the newborn in 1959 which is equivalent to an infant mortality rate of 0·48 per 1,000 live births, compared with 377 deaths in 1958 which gave an infant mortality rate of 0·51 per 1,000 live births. Walker and Mollinson[1] have calculated, however, that with modern treatment of haemolytic disease of the newborn an infant mortality rate of less than 0·2 per 1,000 live births can be achieved. The prevention of still birth from the disease is also an important problem. Tovey and Valaes[2] demonstrate a correlation between the titre of the mother's antibodies and the risk of pregnancy ending in still birth. They suggest that about two-thirds of still births among first-affected babies may be prevented if labour is induced at 37 weeks.

Home population, live births, deaths from haemolytic disease of newborn and expected deaths at 0·2 per 1,000 live births by standard regions, conurbations and urban and rural aggregates outside conurbations, 1959

Regions	Population	Live Births	Deaths from haemolytic disease of the newborn under 1 year	Expected deaths from haemolytic disease of the newborn under 1 year at a mortality rate of 0·2 per 1,000 live births
Northern Region			23	12
Tyneside conurbation	852,210	15,974	5	
Remainder of Northern	2,369,790	42,858	18	
East and West Ridings			33	14
West Yorkshire conurbation ..	1,692,640	27,235	16	
Remainder of E. and W. Ridings..	2,457,360	41,158	17	
North Western Region			67	22
S.E. Lancashire conurbation ..	2,419,150	40,626	26	
Merseyside	1,383,500	27,498	11	
Remainder of North Western ..	2,704,350	42,913	30	
North Midland Region	3,559,500	60,553	25	12
Midland Region			36	16
West Midlands conurbation ..	2,291,890	39,185	20	
Remainder of Midland	2,348,110	39,649	16	
Eastern Region	3,576,000	61,224	37	12
London and South Eastern Region			88	34
Greater London	8,204,800	126,537	71	
Remainder of South Eastern ..	2,819,200	41,905	17	
Southern Region	2,741,500	46,829	20	9
South Western Region	3,343,000	52,095	15	10
Wales including Monmouthshire			16	8
Wales I—South East	1,882,000	30,880	12	
Wales II—Remainder	741,000	11,382	4	

It can be seen from the table that the best results would appear to be obtained in the South Western and Northern regions and in Wales. More than three times the number of expected deaths occurred in the North Western and Eastern regions.

References

[1] Walker, W. and Mollison, P. L., 1957. *Lancet*, i, 1309.
[2] Tovey, G. H. and Valaes, T., 1959. *Lancet*, ii, 521.

Breast Feeding

The following figures are derived from the annual returns to the Ministry of Health on Forms LHS27 and SH3.

TABLE I

Number of babies fully breast fed at two weeks old, as a percentage of domiciliary live births

	1950	1955	1956	1957	1958	1959
England and Wales	86·2	82·4	79·6	80·0	77·1	74·4

TABLE II

Number of babies fully breast fed at discharge, as a percentage of institutional live births

	1950	1955	1956	1957	1958	1959
England and Wales	86·2	76·06	77·26	77·42	74·8	73·4
Post-graduate hospitals (Metropolitan)	83·8	78·09	80·0	76·29	76·4	74·1
Undergraduate hospitals (Metropolitan)	85·1	67·79	73·0	77·42	66·0	64·4
Provincial teaching hospitals ..	81·21	71·55	71·0	70·41	66·0	67·2

Phenylketonuria

Phenylketonuria is an inherited metabolic disease, the basic fault appearing to be a deficiency of the enzyme normally responsible for the breakdown of phenylalanine absorbed in excess of the body's requirements. As a result phenylalanine accumulates in the blood and is excreted in the urine with certain of its derivatives; these can be detected by a simple urine test. A severe degree of mental deficiency is present in most cases, believed to be due to interference with brain development occasioned by the high concentration of phenylalanine in the blood; there may be associated epileptic seizures and other physical stigmata. A few cases with normal or near normal intelligence have been recorded.

The frequency of phenylketonuria in this country has been estimated as 1 per 50,000 of the population and it has been suggested that 20–40, or more, new cases occur in Great Britain each year. It has been established that phenylketonuria is determined by the inheritance of an abnormal, non-sex-linked, autosomal, recessive gene; one person out of 122 is a carrier of the gene.

Interest has been focussed on the condition in recent years by reported beneficial effects of treatment with diets low in phenylalanine content. When there is established mental defect the degree of improvement has been very variable, without restoration to normality. It is believed that in such infants the brain develops normally up to the time of birth although deterioration begins soon afterwards. Workers in this field have stressed the importance of detecting cases as early as possible in order to start the dietary treatment and so prevent irreversible mental deterioration. The diet is controlled by biochemical methods and control calls for exacting professional supervision, a children's unit with special laboratory facilities, and a high degree of co-operation on the part of the mother who will be responsible for the diet when the child leaves hospital after assessment and stabilization. No indication has yet been given as to the period of time for which it is necessary to adhere to the strict diet. The regime is not an easy one; the diet is unpalatable and may be refused and there may be associated gastro-intestinal upsets, loss of weight, and malnutrition. It is understood that some of those closely associated with this work are not sure that the present treatment is an effective remedy for phenylketonuria, nor of its value in any particular case.

In the established case with mental defect the urinary test indicates the basic diagnosis. In the very young infant, however, there is no evident mental defect and the diagnosis of the metabolic fault can only be suggested by the urine test. It has been suggested that the earlier the condition is detected and treatment started the better are the chances of the treatment being effective; however, the potentially affected infant does not pass the abnormal substances in its urine in the first few weeks of life and tests may not be positive until the age of 6–7 weeks.

Medical Officers of the Ministry of Health in discussions with Paediatricians and Medical Officers of Health, suggested that if local surveys for the detection of phenylketonuria in infants were undertaken it would be essential to obtain the co-operation of a Consultant Paediatrician with all the necessary facilities for diagnosis, treatment and control.

Certain local health authorities are now undertaking surveys which are both valuable and commendable. Together with other studies such as the one now being carried out in London they should help to resolve some of the uncertainties about this condition. The present dietary treatment, difficult to arrange, is still in the experimental stage, the duration of treatment and the ultimate outcome are not yet known. The position is being kept under review in the Department.

Report of the Committee on the Welfare of Children in Hospital

This Committee was appointed by the Central Health Services Council in June, 1956, under the chairmanship of Sir Harry Platt, " to make a special study of the arrangements made in hospital for the welfare of ill children—as distinct from their medical and nursing treatment—and to make suggestions which could be passed on to hospital authorities ". The report of this Committee was published in January, 1959.

The Committee's enquiry had been preceded by a number of studies by the Central Health Services Council on various aspects of child care in hospital which had resulted in the issue to hospital authorities of three memoranda between 1956 and 1959 asking them to allow daily visiting of children. The Central Health Services Council had also published a Report in 1953 on the Reception and Welfare of In-Patients in Hospital which included recommendations and suggestions about visiting hours for children and the help that might be given to parents in preparing children for admission.

It is impossible to summarize this Report in a short précis but the following extract from the summary and recommendations gives an idea of the general attitude of the Committee to the problem of child care. " *General.*—1. Greater attention needs to be paid to the emotional and mental needs of the child in hospital, against the background of changes in attitudes towards children, in the hospital's place in the community, and in medical and surgical practice. The authority and responsibility of parents, the individuality of the child, and the importance of mitigating the effects of the break with home should all be more fully recognised."

The Committee's report had four main sections, namely, preparation for admission, admission procedure, in-patient care and discharge.

The Committee laid great stress on measures required to reduce to a minimum, the effect of removing the child from the care of its parents and from the familiar background of its home. These measures included constant consideration of the child's emotional needs while in hospital, as in this environment it encounters conditions similar to those of the deprived child with perhaps the added risk of painful and frightening experiences.

Consequently to meet these needs the Committee emphasized the value of admitting the mother with the young child under five, in suitable cases, whenever possible, and recommended that unrestricted visiting as defined in the report, should be adopted by all hospitals. In this way the continuity of his way of life would be preserved.

This theme runs throughout the report and led the Committee to recommend that—

(*a*) children should not be admitted to hospital if this can be avoided, or only when the medical treatment they require cannot be given in other ways;

(*b*) that when the nature of the illness and the home conditions permit, mothers should be encouraged to nurse their sick children at home, under the care of the family doctor, and with the assistance, when necessary, of the district nurse. It was also stated that in addition to the skilled nursing assistance, domestic help should be provided as well when required.

The Committee also made recommendations to cover the needs of special groups of children, including those in long-stay hospital, handicapped children, and those admitted for tonsil and adenoid and eye operations.

Recommendations were also made regarding the training of nurses in the special aspects of diseases in children and the factors influencing the development of the normal child. The Committee thought that doctors also required some training in the child's emotional needs.

Following the publication of the report, Circular HM(59)19 was sent to hospital authorities commending the Committee's recommendations and inviting them to implement those concerning matters within their jurisdiction, particularly the ones concerning future hospital planning. At the same time regional hospital boards and boards of governors were asked to give attention to a recommendation that where children were at present scattered throughout the adult wards they should be grouped in a children's unit and that adolescents should be accommodated separately or with children. The boards were also informed that the Minister proposed to call for a report in 12 months' time on the action that hospital authorities had taken to implement these recommendations.

The circular to local health authorities, 2/59, asked them to consider the recommendations falling within their sphere of responsibility, particularly the development of home nursing services for children and co-operation with the family doctor. The role of the Health Visitor included helping the mother to prepare the child for admission to hospital and for reception at home on discharge. Such assistance was dependent on her keeping in touch with the family and the hospital.

The recommendations relating to the rôle of the family doctor were embodied in a circular, E.C.L. 8/59, addressed to the Clerk of the Executive Council. In this, attention was drawn to—

(1) the value of home care for the sick child under the supervision of the family doctor when the nature of the illness and home conditions permitted;

(2) the need for the doctor to be informed of the discharge of his child patients from hospital and to receive adequate reports about them.

Changing Trends in the Maternity and Child Welfare Centres

In 1952, comment was made on changing trends in maternity and child care respectively. The change in the pattern of domiciliary ante-natal care and the need for review of the work of child welfare centres was noted at that time. It is of interest therefore to consider some of the developments which have taken place since then.

Ante-natal Clinics

In 1952 the ante-natal care of domiciliary cases was in a transitional stage as an increasing number of general practitioners were providing this care for their booked cases. More general practitioners are now assuming this responsibility. A doctor may see his own booked patients either at his surgery (often with the help of a midwife or health visitor) or at the local maternity and child welfare centre or he may act as a medical officer on a sessional basis. Interim care is given at a growing number of " midwives only " sessions in the clinic and more and more expectant mothers attend mothercraft and relaxation classes. A greater number of local health authorities have appointed obstetricians to take consultant sessions. Thus in some clinics there is a clinical team which may consist of the general practitioner, the midwife, the health visitor, the social worker or other members of local authority staff as required. The health centre is the ultimate expression of this concept but co-operation has been achieved otherwise to a reasonable degree and local health authority proposals for new clinics rarely, if ever, omit provision for ante-natal sessions.

This type of medical supervision was endorsed by the Maternity Services Committee but is not yet provided evenly throughout the country. The whole-time assistant medical officer may in time be replaced by general practitioner obstetricians but in the meantime in many areas she continues to give full ante-natal care, in others she may provide interim supervision if the general practitioner requests it. This may range from full ante-natal care to a single procedure where the doctor merely refers his patient for the taking of specimens for blood examinations. Alternatively, she may only see those patients who have not yet booked a doctor for their confinement.

The character of clinical care during pregnancy is also changing. More attention is, or should be, paid to the mental and emotional health of the expectant mother. Her pregnancy should now be viewed as a family, as well as an individual, incident; her husband's health and circumstances and their environment are considered in assessing the whole background. There is generally a better appreciation of health education and of the value of group techniques in promoting this by means of mothercraft classes and of parent clubs.

Ante-natal clinics continue to distribute welfare foods and maternity packs. Vaccination against poliomyelitis is now offered to expectant mothers—but the acceptance rate of 20 per cent. is unfortunately still very low.

The majority of those attending the clinics expect to be confined at home but hospital booked cases may attend for interim care, for relaxation classes or health education. Application for admission to hospital for social need is frequently made through the clinic. Wherever ante-natal supervision calls for co-operation among the different branches of the health service, it is true to say that this has been improved, particularly as regards the keeping and transfer of records, as a result of the local meetings recommended in the memorandum on " Ante-natal Care Related to Toxaemia ".

Child Welfare Clinics

Changes in the child welfare clinics have been many and varied, some administrative, others clinical in nature. Most have occurred sporadically and by degrees to meet new demands on the service as the progress of knowledge has brought these to light.

Clinics for healthy infants continue to function and a high proportion of mothers bring their infants regularly to them during the first year. Recently an increase has been noted in attendances of children between one and two years of age but relatively fewer toddlers attend regularly.

Local health authorities continue to make applications to the Ministry of Health for approval to build new clinics, either as initial provision in new housing areas, as replacement of unsuitable or temporary premises, or in some cases to extend a service where a new need has been recognized. Frequently maternity and child welfare and school clinics are combined, and dental sessions are provided at one or two key clinics in an area. Since 1948 ten comprehensive health centres have been opened by local health authorities. These are additional to the health centres built by the Nuffield Trust in four areas in England and Wales, three of them offering maternity and child welfare sessions.

Medical advice in the child welfare clinics is carried out mainly by full-time medical officers, a growing number of whom hold joint appointments for maternity and child welfare and school health. General practitioners, however, are now taking an increasing number of sessions. Most assistant medical officers are aware of the importance of keeping in touch with the family doctor over referral of cases to him or for appropriate consultant opinion.

Health visitors are the mainstay of clinic staff. Their association with general practitioners is improving and they form an important link between the clinic and the home, the clinic and the family doctor and sometimes the hospital.

Additional special sessions have been established in a number of areas—for backward babies, for spastics, for detection of impaired hearing, foot health, for parent guidance on psychiatric grounds. At some of the special sessions the clinic medical and nursing staff are brought into contact with specialists in the several subjects. The audiology clinics afford a good example of liaison between health and education departments and regional hospital boards in the contribution of consultants from the different fields. Clinic sessions for mentally backward children have been held in the London County Council area for a number of years, and other authorities are following suit. They are designed for developmental testing and also for guidance of parents in dealing with the handicapped child. Parent guidance clinics so designated, are held in a few areas in clinic premises with staff who have psychiatric experience to deal with behaviour problems in children, expectant mothers and problem families.

Paediatric consultant sessions of a more general nature are held in a few areas. In some clinics a paediatrician also takes child welfare sessions. Several local health authorities have made joint appointments with the regional hospital board for the services of paediatric registrars. In one authority's area such an officer takes both routine child welfare sessions and holds special ones for assessing general development and for early detection of impaired hearing.

Preventive Care in the Clinics

Viewed as a whole, it appears to follow several distinct lines along which advance in knowledge has been made in recent years.

Better appreciation of the importance of mental health and emotional factors, and the inter-relation of these with physical health, has emphasized the need to recognize early deviations from the normal.

Some local health authorities have appointed a child psychiatrist to help the clinic staff to a better understanding of this aspect of preventive psychiatry. In a few instances the consultant advises the mothers directly but the usual pattern is for him to hold case conferences at which the medical and health visiting staffs discuss their cases and seek the guidance and advice of the child psychiatrist on how to deal with them.

Increasing knowledge of normal child development has enabled abnormalities—physical, mental or emotional—to be detected at an earlier stage. This has frequently called for " special " toddlers sessions to allow for the necessary time and privacy. It also calls for a wide and detailed knowledge and experience of the subject, and an understanding of social and environmental factors in order to give parents the guidance they seek. The needs of parents of handicapped children are more fully discussed below.

The range of functions of a clinic medical officer at child welfare centres may be described briefly as follows:—Medical examination of infants and children attending the centre for the first time, advising on diet and child management, seeing any child referred by the health visitor or when a consultation is requested by the mother, periodic medical examination of all pre-school children in attendance, and carrying out various vaccination and immunization procedures.

More recently the importance of finding time to listen to a mother's anxieties and problems has been recognized and, when physical causal factors can be excluded, the reassurance of an unduly anxious mother is recognized as an essential feature of clinic work.

Despite periodical expressions of scepticism from some medical quarters—of the need for these activities in preventive medicine—the value of the child welfare centre in providing this type of medical supervision on an advisory basis is becoming more acceptable to general practitioners, as more of their number are participating in this field. This interest is welcome and should be encouraged by local health authorities by offering facilities to those general practitioners who have the vocation and can spare the time, to perform this service—either for children under five on their lists in their own surgeries—with the assistance of a health visitor—or in child welfare centre premises acting as sessional medical officers.

It is likely that the number of general practitioners who want to participate in these ways will increase. If the practice could be developed and expanded it would do much to help to close the gaps between the preventive and curative services for children and also to promote a better understanding between those engaged in these allied fields of child care to the advantage of both.

The Guidance of Parents of Handicapped Children

The falling death rate among new-born infants in the population as a whole has been paralleled by an increased survival rate among handicapped babies. It is now generally agreed that if these children are to be enabled to make the best of their potentialities, they should be reared in their own homes. The social implications of the care and management of the young handicapped child in the community raises a number of family problems involving the child himself, his parents and his siblings. Many of these problems are of a practical nature. Other difficulties have their roots in inter-personal relationships of such complexity that it may be a long time before the doctors and case-workers concerned are able to assist the families to unravel them.

It is of primary importance that the child's deviation from the normal should be recognized as early as possible and the nature of his handicap fully assessed. This developmental assessment requires considerable knowledge of normal as well as handicapped children and must, therefore, be undertaken by trained and experienced medical officers. Whether this estimation is carried out in hospital or in a child welfare centre, the medical officer of health has the responsibility of ensuring that any necessary treatment and training of the child have been arranged and that the appropriate home visiting and parent counselling services are provided. In many areas a special register of young handicapped children is now kept and the responsibility for periodic review of the cases devolves upon a senior medical officer, but some local authorities have not yet worked out the necessary administration. The duty is not one which can be delegated to non-medical or ancillary staff. Even if the child is receiving treatment at hospital it is necessary that an experienced medical officer should receive and collate the various case reports and keep in personal touch with consultants, family doctors and home visitors.

In the beginning it is usually found that the parents cannot accept more than the bare fact of the diagnosis that their child is physically or mentally handicapped. A simple explanation of the possible aetiology should be given immediately, so that they will not suffer anxiety that they are in some way to blame or that the child is the victim of professional neglect. Not until they have recovered sufficiently from the first shock are the parents ready to plan ahead and to think in terms of the child's assets rather than his disabilities. Their first call for help nearly always assumes a practical guise, e.g., advice regarding daily care and management, assistance with housekeeping and shopping difficulties, transport to hospital, a day nursery vacancy, etc. The implications for other members of the family, particularly the other children, do not become obvious to them for some time. It is still later before they come to grips with their own deeper anxieties and sub-conscious reactions. The same questions constantly arise. Why did it happen in his particular case? Would he be better off in an institution? What prospects are available for his training and education? What will become of him when his parents are no longer there to care for him? It is important that any disturbance of behaviour in the child should be interpreted to the parents so that their anxieties may be relieved. They will need constant support and reassurance of their ability to cope with him. It is usually necessary for the medico-social worker concerned to be prepared to spend a long time going over the same ground again and again before the parents have "talked themselves out" and can accept the case-worker as a guide and not merely as a sympathetic listener.

It is the experience of most workers in this field that unless the parents are skilfully guided to realize that the handicapped child will show all the normal child's instincts, drives and rebellions, complicated by the frustrations of his condition, they will fail to understand his often difficult and contradictory behaviour. A few parents accept their handicapped child with matter-of-fact affection from the beginning. The majority, however, tend to treat their children with over-protection or over-stimulation or even with rejection or despair. The first two are the most common. In their need to make up to the child for his disabilities, an anxiety which may be founded in love, pity or perhaps hidden self-blame, they tend to shield him from all adverse circumstances and to allow him to dominate the domestic life of the whole family. However contented the over-protected child may appear to be in childhood, he will be at a severe disadvantage later in life, since he has never learned to accept the inevitable frustrations of daily living. Over-pressure is often due to an affectionate anxiety on the parents' part that the child shall grow up to be as independent as possible, but sometimes it is due to their unwillingness to face the truth regarding the limitations imposed upon him by his disability and a determination that they will prove to unbelieving doctors, teachers and neighbours, that he has the capacity to succeed as well as any other child. Overpressed children tend to be nervous and worried or to withdraw into themselves in order to seek refuge from a situation beyond their control. In contrast to these preoccupied parents, others experience a feeling of despair regarding their ability to cope with the child's problems, which may lead to the neglect of his basic needs and to the creation of an atmosphere of deep depression and unhappiness in the family. A regular home-visiting service can do much to help. Total rejection is becoming more rare but it still occurs, particularly when the child's disability is obvious from birth and the parents are not wisely handled at the start. For instance, it still happens that applications for institutional vacancies for mongol babies are received from maternity hospitals although, as experienced medical officers agree, of all handicapped infants these are the happiest to rear at home.

There is evidence that the increasing attention given to research, and to the aetiology and treatment of physical and mental abnormality is producing a more informed and accepting attitude not only in the parents but in the general population. A recent television programme in which parents of mentally handicapped children were interviewed and the new findings with regard to chromosomal patterns in mongolism were briefly described, not only gave consolation to many parents of mongol children, but also, by highlighting the human problems involved, aroused the warm sympathy of many ordinary people who would otherwise never have given a thought to such matters. Further popular education of this kind is eminently desirable since it would do much to encourage practical good-neighbourliness and help to break down the barriers that still tend to isolate families with handicapped children from the general life of the community.

X

FOOD AND NUTRITION

Salmonellosis

Salmonellosis remains the predominant cause of food poisoning in this country and a survey of incidents associated with this cause gives an indication of the most salient features of this preventable condition.

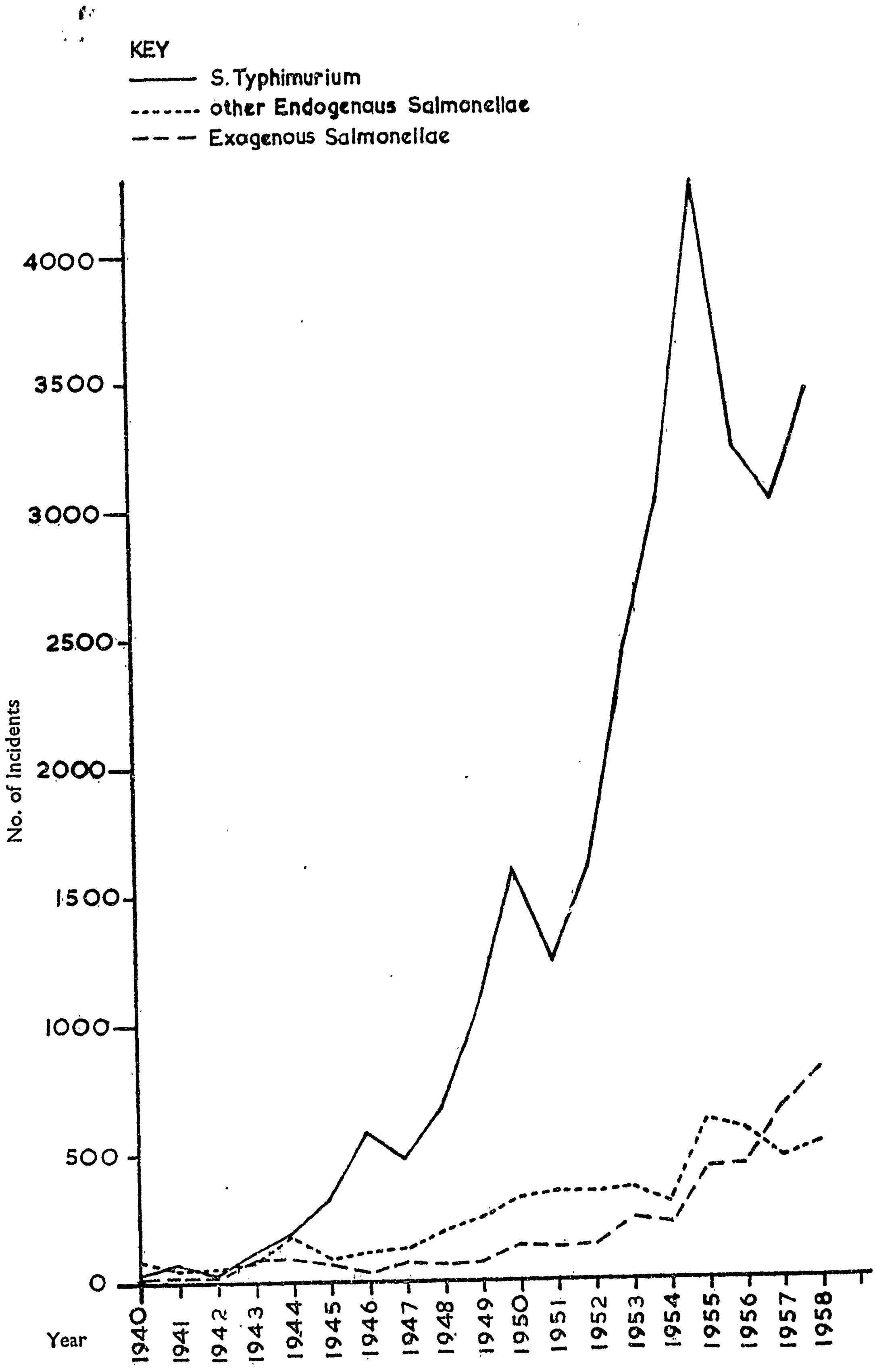
In the period 1949–58 there have been 34,241 food poisoning incidents (general and family outbreaks and sporadic cases) in which the causal organism was identified.[1] Of these incidents 71 per cent. were due to *S. typhimurium* and 23 per cent. to other Salmonella serotypes. The predominance of *S. typhimurium* was most marked in the sporadic cases (74 per cent.), and least in the general outbreaks (40 per cent.). In the family outbreaks *S. typhimurium* was responsible for 68 per cent. of incidents.

A study of the annual number of food poisoning incidents associated with each Salmonella serotype further emphasizes the importance of *S. typhimurium.* The serotypes have been divided into the endogenous types—those recognized in this country before 1940, of which there are twenty, and the exogenous types—the types recognized in and since 1940. Over 140 exogenous serotypes have been associated with food poisoning incidents in the period 1949–58, and of these approximately 100 (72 per cent.) were responsible for less than ten incidents each over the ten-year period; while less than a dozen exogenous, and eight other endogenous serotypes, have been associated with over a hundred incidents each in this period.

The graph overleaf compares the numbers of incidents due to *S. typhimurium* with those due to all other endogenous serotypes, and all exogenous serotypes. The remarkable increase of the *S. typhimurium* incidents suggests that the basic problem in Salmonellosis is, in fact, *S. typhimurium.*

This Salmonella is found in man and animals and has been isolated from meat, poultry, milk, and both home and imported egg products. It is a recognized cause of epizootic enteritis in calves and has also been isolated from cats and dogs.[2] A considerable amount of work is still being carried out on the phage typing of *S. typhimurium*[3], and it may be that some phage types are peculiar to certain sources of food.

In 1958–59 a series of cases of *S. typhimurium* food poisoning occurred in North London and on the South Coast. Phage typing helped in tracing these through the local abattoirs, to a large calf depot near Oxford. The calves had been purchased at markets in the west country and transported by road. They were not usually held in the depot for more than a few hours, but in the latter half of the week their stay might be two days or even longer. The same phage type of *S. typhimurium* was isolated from human cases who had eaten veal, from the abattoirs, from the calves while alive at the abattoirs, and at the calf depot. The infection rate in calves at one abattoir was highest early in the



Salmonella Food Poisoning Incidents, 1940–1958 week—in those calves which had been retained in lairages instead of proceeding direct to the abattoir. The possible role of lairages in the spread of Salmonellosis in meat has previously been reported by McDonagh and Smith.[4]

The annual reports on food poisoning indicate that Salmonellae and especially *S. typhimurium* incidents are far more common in hospitals than in other comparable catering establishments, and it is probable that most of these are due to cross-infection rather than directly food-borne.[5]

Phage typing was of epidemiological value in a series of seven outbreaks of *S. typhimurium* infection extending over a period of eleven months in a children's hospital. The outbreaks were attributed to a dust-borne infection.[6] Ten months after the removal of the last case from one of the wards the organism was isolated from the ward vacuum cleaner bag. A feature of these outbreaks, also noted in other hospital outbreaks, was the incidence in nursing staff, not necessarily as cases but as symptomless excretors.

This high "carrier" rate is also a feature of family outbreaks, and apart from human carriers, domestic pets have not infrequently been found to be carriers as well. In the family outbreaks over this ten-year period 89 per cent. of incidents in which the cause was known were due to salmonellosis (68 per cent. *S. typhimurium* and 21 per cent. other serotypes). While a food source is always suspect as the origin of the infection there are other factors in relatively closed communities such as the family environment, or the hospital ward, which favour the spread of infection. The precise path of infection is rarely clear.

A food-borne outbreak associated with a bakery occurred at the beginning of the year. This was a large modern bakery owning cafés and retail bakery shops in three county boroughs. A total of 179 known cases and 340 symptomless excretors were recorded, and it is reasonably certain that many other cases occurred which were not notified.

Nineteen different salmonella types were identified from the cases and their contacts, the bakery and retail shop staff and the egg products used in the main factory. Of these, twelve types were isolated from cases and their contacts, twelve types from the bakery staff, six types from the end products of the bakery, and eight types from the egg products used in the bakery (four types from American pasteurized albumen, three types from Chinese frozen "white", and two from home produced whole frozen egg).

The outbreak developed over a period of three to four weeks, the third week providing the highest number of cases. Both cases and symptomless excretors were found infected with more than one salmonella type, a feature which is not uncommon with salmonellosis of this type of origin. Over 25 per cent. of the bakery and retail shop staff were found to be symptomless excretors.

An outbreak of this nature provided the Public Health Laboratory Service with a considerable amount of material for bacteriological examination and salmonella typing, particularly where one case may be excreting four or five salmonella types. Once the source of the infection was known the typing of all the salmonella types from all samples was neither necessary nor practicable. Certain unusual salmonella types isolated from cases indicated that pasteurized American albumen, a new import, was suspect. The bakery had only recently used this albumen in preference to Chinese albumen (heat-treated in this country). While only four salmonella types were isolated from the American albumen in the bakery it is important to note that of the nineteen types found in the outbreak fifteen have subsequently been isolated from American pasteurized albumen. Coupled with the findings in cases and symptomless excretors this seemed to suggest that the new pasteurized product was the source of the Salmonella infection.

At the time of the outbreak extensions were being made to the bakery, and these, apart from reducing the working space, created dust. The ventilation system was such that the flow of air was from the mixers (into which were put the egg products) across the line of production. This could have been a factor in the dissemination of infected egg products, so that contamination of end product and personnel occurred.

The figures and incidents quoted emphasize that the most important problem in food hygiene is the prevention of the spread of Salmonella infections with particular reference to *S. typhimurium.* Not all Salmonellae are so ubiquitous, or so easily affect man and animals. The increased examination of foodstuffs and investigations into food poisoning incidents has shown a wide variety of serotypes, none of which has shown such a greatly increased incidence as *S. typhimurium.*

Meat and meat products are the most common food vehicle of infection,[7] and the many ways in which meat can become infected emphasize the difficulties of control and importance of veterinary as well as public health measures. The Slaughterhouse (Hygiene) Regulations, 1959, should lead to an improvement in both construction of slaughterhouses and in the handling of meat at a stage where contamination can most easily occur.

It is important to realize that not all human Salmonellosis is food-borne and the incidence of subclinical infections or symptomless excretors in some community outbreaks indicate the ease with which cross-infection can occur. While the main problem of food poisoning incidents may be Salmonellosis, the control of Salmonellosis is not confined to food hygiene.

References:

1 *Mon. Bull. M. Hlth.*, 1949–58.
2 Williams Smith, H., 1959. *J. of Hyg.*, **57**, 3, 266.
3 Callow, B. R., 1959. *J. of Hyg.*, **57**, 3, 346.
4 McDonagh, V. P. and Smith, H. G., 1958. *J. of Hyg.*, **56**, 2, 271.
5 *Mon. Bull. M. Hlth.*, 1954, **13**, 12.
6 Bate, J. G. and James, Ursula, 1958. *Lancet, ii*, 713.
7 McCoy, J. H., 1959. *Sanitarian*, **68**, 2, 117.

Shellfish

On page 156 of my Report for 1958 reference was made to an association with the consumption of oysters of 12 cases of typhoid fever.

Following on this, research work carried out at the Fishery Research Station of the Ministry of Agriculture, Fisheries and Food, at Burnham-on-Crouch resulted in the invention of a new process of providing bacteriologically clean water in which oysters may be laid to carry out their biological self-cleansing processes. The process involves tanks filled with natural or reconstituted sea water, a pump to circulate the water, a powerful source of ultra violet light acting upon the circulating water and destroying the bacteria present and an aerating tower whereby the oxygen content of the water is maintained.

A number of traders have already installed these systems with good results. In one of these cases the apparatus has been provided at a retailer's business premises in London; this has worked well on reconstituted sea water.

The emergence of this system for providing clean water for oysters represents a real advance for the industry in the drive to present a safe product to the consumer and it is hoped that it will find general acceptance within the trade.

Tuberculous Adenitis

The discovery of three cases of tuberculous adenitis during a school medical inspection brought to light a source of infection in the school milk supply. The milk had come from a pedigree Friesian tuberculin-tested herd; this herd on retesting gave 36 reactors in a total of 140 animals. The source of infection in the herd was uncertain, but it was thought to have been in a foundation member of the herd which had had a chronic infection of the udder for some time. This animal had been slaughtered, without a post-mortem examination, just before the investigation began.

A breakdown in a tuberculin tested herd at this time when the national attestation scheme is nearing completion is a timely warning of the need for continued vigilance. Attention was drawn in my Report for 1957 to farmers and farm workers suffering from phthisis of bovine type being a possible source of breakdown. Such instances in this country have already occurred.

Poultry

During the year a study has been made of recent developments in the poultry trade which have presented several problems of public health import. What has now become known as the broiler industry has grown from small beginnings to a large-scale integrated process of selected egg incubation, the intensive rearing of selected chicks in specially designed breeding houses, followed by the slaughter and dressing of carcases in packing stations. These packing stations vary greatly in size from a small ancillary building on the farm to the modern type of factory dealing with thousands of birds in a day. Reliable sources give the sales figures for 1959 as exceeding 75 million birds, with estimates of future expansion to twice that figure in the next three or four years.

Although named the " broiler trade ", packing stations are designed to deal with other forms of poultry, e.g., poussin (4-week old birds), broilers or spring chickens (10–16-week old birds), ducklings (10–16-week old birds), older birds (chickens, ducks, geese, turkeys), culls from breeding flocks and egg laying batteries.

The birds are mechanically plucked, a process which has to be finished off either by hand or mechanically. In some stations the birds are eviscerated, though this is not always the case. The birds are then trussed and dressed and presented for retail sale in oven-ready form in individual transparent film packs. To ensure continuity of supply and a relatively stable price, over 90 per cent. of this poultry is kept in refrigerated storage until required for sale. The huge production of poultry has also brought into being special shops which retail ready cooked chickens either for consumption on the premises or for taking home.

All premises where poultry are dressed and packed are subject to inspection by the sanitary authority under the Food and Drugs Act, 1955, and the premises and all processes in them must comply with the Food Hygiene Regulations, 1955. Many packing stations are in rural districts, for obvious reasons, and the two main problems have been water supply (an average of three to five gallons per bird is a normal requirement) and waste disposal. Apart from the special sewage arrangements which may be required for fluid effluent, the disposal of feathers and inedible offal requires special precautions.

The food trade realizes that high standards of hygiene are closely allied to planning, organization and layout of the factory. In the larger packing stations standards of hygiene and handling are satisfactory, but in many of the smaller stations, such as those set up on farms in adapted premises, the maintenance of even reasonable hygienic standards may be particularly difficult.

The number of carcasses, and the speed with which they are dealt with, increase the hazard of cross-contamination, and the build-up of such contamination in plant and machinery. Laboratory evidence of this has already been shown. Ante-mortem and post-mortem inspection to eliminate diseased birds is also important.

In many respects the best interests of the trade are allied to food hygiene, for example, speed along the line from slaughter to deep-freeze reduces any contamination hazard and increases the shelf life and keeping property of the carcass.

The rapid growth of the trade in the last few years and its planned expansion in the near future is an example of the need to appreciate the importance of food trends. This department has been studying the trade processes and procedures with a view to the preparation of an appropriate hygiene code.

Antibiotics in Milk

During the year the Antibiotics Panel (Annual Report, 1958) examined the problems arising from the occurrence of antibiotics in milk supplies. Surveys carried out over the past few years seemed to indicate that the incidence of this contamination of milk was increasing. The evidence examined by the panel suggested that penicillin could be detected in 3–4 per cent. of milk samples in this country, and that this originated from use in the treatment of bovine mastitis. In the panel's view the presence of penicillin constituted a potential danger to the health of consumers on two grounds. First, the wholesale and unsupervised usage for treating mastitis was likely to result in the development of resistant strains of organisms. These might cause disease in man or, in the case of the coagulase positive staphylococcus, result in food poisoning outbreaks. Second, even the small concentrations of penicillin found in samples of bulked milk, generally in the range ·04 to ·1 international units per millilitre, was sufficient to produce allergic reactions in sensitive subjects.

The average consumption of milk per head in this country is between 4½ and 5 pints per week. This might commonly contain 120 to 300 units of antibiotic. Concentrations of penicillin at 4 international units per millilitre have been found and at this level 1,200 international units would be taken in a ½-pint glass of milk.

It is generally agreed in this country that the presence of antibiotics in food is undesirable and that everything practicable should be done to reduce the incidence of contamination. Action has been taken to this effect.

The Milk Marketing Board have introduced into their contract with farmers a clause which prohibits the sale to the Board of milk from cows undergoing treatment with antibiotics within 48 hours of the last treatment. Research is also being undertaken under the supervision of the Agricultural Research Council to find a suitable marker substance, easily detectable in milk, to incorporate in antibiotics preparations for veterinary use.

Nutrition

Indices of Nutritional State

Still birth rates continued to fall, being 20·8 per thousand total births in 1959 compared with 21·5 in 1958. The corresponding neonatal mortality rates were 15·9 and 16·2. The rejection rate of new female blood donors was 6·5 per cent.; in 1958 the figure was also 6·5 per cent. There are some indications that the rate of growth of young children may no longer be accelerating as it has done in previous years, but, as pointed out in my report for 1957, data extending over at least five years need to be studied when the possible effects of diet are to be considered. The standardized mortality ratios for arteriosclerotic heart disease showed overall little change; in 1958 they were 129 for each sex, and in 1959, 128 for males and 130 for females.

Records of food supply and purchase

Records of national supplies of principal foods[1] showed a small rise in 1958 in supplies of sugar but virtually no change in the supply of visible fat. Supplies of protein of animal origin increased by 1 per cent. The national food survey records[2] indicate a small increase in consumption of visible fats and of sugar.

The general picture is one of little change in the nutrient value of the diet but there has been a slight fall in the intake of some nutrients by families containing four or more children, in 1959, compared with 1958.

Interpretation

As suggested in last year's report, equilibrium has not been reached, following decontrol of foodstuffs. Nevertheless such changes as occur from year to year are not large. Similarly no gross change occurred during the year in the main indices of nutritional state, though the neonatal mortality and still birth rates continue, gratifyingly, to fall.

We now turn to such predictions as can be hazarded upon the shape of things to come. Presumably sugar and fat consumption will eventually become stabilized. The level at which equilibrium is ultimately struck in regard to fat may be affected to some extent by the state of our knowledge on atherosclerotic disease of the coronary arteries. If fat, or certain fats, become clearly defined as a cause, then levels of intake ought to be less than they are now.

One change that is already taking place in the diet is an increased reliance on processed and preserved foods (particularly frozen foods). Such foods require less preparation, and free the housewife for other work, including paid employment. This trend need not be associated with any reduction in the nutrient content of the diet, for many proceessed foods are nutritionally as good, or

[1] Board of Trade Journal, 177 No. 3260, 11th Sept., 1959.
[2] Domestic Food Consumption and Expenditure, 1958. H.M.S.O. (in press).

nearly so, as their home-cooked equivalents. It may, however, be important to provide informed guidance over the years to come, so that the best aspects may be encouraged.

Work in the Nutritional Field

Committee on Medical and Nutritional Aspects of Food Policy

This committee, of which I am chairman, met five times during the year. They tendered advice, on request, to the Ministry of Education on the possibility that school milk and school meals might, by accelerating the rate of growth, reduce the ultimate life span; the advice was of a fairly detailed nature, but to the effect that whereas the committee could find no evidence to suggest that school milk and school meals shorten life, they knew of much to suggest that considerable benefits to health result from them. They also advised the Ministry of Education on the protein content of school meals, and the Ministry of Agriculture, Fisheries, and Food upon the testing of food additives for possible hazard of carcinogenicity. Through a panel of experts under the chairmanship of Professor F. G. Young, the committee scrutinized the composition of a number of preparations proposed for infant feeding, in which the fat of milk is replaced by other edible fats and/or oils; on this subject they tendered advice to the Ministry of Agriculture, Fisheries and Food, with a view to formulation of regulations. A further matter considered was the high calorie value of foods recorded by the national food survey as having been bought by elderly women living alone. The committee earlier initiated an investigation into what lay behind this observation; it was completed at the close of the year. A wide range of other subjects was also considered by the committee; these related to such matters as the growth rates of children, the possible hazard of paraffin wax as an ingredient of chewing gum and the desirability of the iodisation of salt for the prevention of goitre.

Committee on the Composition of Milk

The independent committee set up in 1958 " to consider the composition of milk sold off farms " continued to take evidence throughout 1959.

Use of Antibiotics as Food Preservatives

The Report on Preservatives, by the Food Standards Committee, which was published during 1959, contained a report by a special panel, on the health aspects of certain uses of antibiotics as preservatives in food. It recommended that nisin be permitted for use in certain foodstuffs, but deferred judgment on the proposals which had been made for the use of tetracyclines on poultry and fish. The use of the antibiotics on whale meat which was subsequently heat processed was not thought to present any hazard.

Work of the dietitians

The Ministry's catering advisers have continued to visit hospitals and homes for the aged to advise in developing or re-organizing their catering services. The Ministry's function in this connection is, of course, wholly advisory, as direct responsibility for the feeding of the patients and residents rests with the hospital management committees and local health authorities. The catering advisers can only assist where they are called in by the responsible bodies concerned.

During the year the major pre-occupation has been with improvements in the layout and design of kitchens and the concentration of staff dining facilities into more economical units. These re-organization schemes and the design of kitchens for new hospitals provide opportunities to experiment with systems aimed at solving the most difficult problem of hospital catering, i.e., the delay between the cooking of food and its service to patients. Speedy transport of food is often hampered in existing hospitals by the layout of the buildings in which ward units may be widely scattered and lift services inadequate. In new hospitals and under some schemes for re-organization these difficulties can be avoided and opportunities are offered for trying out new methods and equipment. It may be that experience thus gained will indicate these modifications most likely to improve facilities in existing hospitals. Whatever system of transport is adopted, some delay in the service of cooked food to patients is inevitable but reduction in this time can lead to important improvements in the nutritional value and palatability of hospital food.

Many hospitals already provide a limited choice of foods for staff. This practice is becoming more common and the range of choice is being extended. The provision of a selection of dishes for patients is more difficult but is being attempted in several hospitals and an extension of this development can be considered as the next objective in hospital feeding. One obvious advantage in offering a choice of food is that under these circumstances the nutritional requirements of the ailing patient with a capricious appetite are more likely to be met. The diet offered to a sick person must often be a compromise between what he needs nutritionally and what he is able and willing to consume; every patient, at least in an acute general hospital, presents an individual problem. For many patients there is a period of pain, apprehension or acute illness in which nutritional needs may not be fully met. This may be followed by a stage of convalescence where the appetite is hearty and nutritional deficiencies can easily be made good but with the present tendency for early discharge after the acute phase this stage may not be reached or completed while the patient is still in hospital.

XI

DENTAL HEALTH SERVICES

My last Annual Report contained a brief survey of the first ten years of the dental health service. The present chapter summarises the work of the service during 1959 and attempts to indicate some possible developments in the current decennium.

In the field of prevention there would seem to be every possibility that substantial progress is being made towards solving the problem of periodontal disease—pyorrhoea. Research, under Professor Cohen, in the Department of Dental Science at the Royal College of Surgeons, has shown that this disease of the gums and supporting tissues of the teeth has its origin much sooner after the eruption of teeth than had hitherto been supposed. The precise mechanism of the condition is now understood. It seems probable that the usual end result—multiple extractions and dentures in middle-age, may well be avoided completely or very considerably mitigated in the light of further research now in progress.

The genesis of dental caries, which mainly affects the teeth of children, adolescents and the younger adult, is still the subject of controversy despite much research into its causation and prevention. In the absence of a specific remedy future efforts must be directed equally to making the substance of the tooth better able to resist the process of decay and to eliminating the cause of caries. Attention to the diet of the expectant mother and the making good of any deficiency in the natural fluoride content of domestic water supplies should do much to ensure a more resistant tooth. Dental health education directed to promoting sensible eating habits and oral hygiene is, in the light of our present knowledge, the only reliable method of controlling the cause.

The general attitude of the public towards dental care may be expected to undergo a change in future years. Before the advent of the National Health Service a comparatively small proportion of patients were under regular examination and treatment—the majority only sought relief from dental pain. A high proportion of treatment consisted in multiple extractions and full dentures—indeed, abroad we were looked upon as a false-teeth nation. The objective of the general dental service has from the outset been the early detection of dental disease and complete treatment, and it is to be regarded as highly satisfactory that the number of patients rendered dentally fit and subsequently seeking regular maintenance treatment is on the increase, and conversely the number of patients seeking casual treatment is falling. The probable change in treatment requirements will lead to further developments in technique and materials. As the number of full dentures provided decreases the number of partial metal dentures, designed to avoid stress on supporting teeth and damage to soft tissues, will increase. The conservation of carious teeth by fillings, inlays and crowns will call for advanced operative techniques so as to produce restorations of reasonable permanency. The early treatment of diseases of the gums will, in all probability, demand new methods. In all these directions the training of the dental surgeon and his helpers will be affected. The single-handed dentist, who to-day represents the majority of the profession, may be expected ultimately to become the leader of a dental team consisting of a skilled dental surgery assistant, a hygienist, and a first-grade dental technician. In the course of time, the team will expand by the inclusion of dental surgeons who have specialized in the various branches and group dental practice should become established.

Dental Manpower

The total number of dentists appearing in the Dentists Register on 1st January, 1960, was 16,036, of whom 14,161 or 88 per cent. were registered with dental qualifications: 1,875, or 12 per cent., under the Dentists Acts 1921–23 without additional qualifications. During 1959, 709 names were removed from the Register owing to death, retirement or other reasons; 156 were restored and 667 new names were added by the close of the year. The additions included 175 names by virtue of qualifications granted in the Commonwealth. This was the highest number so far recorded in any one year and is in marked contrast with the total of six Commonwealth graduates registered in 1948. The evident desire of overseas practitioners to secure entitlement to practise in this country may fairly be taken to represent a measure of the attractions offered by the National Health Service. The total of 486 names added to the United Kingdom list showed a slight increase on the previous year but fell far short of the figures recorded in the early nineteen-fifties.

The demand for admission to dental schools in 1959 far exceeded the number of places available, there were few, if any, vacancies for first-year students in any of the London or provincial schools. Indeed, only by doubling classes and the staggered use of dental chairs have some of the schools found it possible to cope with the numbers they have accepted. The proposals for the extensions of dental teaching facilities, referred to in my last Annual Report, should produce an annual output of about 800 qualified practitioners likely to practise in this country, sufficient to make good losses by death and retirement and to build up a register more nearly capable of meeting probable future needs Increasingly, students are reading for the degree in dental surgery, and it is interesting to note that nearly one in five of the practitioners registered in the United Kingdom list has more than one qualification.

Maternity and Child Welfare

In the year under review 40,652 expectant or nursing mothers and 51,932 pre-school children were treated in local authority clinics, compared with 42,556 and 57,207 respectively in 1958. Only a small number of authorities have a full dental establishment; the majority have endeavoured to maintain a service, although under difficulties. It follows that for the most part authorities have had to be content to try to meet the actual demand rather than to stimulate it. The shortage appears to be most acute in the Midlands, where some authorities have no full-time staff whatever and are dependent upon the few clinic sessions which local private practitioners can spare. Although the numbers treated had fallen the standard of treatment has been fully maintained, 67 per cent. of mothers and 76 per cent. of the children were rendered dentally fit. The priority classes have made greater use of the general dental service than the local authority clinics; thus in 1959 there were about 558,700 courses of treatment approved for expectant and nursing mothers, compared with 454,550 in 1958. Similarly, the courses of treatment for children aged 0 to 4 years increased to 231,300, compared with 165,140 in 1958. Statistics for the last three years show that about 40 per cent. of expectant and nursing mothers sought dental treatment either under general dental service arrangements or in local authority clinics; 37 per cent. under the former and only 3 per cent. under the latter. The demand rate in the general dental service appeared to vary widely in different parts of the country. Thus, in London and south-east England it was 55 per cent., in the southern and south-eastern regions it was 46 per cent., while in the remaining regions it varied between 26 and 33 per cent. In the regions where the acceptance rate was highest the ratio of population per dentist was below 4,000, compared with more than 5,000 per dentist where the demand was lowest.

Pre-School Children

The incidence of dental caries in young children would still seem to be increasing. It is estimated that, on average, children aged 5 years have five decayed teeth. Reports from some dental hospitals indicate that increasing numbers of children aged two years attend for the treatment of extensive caries of the deciduous teeth. This is variously attributed to the use of night bottles flavoured with sugar, or dummies dipped in or filled with sweetened vitamin supplements, sugar or honey. When the reason for the extensive decay is explained to mothers they appear to be astonished that the administration of what they had been taught was essential to their children's nutrition should have had such unfortunate results. Preventive measures in relation to diet rest largely with the family doctor, health visitors and others who may be called upon to give advice on infant feeding at a time when mothers are likely to be most receptive of health teaching. In many of the cases referred to there was complete destruction of the upper anterior teeth and first deciduous molars, frequently with abscess formation. The only treatment possible under such circumstances is extraction under a general anaesthetic, a most unhappy experience for a two-year-old child. Badly decayed teeth can cause much pain and discomfort, and it cannot be too strongly emphasized that it is quite unnecessary for young children to endure so much suffering.

Infestation is now rightly regarded as a parental stigma and there are many dentists who do not hesitate to include dental caries in the same category.

Dental Health Education

Circular 11/55 emphasized the importance of dental health education in the health programmes of local authorities. Good progress is being made in some areas—the Birmingham maternity and child welfare department, for example, propose to appoint trained staff to devote their whole time to teaching dental health. Among other authorities which are concentrating on dental health teaching are Northamptonshire and Essex where pilot surveys are being carried out. Gloucestershire appointed a dental hygienist in 1953, and an active dental health scheme was commenced. In addition to her clinical duties, the hygienist attended welfare centres and mothers' clubs, and gave talks illustrated by colour slides and models on the care of toddlers' teeth. The scope of the work extended, and in 1959 the Council appointed a dental health education officer, being the first authority to do so. A dental health exhibit for use in schools has been developed and has been shown at local agricultural shows. Teaching is by means of flannelgraphs, acrylic models, coloured slides and film-strips, the latter ingeniously linked with a tape recorder. The bulk of the material is produced locally since it is the considered view of the County Chief Dental Officer, Mr. Smyth, that to have the maximum effect the teaching should have a strong local flavour.

Another interesting example of local effort is afforded in what has become known as the Braintree Experiment. The Chief Dental Officer to the Essex County Council and the Health Education Officer carried out a number of small pilot experiments in different areas in the county, in the light of which it was decided to stage an extended scheme over a period of six months. With the enthusiastic co-operation of the teaching staff a dental health week was held in a new junior school in Braintree. The objectives were to overcome the fear of dental treatment, to promote education in relation to food and food habits, to train children in correct methods of cleaning teeth and to endeavour to assess the results at the end of the period. A fully equipped dental surgery was on view, the use of the various pieces of apparatus was explained, the children were allowed to use a high-speed dental drill on model teeth. Each class of children visited the exhibition and its purpose was explained by the dental hygienist, who also demonstrated the contrasting effects of caries-inducing and tooth-cleansing foods. For the latter the local Farmers' Union supplied apples, carrots and celery. The experiment has been described in full elsewhere and it is here only necessary to refer to the results. Although the number of children under observation was comparatively small and the period only six months, a very definite improvement in the standard of oral hygiene was noted.

A five-year experiment has been planned by the Essex authority, with the co-operation of the General Dental Council and this Department. An intensive campaign will be carried out throughout the period in Harlow New Town. The condition of the teeth and gums of children at the start of the campaign, during and at its conclusion will be carefully assessed and the results will be contrasted with the dental state of the children in another new town, Basildon, as a control.

The developments referred to will be watched with interest by the Standing Committee for Dental Health Education set up on the recommendation of the Lord McNair committee. Future developments in this field may be expected to include further pilot schemes leading to a national plan having as its central feaure a National Dental Health Week.

Fluoridation

Fluoride is present to a greater or lesser degree in most water supplies. In England and Wales it is generally present as a trace, but in some areas such as South Shields, Slough and parts of Essex the amount present is such as to have materially increased the resistance to dental decay of the teeth of children born and brought up in those areas.

Fluoridation, to make good a natural deficiency of fluoride, has been in operation in three centres in Great Britain (Anglesey, Kilmarnock and Watford) for four years. Though it is still too early to assess its effect, there is no reason to suppose that it will differ in any way from that observed in America and other countries. It may therefore be timely to consider the bearing of fluoridation on the future, in terms of dental health and care.

It is not to be supposed that dental caries will entirely be eliminated but, on the experience in the United States, the incidence will be less, the attack rate will be much less severe, and we may expect to find about one-third of the children aged 12 to 14 completely free from caries. With the decrease in rampant caries it should follow that fewer extractions, fewer dentures, crowns or bridges will be needed. Carious cavities will be fewer in number and smaller in extent, therefore more manageable. It is probable that fewer teeth will be lost through periodontal disease since the supporting tissues will be less subject to stress. That this is so was shown in 1955 in an American survey of the dental state of life-long residents in Colorado Springs, where the water has a fluoride content of 2·5 parts per million, compared with a similar group in Boulder, which has but a trace of fluoride in the water supply. The tooth loss was much less in the fluoride area. In this country a similar study was made in North and South Shields: 37 per cent. of women aged 20 to 45 years in North Shields, a low-fluoride area, were wearing dentures, compared with 9 per cent. in South Shields, where the water contained 0·8 to 1·4 parts per million of fluoride.

The possibility that there may be a decreased incidence of malocclusion, and therefore less need for orthodontic treatment, is foreshadowed by studies carried out recently in Turkey and in this country. In Isparta, where the fluoride content of the water ranged from 1·6 to 4·3 p.p.m., the percentage of malocclusion was notably lower than in Antalya, where the water contained only 0·26 p.p.m. A study in this country was carried out on children between 11 and 13 years of age in three areas in East Anglia: Colchester, where the fluoride content of the water consistently averaged 1·4 p.p.m.: Chelmsford, with an intermittent fluoride content between 0·0 and 1·0 p.p.m.: and Norwich, where fluoride was present only as a trace. It was found that 50 per cent. of the Colchester children, who had been exposed to fluoride continuously from birth, had a normal occlusion, compared with 35 per cent. in the total group examined. There is as yet insufficient evidence in the surveys referred to to be able to say with certainty whether the improvement in the skeletal pattern of the jaws was due to the fluoride intake or to a difference in the ethnic pattern: an extension of the studies in areas with different levels of fluoride and different types of population may provide more positive data.

Despite the careful scrutiny to which fluoridation has been subjected in various parts of the world by special commissions and professional bodies of standing, no evidence has been found of any hazard to health at a concentration as low as 1 p.p.m. Nevertheless, fluoridation is still the subject of controversy, albeit confined to a comparatively small section of the population, and follows a pattern familiar to public health workers who remember the opposition to the introduction of chlorination of water, pasteurization of milk and vaccination against smallpox.

Hospital Dental Services

Future developments in the provision of dental care in hospitals will probably be in the consultant branch. General dental practitioners readily avail themselves of consultant advice and treatment in complicated oral surgery or orthodontic cases. The speed of development must necessarily depend to a great extent upon an adequate supply of properly trained and experienced applicants. So far as oral surgery is concerned, the outlook is reasonably good, but there is a serious shortage of orthodontists of consultant status, indeed some regional boards have been unable to fill vacancies for this reason. The creation of more teaching-grade orthodontic registrars and senior registrars, working partly in the field under an experienced consultant, and partly in an undergraduate or post graduate teaching hospital, should in time meet the difficulty.

The problem of providing for the routine dental care of the long-stay patient or the acute patient, as part of his medical treatment, will probably remain unsolved for some years. This is due partly to the shortage of dentists, and also to the undoubted fact that dentists prefer the rewards of private practice to those offered by a whole- or part-time appointment in the general dental duties grade of the hospital service. As a consequence, management committees are finding it increasingly difficult to fill vacancies.

The details of staff, sessions worked, etc., in other than dental teaching hospitals, set out in the accompanying Table, do not differ materially from those contained in my last report.

The professorial and clinical staffs of undergraduate dental schools and the associated dental hospitals are in some instances difficult to distinguish and are not readily presented in a table. The broad picture would seem to be that of the total combined university and hospital whole- and part-time staffs, which, in 1959, totalled some 562, there were included 154 consultants, 46 senior hospital dental officers, 20 senior registrars, 68 registrars and 83 house officers, the balance being ungraded officers. A development in the near future will of necessity be an increase in the establishment of dental teachers consequent upon the projected increase in the number of dental students.

Orthodontic Services

The steady increase in demand for orthodontic treatment which has occurred since the inception of the Health Service can be expected to continue within the foreseeable future. Approvals for treatment under the general dental service during 1959 showed an increase of about 5 per cent. over the previous year, a rate of increase which is likely to continue. It is inevitable that most of the demand must be met by general dental practitioners and school dental officers, supported by the advice and active participation of the consultant services of the regional hospital boards. It is pertinent, therefore, to review the efficiency of the general dental service in an orthodontic context and to consider means whereby it may be brought to the highest level.

Although the newer concepts in orthodontic diagnosis and treatment planning, which have followed on the practical application of basic research findings, are steadily gaining ground, a large number of estimates for treatment based on out-moded concepts and empirical in nature are still being submitted for approval.

The problem must be approached from two aspects: (*a*) a review of the basic structure of orthodontic teaching at undergraduate level and (*b*) provision of adequate facilities for postgraduate instruction for existing practitioners.

Analysis of Replies from 2,478 Hospitals to Enquiry (excluding Dental Hospitals)

Class of Hospital	Number of Hospitals	Number of Sessions per week (to nearest whole number)						Accommodation and Equipment			Group Dentist as required	Unappointed Dentist as required	Other Dental Staff		
		C.	S.H.D.O.	S.R.	R.	H.O.	G.P.	F.	S.	C.			T.	H.	C.
Acute	743	570	311	55	259	341	191	136	88	62	508	40	78	10	38
Mainly Acute	117	121	150	18	23	49	69	51	17	7	61	2	30	4	18
Partly Acute	49	33	19	—	—	—	21	13	7	4	21	2	4	1	3
Mainly Long Stay	69	40	15	—	—	—	29	6	10	6	47	5	1	—	—
Long Stay	61	5	12	—	—	—	24	13	5	8	48	1	2	—	—
Chronic	268	12	13	—	—	12	35	12	14	12	205	16	1	—	—
Pre-Convalescent	69	—	—	—	—	—	2	2	3	2	53	2	—	—	—
Convalescent	60	—	1	—	—	—	1	—	1	1	25	1	—	—	—
Rehabilitation	13	—	—	—	—	—	—	—	—	—		2	—	—	—
Isolation	38	6	1	—	—	—	1	1	—	—	19	—	—	—	—
Maternity	245	3	1	—	—	—	1	3	4	2	200	8	—	—	—
Mental Illness	138	2	93	—	—	—	160	84	23	6	23	—	3	1	4
Mental Deficiency	205	11	38	—	—	1	68	43	30	20	67	5	—	1	2
Orthopaedic	39	5	20	—	—	—	15	5	19	2	27	—	—	—	—
Tuberculosis and Chest ..	55	29	46	—	—	1	90	42	47	15	76	2	2	1	4
Tuberculosis, Chest and Isolation	49	2	7	—	—	—	10	5	8	1	34	1	—	—	—
Children's (Acute)	48	24	28	5	22	13	24	12	8	5	29	—	4	—	1
Eye	23	1	1	—	—	—	—	1	1	2	16	—	—	—	—
War Pensioner	6	14	—	—	—	—	—	—	—	—	—	—	—	—	—
Other	183	37	19	22	11	11	124	11	4	5	127	7	11	11	7
Totals	2,478	915	775	100	315	428	865	440	289	160	1,586	94	136	29	77
Total Sessions, all Grades		3,398													

Key.—Accommodation and Equipment .. F = Fully equipped surgery and dental department.
C = Dental chair and instruments only.
S = Dental chair and sufficient equipment for routine treatment in shared accommodation.

Other Dental Staff .. .. .. T = Dental technicians. H = Dental hygienists. C = Dental chairside assistants.

It is now generally recognized that the biological and bio-mechanical principles upon which the modern concept of orthodontics is based are common to the study of dentistry as a whole, though much of the time now available for orthodontics must necessarily be devoted to such basic teaching. It seems reasonable to assume that in the future the curriculum may be revised to include these basic subjects in the pre-clinical period and so release valuable time for the study of their clinical application late- in the curriculum.

Whilst provision of postgraduate courses is increasing there is a wide variation in the distribution and availability of such courses. The programme of the British Postgraduate Medical Federation (London University) with 11 courses during 1959 and 12 courses arranged for 1960 is in direct contrast to many other regions in which little or no provision has been made.

The response to the joint circular issued in 1954 by the Department and the Ministry of Education to hospital boards and local authorities has been encouraging but there are still five regions in which no consultant appointment has been made, and there is still a long way to go before the consultant coverage can be considered adequate to the geographical distribution of practitioners and patients.

Another limiting factor, already referred to, is the small number of available personnel with suitable academic qualifications enhanced by a sufficiency of clinical experience. The creation of registrar and senior registrar posts would enable consultants, many of whom are at present overburdened with the large accumulation of clinical work, to devote more of their time to their main function, which is consultation. This applies equally to dental teaching hospitals in which a large proportion of this work is undertaken by the teaching staff. Too great a demand on their time can interfere with their normal teaching function and, in fact, this has already occurred in one dental teaching hospital which has had to decline further references from local practitioners.

Apart from the provision of postgraduate courses other avenues have been explored by individual consultants in their endeavour to improve orthodontic standards in their areas. In some regions short-term clinical assistantships are made available to local practitioners. In the Manchester region the board has provided the practitioners with a brochure prepared by the consultant, Mr. Norman Wild, designed primarily to facilitate his discussion of individual cases with practitioners, and, in addition, to provide a very useful guide to the practice of orthodontics in the general dental service.

Discussion of the orthodontic consultant service would be incomplete without reference to the cleft palate units. It is in these units that the value of teamwork is most fully exemplified. The paediatrician, plastic surgeon, orthodontist and speech therapist combine to ensure the utmost integration of their various fields for the common good. An excellent example is to be seen in the Liverpool unit. The orthodontic consultant attached to this unit, Mr. W. R. Burston, bases his approach on the early orthopaedic intervention for the alignment of the maxillary segments, originally suggested by McNeill of Glasgow. The orthodontic care of the patient commences within a few hours of birth and continues at planned stages to the conclusion of treatment in the permanent dentition.

Perhaps the most important development in orthodontics is the reappraisal which has occurred in the correct timing of treatment. It is now more generally accepted that, with certain exceptions, treatment in the primary and mixed dentitions is not justified and that the optimum time for treatment coincides with the eruption of the premolars at which time the growth pattern becomes a matter of fact rather than conjecture. It is interesting to note that the optimum years for treatment, i.e., between 11 and 14 years of age, happens to coincide with a period in education when the child has the 11 plus examination behind him and is not yet imminently concerned with the general certificate examination. It is also the age at which the greatest degree of co-operation from the patient may be expected.

It is becoming increasingly recognized that interceptive measures such as space maintenance must be the subject of careful diagnosis for individual cases rather than, as was so frequently the case, a routine measure following premature loss of deciduous teeth. Similarly, another interceptive measure, frequently advocated but rarely justified, is fraenectomy. The abnormal fraenum labium has been shown to be a negligible aetiological factor in mid-line diastemata most of which close spontaneously with the eruption of the lateral and canine teeth.

During the past decade the framework has been laid for the development of an efficient comprehensive orthodontic service. The task of the future is to clothe it suitably.

Consultant Orthodontic Service—Regional Hospital Boards

Region	Number of Consultants	Number of Sessions per week	Remarks
1	2	22	
2	1	11	
3	Nil	Nil	
4	1	7½	
5	2	20	
6	Nil	Nil	Appointment pending.
7	2	13	Some sessions devoted to cleft palate unit.
8	Nil	Nil	
9	1	9	
10	Nil	Nil	Appointment pending
11	Nil	Nil	
12	2	22	
13	1	11	
14	1	4	Cleft palate unit only.
15	3	33	
Total ..	16	152½	

General Dental Services

During the past year there was an overall increase of 5,903 in the number of cases referred by the Dental Estimates Board for examination by dental officers on the total for 1958, an increase of 32 per cent. There were 510 fewer references made before treatment was initiated, and 6,413 additional references raised after treatment had been completed; an increase of 122 per cent. on the corresponding figure in 1958. This satisfactory increase illustrates the growing awareness of the need to ascertain the standard of treatment provided.

Statement of References received and cleared for the period 27th December, 1958, to 26th December, 1959

References	England	Wales	Total	Total for previous year 1958
Pending at start of period	1,661	151	1,812	2,076
Received from the Dental Estimates Board—Estimates	12,081	372	12,453	12,963
Received from the Dental Estimates Board—Treatments	10,591	1,069	11,660	5,247
Received from Dentists	1,414	72	1,486	1,388
Received from Local Executive Councils ..	504	29	533	500
Totals	26,250	1,693	27,943	22,174
Cases cleared by examination	21,245	1,452	22,697	18,229
Cases cleared by cancellation	2,665	86	2,751	2,133
Totals	23,910	1,538	25,448	20,362
Pending at close of period	2,340	155	2,495	1,811

It is contemplated that, in future, treatment references will represent about 60 per cent. of the references made by the Board.

Of the cases examined before initiation of treatment, dental officers found that in 35 per cent. they were in complete agreement with the treatment plan outlined by the practitioner, compared with 33 per cent. in 1958. In 1·2 per cent. cases, compared with 2 per cent. in 1958, dental officers considered that the treatment proposed was not such as would secure the dental fitness of the patient. Between these two extremes a large number of cases fell into a category where the dental officer's opinion differed from that of the practitioner only in a minor degree. In the case of patients examined after completion of treatment, in 61 per cent. treatment was entirely satisfactory and only in 2 per cent. was treatment considered to be entirely unsatisfactory. The corresponding figures for 1958 were 52 per cent. and 2 per cent. respectively. Between these extremes there was a large number of cases in which there were varying degrees of deficiency in the treatment provided.

In view of the small number of cases examined compared with the number of estimates dealt with by the Board, it is difficult to draw any firm conclusions; nevertheless, the above analysis shows that of the patients examined by dental officers the increase in the standard of both clinical assessment and treatment, mentioned in last year's report, has been sustained.

The relationship between the regional dental service and the profession continues to be good, and the increase in the number of cases in which practitioners have referred cases for the opinion of the dental officer, 1,486, compared with 1,388 in 1958, may perhaps be regarded as a measure of the confidence which the profession has in the dental officers. There has been a considerable increase in the number of telephone calls from dentists seeking guidance. On several occasions during the year dental officers have addressed meetings of practitioners on the various aspects of their work.

Treatment Trends

Part I of the Annual Report contains details of the incidence of treatment in the different age groups. It is here only necessary to refer briefly to some of the more interesting trends. 12,881,888 new estimates for treatment were received during 1959, an increase on the total for the previous year of 4·6 per cent. Emergency treatment of casual patients fell, from 18·3 per cent. of the total in 1958, to 16·9 per cent. The proportion of courses of treatment provided for patients aged 16 to 17 years increased by 14·5 per cent.

The use of X-rays as an aid to diagnosis continued to increase. In 1959, 10·6 per cent. of all courses of treatment included radiographs, compared with 10·0 per cent. in 1958.

Conservation of teeth also increased by 10·2 per cent., the total number of fillings inserted in permanent teeth reached the surprising total of twenty-two and a half million. There were striking increases in inlays and crowns by 33·1 and 24·8 per cent. respectively. Although there was some increase in the number of estimates which included provision for the extraction of teeth, the actual number of teeth removed decreased by 1·3 per cent. and by 6·2 per cent. in the case of casual or emergency extractions. The trend, previously noted, of a swing-over from radical to conservation treatment seems to have become established and would appear to support the view earlier expressed that we may expect an even greater change in the attitude of the public towards dental care.

The demand for the conservation of the deciduous teeth increased slightly. The number of new orthodontic estimates totalled 74,812, an increase of 5·1 per cent. During the year, 57,127 cases were concluded. As orthodontic treatment may extend over one, two or three years it is not possible to relate the figure of completed cases to the number of new cases approved in any one year. It was disturbing to note that of the concluded cases 17·5 per cent. were discontinued before treatment was completed. We must always expect a proportion of cases to fail to reach finality but the figure just quoted is much too high. It is to be hoped that practitioners will give some thought to the desirability of explaining to parents the proposed plan of treatment, the probability of many, time-consuming appointments and the need for the maximum degree of parental co-operation. Where there appears reason to doubt that parents will co-operate (as, for example, when it is clear from the condition of the child's mouth that oral hygiene has been neglected) it is open to question whether orthodontic treatment other than by extraction of teeth should be contemplated. Similarly, if during the course of treatment it becomes apparent that the parents are unco-operative and that an appliance is not being worn, it will be wise to consider terminating the treatment.

XII

NURSING AND THE PUBLIC HEALTH

Hospital and Public Health Nursing Services

In last year's Annual Report the review then made of the first decade of the National Health Service showed marked progress and changes both in the service to patients and in the training of nurses. This progress continued at an increased rate during the year 1959 and some of its features are described in the pages which follow.

Hospital Planning

During the course of the past year an increasing number of schedules and plans, both for new hospital building and for adaptations, have been put before the Department's nursing advisers for their comments and advice on those aspects which affect the nursing services and the training of nurses. This, however, is only one facet of hospital planning.

In the Ministry, research is being undertaken into the design and equipment of hospital premises, and in addition to the *ad hoc* advice mentioned above the nursing adviser has a definite contribution to make in these studies. Considerable thought has been given to such matters as design and size of ward units; the provision in out-patient departments for "one-day cases" and "24-hour wards", all of which affect design. These studies are urgent in view of the increasing amount of money which is to be available for hospital building over the next ten years.

Rapid changes are taking place in the hospital service and only a nurse who has worked within its precincts both day and night knows how the plan of a ward or department can profoundly affect the service to patients. It is, therefore, necessary that the Department should have a nursing officer who is able to devote her time and energies towards this subject of planning. The nursing officer will be but one of a team dealing with this subject, the tempo of which will increase considerably over the coming year or two.

Work Study

As anticipated in my Annual Report last year, considerable advance has been made in this subject. Many of the regional hospital boards now have a full time work-study officer and the Department's Organization and Method team have undertaken a number of studies and have many awaiting their attention.

Those studies which directly affect nursing techniques and the nursing service require guidance from professional officers if they are to be wholly successful and of value to the hospital concerned. Some nurses have already been appointed to work-study posts, others are being seconded to work-study courses. The more this develops so will more members of the profession be made conversant with the subject and better able to appreciate work-study. Hospital planning and work-study are interrelated.

We must anticipate the existence of a nursing service which can deal efficiently with new medical and nursing developments and yet be maintained with the present numbers of staff. The manner in which personnel are utilized will have been greatly improved through work study. Similarly the planning of hospital buildings following work study may result in greater economy of the staffs' time and energy.

The Education and Training of Nurses

In last year's Report reference was made to the alterations in conditions of approval of training schools for nurses and the re-introduction of an educational entrance test to training for certain parts of the Register of Nurses of the General Nursing Council. Early in the year the Minister held a meeting so that these proposals might be fully discussed with representatives of the General Nursing Council and all interested bodies. The latter were representative of those concerned with the nursing service, nurse education and with the profession generally. Following this meeting, further consideration was given to the alterations proposed and, although these were still under discussion between the Minister and the General Nursing Council at the end of the year, it was hoped that agreement would be reached early in 1960.

In 1952, when the General Nursing Council issued the revised syllabus, a new subject " The Social Aspects of Disease " was introduced. Some nurse training schools were already teaching on these lines but in the past seven years many more have participated and almost all student nurses now receive lectures from health visitors and other workers in the public health field.

There is, in many instances, a two-way exchange where hospital nursing staff visit patients being treated at home and the health visitor and district nurse visit the out-patient department or the wards of the hospitals. By these means, and others, the social aspects of disease are gradually bringing together the hospital and local authority services to the ultimate benefit of the patient.

During the past year discussions have continued between the General Nursing Council and the Central Midwives Board on the matter of obstetric nursing experience as a part of general nurse training. Its inclusion in the general nurse training syllabus is a logical step in the process of broadening the nurse's education. Guidance and counselling in planning their careers can be given to student nurses by a midwife during their basic training and although this may produce in the future a smaller number of pupil midwives, it may also have the effect of increasing the percentage of practising midwives.

The Nurses Act of 1949 empowered the General Nursing Council to approve experimental schemes of nurse training which were submitted to them. Among these schemes, in recent years, has been a small number which integrate hospital and public health nurse training. At the end of 1959, four such schemes had been approved and were in progress, three in London hospitals and one in a provincial hospital. In two instances training is linked with a University, in one with a College of Technology and one with the Royal College of Nursing. Each course prepares the student for entry to the general part of the register of nurses of the General Nursing Council as well as the health visitor's certificate.

These courses are intended primarily for candidates who are particularly interested in the social aspects of nursing. The aim of one of the schemes is "to give a balanced understanding of the principles of nursing, both for the care of the sick and for the promotion of health and for the prevention of disease in the community". It may well be that courses such as these will increasingly be used for the preparation of both hospital and public health nursing personnel.

Postgraduate Education

There are now many more courses in post-basic nursing education than ten years ago. At each stage of the nurse's career there is opportunity for taking an initial or refresher course for the appointment to be taken up, or in the subject already practised. The Royal College of Nursing and the King Edward's Hospital Fund for London have done much to develop wide and stimulating programmes which cover courses for, among many others, ward sisters, teachers of pupil assistant nurses and nurse administrators in the general and mental hospitals. The Royal College of Midwives has also continued to arrange refresher courses and conferences for midwives.

The first course for clinical instructors, held at Edinburgh, has aroused much interest, as have also the number of "in-service" training courses inaugurated by many hospitals. The latter are particularly of value to the newly registered nurse before taking up her first appointment. This step from student to staff nurse is undoubtedly the most difficult process of adaptation a nurse will be called upon to make in the course of her career.

At Regional Hospital Board level several courses have become established. Some have been designed to give opportunities for midwives to take their refresher courses at a centre near their home, others to give opportunities to trained nurses to make a special study of certain subjects.

Each year students from some of these courses visit the Department and are given a background picture of the work being undertaken within the Ministry. It is important that the nursing administrators of the future should have a clear picture of the structure of the national health service and appreciate their position within it.

Midwifery Service

Considerable interest has been centred round the hospital and domiciliary midwifery services, during the past year. Early in 1959 the Ministry issued a Memorandum, H.M.(59)10, entitled "Shortage of Midwives in the Hospital Service". Through this Memorandum the National Consultative Council on the Recruitment of Nurses and Midwives brought out a number of factors which they felt might be contributory to this problem. Because of its serious nature, therefore, the Minister arranged for a medical and nursing team to make surveys in affected areas. An interim report, H.M.(59)80, on this subject was issued in the autumn, which confirmed that the factors mentioned in the earlier memorandum were in fact the causes of much of the shortage. Many of the conditions in which midwives are expected to work are out of date and, with the increasing number of hospital confinements, the pace of work has become such that pupils are disinclined to remain in the service upon qualification and trained midwives are deterred from continuing to practise.

This interim report made clear, however, that the shortage is not universal. Some areas are particularly affected, as are also some of the small maternity units which are not training schools. Nevertheless, certain of these smaller hospitals which previously have been compelled to curtail their services considerably have, during the past year, recruited more staff. Many hospitals are looking to their own locality for married midwives who may be able to give whole or part-time help and others are utilising the services of state enrolled assistant nurses and nursing auxiliaries on non-midwifery duties. In addition, in the domiciliary midwifery service, the night rota system and better transport have both made conditions more acceptable even in those areas where staff are working under pressure.

The Report of the Maternity Services Committee, under the chairmanship of Lord Cranbrook, was made public almost simultaneously with memorandum H.M.(59)10. The recommendations of the Cranbrook report have been studied by medical and midwifery organizations and though many were accepted immediately others are still under discussion. Midwifery organizations laid special emphasis on the matter of ante-natal care and on the need for better co-ordination and co-operation among all engaged in the maternity services. Emphasis was also laid on the place of health education during pregnancy and on the important role of midwives and health visitors.

During the past year the number of persons entering midwifery training and those qualifying has increased, and although it has been evident in the past that a large number who qualify do not continue to practise their profession, it is hoped that from this increase we may see an improvement in the number of practising midwives. It is also hoped that, with the shortening of their training from two years to eighteen months, more enrolled assistant nurses may be encouraged to take this training. Many of these assistant nurses are older women, who may well practise their midwifery for a number of years, whereas the younger midwife may only give a limited period in practice often due to early marriage.

Refresher courses for midwives arranged by local authorities and the Royal College of Midwives have done much to encourage and strengthen the profession. The number of such courses has grown, some having been inaugurated at regional hospital board level; these latter courses are most helpful to the midwife who, because of domestic commitments, is unable to travel a distance to take her refresher course. Considering that all possible sources of recruitment must be looked into in order to staff adequately the maternity services, the more arrangements that can be made locally the better.

Nursery Nursing

Unlike many of the other services the day nursery service is not expanding, but there is reason to believe that many day nurseries are being used to greater advantage. Places are now given to children needing help because of physical or mental handicap either in themselves or in their families. This development is welcomed by the staff and the families but it gives rise to some concern where the staffing establishment is below the recommended ratio.

The National Nursery Examination Board training continues to provide suitable and qualified staff for all types of nurseries and other child care services, notably that of the nurseries in maternity units. Nursery work is very popular with the young school leaver and the demand for the National Nursery Examination Board training facilities far exceeds the places available. The Board works towards good national standards, at the same time encouraging local training authorities to assume full responsibility for the selection of students and for the assessment of the practical training. New regulations limiting the Board's examination to a written paper with practical assessment by the training authorities were introduced in July, 1959.

Attention has lately been drawn to the need for training of some kind for all staff working with young children and to this end consideration is being given to the desirability of a systematic in-service training for nursery assistants. The possibility of a practical course of instruction carried out in the nurseries perhaps linked to a short lecture course is being examined.

Health Visiting

The publication of Circular 26/59 on the health visiting service was generally welcomed. The Minister's support for a grade to be known as "group adviser" gives scope for the appointment of health visitors intermediate between the general duties staff and administrative appointments. Thus health visitors whose skill is to be found in the techniques of field work rather than in administration will have recognition and their services can be used to develop particular aspects of the work and as counsellors of newly appointed staff and students. In the circular the status of the health visitor and her relationship with others was considered in some detail, the general purport being that the health visitor should feel free to refer cases and to co-operate with other field workers as well as having ready access to senior colleagues and medical officers. The structure of the profession was referred to in the reference to the appointment of health visitor superintendents.

Some of the recommendations of the working party on the Field of Work, Training and Recruitment of Health Visitors (Jamieson Report 1956) are still the main subject of discussion with representatives of professional organizations and employing authorities. The constitution, functions and financing of a central training council have exercised the minds of those concerned with the health visiting service. The chief problem is the question as to whether the training council shall be an independent and separate body or whether it shall be linked with some other body. Until such time as a new council begins to function little progress on the overall planning of courses and the syllabus can take place. Some health visitor schools have, however, made a real attempt to bridge the gap that exists between the early interpretation of the 1951 syllabus and the demands made upon a modern health visiting service.

Several progressive local authorities have made arrangements for health visitors to spend some time, varying from a few weeks to a few months, in mental hospitals to gain insight into the modern treatment of mental illness as a means of preparing staff for helping with the care of the mentally ill in the community. This is in addition to the many that give the subject a special place in in-service training arrangements.

Home Nursing

The centenary of district nursing was celebrated in 1959. Queen Elizabeth the Queen Mother received representatives of district nurses from all parts of the United Kingdom and abroad at a gathering in the gardens of Buckingham Palace. Services were held at Westminster Abbey and Westminster Cathedral to mark the occasion.

Since 1948 it has been the responsibility of local health authorities to ensure that all who need nursing attention in their own homes receive it. A large number of requests come from general practitioners, a smaller number from friends, relatives and other local authority departments, and by far the smallest number from hospital authorities. This is an indication that the potentialities of the service are not fully recognized, and it suggests that benefit might accrue from a review of hospital and local authority liaison arrangements.

In areas where the home nursing service is more fully used, the nurses receive a variety of work from the hospitals. Many technical procedures carried out in hospital can equally well be carried out in the patients' own homes, and it is surprising that the services of the home nurse are so seldom sought for the many patients attending out-patient departments for the renewal of simple dressings, or indeed for the care of post-operative cases discharged early from hospital.

The place of the home nurse in the proposed mental health services is not yet clearly indicated. Home nurses, in the course of their duties, are frequently called upon to care for elderly mentally ill patients. A number of home nurses are qualified in psychiatric nursing as well as in general nursing.

The instruction of the untrained staff in the welfare authority homes for the elderly, in the principles of basic nursing care, may well be extended to homes and hostels for other groups. In the " One in Five " scheme organized by the Women's Voluntary Service, there is a place for the home nurse to participate in spreading knowledge on the important aspect of caring for a sick person under emergency conditions.

The panel of assessors, appointed by the Minister on the recommendation of the Advisory Committee on Training of District Nurses, is now considering schemes of training, based on the model scheme prepared by the Advisory Committee for their guidance. The model training syllabus enphasizes the practical nature of the preparation needed and both the practical and the theoretical training can be adapted to meet the needs of the individual nurse, and the changing needs of patients nursed at home.

Domestic Help

The home help services throughout the country continue to do excellent work, enabling many old people to remain in their own homes and preventing the break-up of families with young children. Some authorities augment the service by arranging for evening visits and, in special circumstances, provide night attendants for people who are frail or sick and live alone. The demand for night service is not great and organisers operating a scheme can, with few exceptions, meet it. Many of them regard the evening and night services as essential and have a small group of workers who have volunteered to be available on call. In areas where there are special housing arrangements for old people, authorities have found it helpful to allocate one or two home helps to look after the group.

A major problem in the care of old people is the washing of clothing and bed linen. When the home help visits several households in a week it can become a heavy burden upon her. The more progressive authorities are overcoming the difficulty by providing laundry centres.

It is encouraging to record that many authorities having training courses for home helps, which, provided they are not too elaborate, can help the worker considerably, giving her a sense of responsibility and encouraging her to realize that she has an important place in the domiciliary health service.

The success of the service is largely due to the ingenuity and skill of the organizers in their relationship with home helps and members of the public.

Mental Health Services

The Mental Health Act, 1959, has focussed the attention of the nation on the mental health service. In the mental health services of the future the hospital will be but one part of the service, but it will also be the main source of training for the many nurses who will work in mental hospitals, in psychiatric units within general hospitals or in the community. From the nursing point of view, therefore, much thought must be given to the educational programme for these students and to their training syllabus. Already several experiments are taking place which link the trained nurse and student in hospital with the services outside. That mental nurses in large numbers will migrate from hospital to community services seems unlikely, nor is it desirable in view of the fact that mental hospitals will, for many years, contain a large number of patients for whom no other form of care is suitable.

Much has been done over the past few years to encourage direct recruitment to mental nursing and the numbers have steadily increased, leading to the hope that during 1960 and 1961 there should be more trained nurses than ever before. Added to this, the experimental schemes of integrated training (covering less than 4½ years) for the general and mental parts of the register have produced a steady flow of those qualifying in the mental nursing field. However, the trained nursing staffs will continue to require the support of personnel less highly trained, and it may be that the programme of instruction for nursing assistants, which has for some time been carried out in many mental hospitals, should be introduced into the smaller psychiatric units of general hospitals. A principal advantage of the nursing assistants' training suggested in H.M.(55)49 lies in the fact that hospitals are free to plan the programme according to the duties which are required of nursing assistants in individual hospitals.

It had been hoped that secondment of general student nurses to mental hospitals might arouse sufficient interest in the participants to encourage them to undertake postgraduate mental training, but this has not been so. These secondment schemes are on a very small scale, having been inaugurated in some London and a few provincial teaching hospitals. Though the student nurses who have been seconded are appreciative of all they have experienced and learned, the number of nurses from this group proceeding to mental training is small.

Mental nurses during the course of the past year have taken part in combined study days and conferences with general nurses, health visitors and home nurses. This is all to the good since it develops mutual interest and a greater understanding of the contribution each is endeavouring to make in this comprehensive service.

Miscellaneous

Standing Nursing Advisory Committee

During the course of the past year this committee has met three times. A number of sub-committees have been convened to consider such subjects as the "interim report on the control of staphylococcal infection in hospitals";

"health records and sickness absences of nursing staff"; "design of male nurses' uniforms"; "protection of nurses exposed to ionizing radiation"; and "the control of noise in hospitals".

Early in the year the committee presented to the Central Health Services Council its report on "The Design of Nurses' Uniforms", which was published in May and received much publicity.

The employment of young persons in hospitals, either in nursing cadet schemes or pre-nursing courses and that of residential accommodation for hospital nursing staff have also been brought to the notice of this Committee.

One sub-committee has met on a number of occasions to consider "The pattern of the in-patients' day". Much time and thought has gone into study of the traditional pattern, and of the ways and means in which this could be brought more into line with the normal home life of patients. At the same time consideration has been given to the problem of providing a continuous nursing service and of the best possible ways of implementing the 44-hour week for nursing staffs. Each of these points is dependent on the other and it has become evident to this committee, not only from the patients' point of view, but from that of staffing the hospitals, that the pattern of the patients' day must be considerably revised.

Overseas Visitors

The increasing number of study fellowships given by the World Health and other organizations to nurses from countries all over the world means that there has been a fairly constant stream of visitors for whom programmes are arranged in this country.

Each programme is based on the individual needs of the persons concerned, having regard to their qualifications and experience, and to the appointment which they hope to hold on returning to their own country. The planning of such programmes involves a good deal of thought and necessitates a close link with hospital and public health personnel in order to ensure that visitors utilize to the full the time allotted to them for their study tour. In addition, each visitor is interviewed on arrival in this country and again later to ensure that the desired experience is being obtained and that the student is gaining the maximum benefit from it.

Varying interests bring these visitors to this country; some desire further knowledge of basic and post-basic nurse education, some wish to observe special nursing, such as domiciliary, paediatric, obstetric, plastic or thoracic-surgery. Others come here to follow regular courses of instruction, such as those for nurse administrators', the sister tutor's certificate, the health visitor's certificate, the midwife teacher's diploma or the certificate of the British Tuberculosis Association. Though the incidence of tuberculosis is falling in this country, the disease is still prevalent in other countries. This training, therefore, is valued by certain overseas students.

As is well known, a large number of girls from overseas have undertaken their nurse training in this country, many of whom return to their homelands to give valuable service there. A considerable number are still in training here for different parts of the register of nurses, in addition to those who have come for one year's post-basic experience. Beside those who return to their own country to strengthen the nursing services, there is a need in certain areas for help from a country such as our own, where nurse training is well established. During the course of the past year a small group of trained nurses has gone out to certain countries to help to build up nurse training schools and, by example, to teach the British way of nursing in the wards. It is hoped that an increasing number will come forward to undertake this work.

Liaison with other Government Departments

The Nursing Division welcomes the contact which it has with other Government Departments through its professional officers. Though this is often on an informal basis the opportunities thus afforded are of mutual benefit.

Since 1948 a nursing officer has attended, as an observer, meetings of the Home Office central training council in child care. This has provided a means of keeping in touch with the developments of the training council which have a bearing on other forms of training. It is becoming increasingly apparent that all forms of training embracing community and child care must keep in step.

Over the past few years—at the invitation of the Foreign Office—a nursing officer of the Department has assisted in the selection of candidates for key nursing posts abroad. This has provided a closer link with overseas nursing service and hospitals, some of which are not under British administration. The standard of applicants has been high.

At the invitation of the Ministry of Pensions and National Insurance a nursing officer makes a contribution to the course of in-service training held annually for its war pensioners' welfare officers. The work of these officers brings them in touch with various aspects of local health authority services and it is felt to be useful for them to learn something about the services available and the training and qualifications of some of the field workers they will meet.

The regional and nursing appointments officers of the Ministry of Labour have continued to co-operate with the nursing officers of the regional hospital boards and with local hospitals in finding suitable employment for those who particularly require their help. In addition they have given guidance regarding available " pockets " of labour and local problems of recruitment.

Arrangements have recently been made with the Ministry of Education for a nursing officer to gain a closer insight into the work of school health visitors and school nurses. Such information is desirable in connection with the training of health visitors, refresher courses and in negotiations with the Whitley Council.

Co-operation between the Ministry's nursing officers and Her Majesty's Inspectors of the Ministry of Education, which began in the early days of wartime nurseries, is now well established. It is firmly rooted in nursery care and education for which both Ministries have interests and responsibilities, and in the training of nursery nurses for the National Nursery Examination Board.

Publicity and Recruitment

In presenting nursing and midwifery to the public, particular emphasis has been given to the opportunities in the mental and public health nursing services. Assistant nursing and other branches have also been carefully presented.

The National Education and Careers Exhibition, which was held in May, 1959, drew a large number of visitors, almost half of whom came from outside the London area, and many serious enquiries were made with regard to the training of nurses. The three mobile nursing exhibitions have continued to be heavily booked by the regions and the two mental health exhibitions have helped towards the appreciable change in attitude of the public mind regarding mental sickness. Publicity material has been widely distributed and in the course of the year a colour film has been in process of preparation depicting careers in the hospital service.

In each of the regional hospital board areas nursing publicity continued alongside careers advisory work, the one being complementary to the other. Regional hospital boards and many hospital management committees have introduced new methods of focusing the attention of the public on the responsibilities and privileges of the nursing profession. The quality of the hospitals public relations with the community plays an increasingly important part in its appeal to potential trainees in the nursing service.

As a result of discussions with the central youth employment executive, arrangements have been made for nursing literature to be distributed to all the schools through the youth employment officers. A review of the nursing and midwifery staffing position at 30th September, 1959, showed an increase in each of the different grades of staff, students and pupils. Of particular interest are the increases of student nurses in the mental health services, and in the number of Part II pupil midwives and of practising midwives.

General Distribution of Nursing and Midwifery Staff

For various reasons some hospitals enjoy better recruitment than others and this has perpetuated the problem of the distribution of nursing and midwifery staff. Many factors have a bearing on this but the quality of the nurse educational programme, the standard of personal relationships and the methods of selection of student and pupil assistant nurses are the most obvious. Efforts have been made in many hospitals towards better selection which weighs equally with qualities, attitudes and educational attainment. The presence of the state enrolled assistant nurse can also improve the quality of training of nurses and consequently the appeal of the hospital for nursing and midwifery candidates.

Over the next few years, there will be an increase in the number of school-leavers and, therefore, potential candidates for nurse training, but—alongside this—there is the increasing trend for early marriage and the consequent loss to training.

From all points of view it must be ensured that in the future there is good selection, better utilization of staff (with the aid of work study) and provision for the training and employment of married women. In these ways, staff will be more economically used in hospitals and public health nursing services.

National Hospital Service Reserve—Developments of Forward Medical Aid Unit Training

The year 1959 marked ten years of sustained effort by the National Hospital Service Reserve which has now 53,364 in its ranks. The members have made a valuable contribution to the regular nursing service and because of the close co-operation between the National Hospital Service Reserve and many hospital staffs, members of the Reserve have been made to feel that they are part of the hospital team. Courses of training based on hospitals have been arranged. These have included practical nursing, lectures, films and demonstrations. The knowledge of nursing procedures, superimposed on their knowledge of first aid, has been of the utmost value in stimulating and increasing the interest of members, many of whom have become members of forward medical aid units. The National Hospital Service Reserve has also been responsible for a proportion of its members joining the regular nursing service. Training for forward medical aid units is still in the experimental stage but syllabuses are being planned in the awareness of the essential need for more experience in basic and emergency nursing care together with a clearly defined knowledge of the function of the civil defence corps. Nursing staff in many hospitals give the greatest co-operation in this added responsibility. Greater numbers are needed to help in the training of men and women National Hospital Service Reserve auxiliaries and who are willing to co-operate with nurses and midwives who have joined and are giving of their time to the Reserve. A great need exists also for more help from medical practitioners in the formation of an increased number of forward medical aid units.

XIII

WELSH BOARD OF HEALTH

The Wales and Monmouthshire Report on Developments and Government Action, 1959 (Cmnd. 961), indicates noteworthy developments in health matters in Wales. Statistics about the work in the hospital, the executive council and the local health authority services in Wales, of the gross expenditure on the National Health Service from 1951 to 1959, together with statistics about tuberculosis during the years 1948 to 1959 are contained in the Digest of Welsh Statistics No. 6, 1959.

Maternal and Child Care

Vital Statistics

The total number of live births in 1959 was 42,262 which was slightly lower than the total for 1958. The birth rate of 16·1 per thousand population showed little change compared with a rate of 16·2 in 1958.

The infant mortality rate of 26·3 per thousand live births showed a further reduction from 26·5 in 1958. The neonatal mortality rate increased to 19·6 per thousand live births from 18·9 in 1958.

The still birth rate at 26·3 per thousand total births was the same as that for 1958.

The perinatal mortality rate at 42·2 per thousand total births showed a slight increase over the rate of 41·5 for 1958.

Eighteen mothers in Wales died in childbirth, a maternal mortality rate of 0·41 per thousand total births. The rate for 1958 was 0·57 and there were 25 deaths.

Domiciliary Midwifery

At the end of the year, 647 midwives were employed by local health authorities, either directly or through agency arrangements, and of these approximately 340 were married women. Their age distribution is shown in the following table:—

Age	Percentage
20–30	9
31–40	16
41–45	18
46–50	13
51–55	19
56–60	16
61–65	6
Over 65	3

Only 25 per cent., therefore, of the domiciliary midwives in Wales are under 40 years of age. Analysis of the information supplied by local health authorities shows that, in general, the older midwives tend to be found in the rural areas and that these are, more frequently, married women with domestic responsibilities, while the younger midwives prefer working in the towns with their better facilities and social amenities.

Local health authorities in many parts of Wales, particularly in the more rural areas, are finding it increasingly difficult to recruit midwives. The changing pattern of midwifery, the increasing tendency for confinements to take place in hospital, the greater commitments regarding ante-natal care and the nursing of early discharges from hospital are all factors which have a bearing on this problem. In Wales, as elsewhere, many newly qualified midwives are reluctant to practise, although those who are not state registered nurses tend to remain in practice longer because there is no other field open to them. Living conditions in rural areas are frequently not sufficiently attractive and regular off-duty periods are often difficult to arrange because of shortage of staff. While there is, in general, a shortage of midwives in rural areas, some rural local health authorities experience no difficulty while others have difficulty in staffing only certain parts of their area, as was noted during a survey carried out by officers of the Department during the year at the request of one local health authority which was encountering unusual difficulty in recruiting midwives. Whatever the long-term solution to the problem may be there can be no doubt that local health authorities can do much to make their service more attractive by improving living and working conditions.

Ante-natal Beds

Enquiries made of the local health authorities in Wales regarding difficulties encountered in obtaining admission from their clinics of patients considered to need hospital ante-natal treatment elicited the information that 11 had no trouble in getting their ante-natal clinic patients into hospital where necessary, 3 had occasional difficulty and 2 stressed the need for more ante-natal beds throughout their areas.

Obstetric Flying Squads

In 1959 there were 11 flying squads in eight hospital management committee areas in Wales. Forty-four calls (including 9 from general practitioner hospital or maternity homes) were made—40 by general practitioners, 2 by midwives and 2 from the patients' families—and for the following reasons: post-partum haemorrhage 16, retained placenta 13 (10 cases in one hospital management committee area), delayed first stage 6 (2 patients were removed to hospital), ante-partum haemorrhage 4 (1 patient was moribund when the unit arrived), abortion or miscarriage 4 and acute inversion of uterus 1.

The exact composition of the squad at each turn-out is not clear but no doubt it varied, and there was sometimes uncertainty among those calling the squad out and those authorising its use as to its precise role. For instance, a request for a flying squad was hardly necessary to assist in the six cases of first stage delay and it is surprising that the unit was summoned to general practitioner hospitals or maternity homes where, with the arrival of the obstetrician, the facilities should have been adequate. However, as the calls were mostly on account of haemorrhage, it would be presumptuous to cavil at an occasional needless or inappropriate demand, bearing in mind the possible tragic consequence of a single omission to solicit aid. Indeed, remembering that inefficiency and unpreparedness inevitably threaten seldom-used units, the more opportunities they are given to operate, the better their performance is likely to be.

Dental Health Services

There is little that is new to report with regard to the dental services in Wales. Demand for treatment has continued at a high level, and the total number of dental practitioners in the Principality has again decreased slightly through the effects of death and retirement; unfortunately these losses are not as yet being made good to any appreciable extent by the addition of newly qualified dentists. It is encouraging to know that plans for the new dental hospital and dental teaching school which will form part of the new University Hospital of Wales in Cardiff are in process of being drawn up, and there is no doubt that the provision of such facilities will be of far-reaching benefit in many ways to the dental health of the community.

From the statistics compiled by the Dental Estimates Board it is apparent that expectant and nursing mothers form a large proportion of those receiving treatment under the general dental service, and there is no doubt that the general dental practitioner is anxious, so far as he is able, to afford these patients any measure of priority which may be possible. It should not be forgotten, however, that local health authorities are required, under Section 22 of the Act, to make provision for the dental inspection and treatment of these patients together with pre-school children, and it is pleasing to record that, despite shortage of staff, many authorities in Wales are endeavouring to expand their services in this direction. Visits are periodically paid to various areas by the Dental Officer of the Department in order to advise and assist wherever possible, and the Department are anxious to encourage progress in this field. It has been found that many mothers are not aware that facilities exist for their dental treatment under the same local health authorities which may undertake their ante-natal and post-natal care, and publicity measures are usually necessary to give the requisite information.

The statistics also show that there has been a slight but steady and consistent increase in the amount of conservative treatment given, particularly for the younger age groups. Since in the past Wales has been, and no doubt will continue to be for some time to come, notable for large numbers of teeth extracted and dentures provided, any appreciable diminution of this tendency with a corresponding increase in the numbers of natural teeth saved, is one to be welcomed.

The fluoridation of part of the water supply system in Anglesey has now been in operation since 1955, with annual dental and other checks of the children concerned, so that from the end of 1960 it should be possible to commence some evaluation of the reduction in the incidence of caries in children which may be expected from this comparatively inexpensive measure.

It may be mentioned that increasing use is being made of the services of the Department's Dental Officers, not only by the Dental Estimates Board and the local executive councils but by local health authorities, dental practitioners and others, with a view to obtaining advice and assistance on any matter connected with the dental services, such help being willingly given and as promptly as possible: the Dental Officers also welcome the opportunity of meeting their colleagues and of hearing at first hand of any difficulties, clinical or otherwise, which may arise in the course of practice, so that the service rendered may be of increasing value to all concerned.

Health Control at Sea and Air Ports

From the 1st April the Minister of Health delegated to the Welsh Board of Health certain of his functions in relation to health control at sea and air ports, medical inspection of aliens and shellfish and imported foods.

The responsibility for carrying out health control of sea traffic rests mainly on the nine port health authorities in Wales, five of which are single authorities and four are joint boards, each composed of representatives from seven constituent riparian authorities. Single authorities are responsible for health control at the four larger South Wales ports of Swansea, Cardiff, Newport and Barry. On behalf of the Minister of Health the Barry Port Health Authority also exercise health control of Cardiff (Rhoose) Airport.

15,203 ships, with a total tonnage of 10,839,276, entered the districts of port health authorities in Wales during 1959, 3,583 of them, with a tonnage of 5,942,388, from foreign ports. 23 ships were reported as having or having had infectious disease on board during the voyage immediately prior to entry.

Considerable interest has been focussed on developments at Milford Haven where two petroleum companies are constructing large oil terminals. From the summer of 1960 the tonnage of oil tanker traffic entering the port is expected to increase considerably but there is not expected to be a commensurate increase in port health work.

Shellfish

The Department's functions, which are predominantly consultative and advisory, relate to the control of shellfish gathering from layings which are contaminated or at risk of contamination. Three district authorities and one port health authority have made Orders under the Public Health (Shellfish) Regulations 1934, controlling the sale for human consumption of shellfish taken from prescribed areas within their districts.

Hospital and Specialist Services

Capital Building Schemes

New hospital projects completed during the year include:

- Maelor General Hospital, Wrexham (adaptations to provide a maternity unit).
- Llanelly Hospital (new 64-bed ward block).
- Llwynypia Hospital, Rhondda (improvements to casualty and physiotherapy departments).
- Morriston Hospital, Swansea (new out-patient department).
- Neath General Hospital (new boiler house and boilers).
- Barry Accident Hospital (alterations to operating theatre and installation of central heating).
- Aberdare General Hospital (extension to out-patient department).

Projects which were commenced during the year include:

- Stage II development of West Wales General Hospital (96-bed ward block, out-patient department, and public health laboratory).
- Merthyr General Hospital (new operating theatre).
- Pembroke County War Memorial Hospital, Haverfordwest (new main kitchen).
- St. David's Hospital, Bangor (new operating theatre suite).
- St. Cadoc's Hospital, Caerleon (new admission unit).
- South Pembrokeshire Hospital, Pembroke Dock (general improvements).
- Llanelly Hospital (new laundry).
- Mount Pleasant Hospital, Swansea (modernization of a ward block to provide a psychiatric observation unit and to accommodate chronic sick).
- Mid-Wales Hospital, Talgarth (re-organization of engineering services).
- Ely Hospital, Cardiff (training centre for ambulant patients).

Radiotherapy

Wales is served mainly by two major radiotherapy centres; in South Wales a radiotherapy hospital has been established at Whitchurch, Cardiff, while North Wales looks to the centre at Clatterbridge Hospital, Wirral, which is administered by the Liverpool Regional Hospital Board. At Whitchurch conventional deep X-ray facilities have been supplemented by the provision of two cobalt units, the second of which was installed in 1959 and plans are well advanced to provide a linear accelerator there.

Mental Health

The Mental Health Act, which received the Royal assent on 29th July, 1959, incorporates the main recommendations of the Royal Commission on the Law Relating to Mental Illness and Mental Deficiency (Cmnd. 169). The Royal Commission stated as one of its general principles for the future that there should be a reorientation in the mental health services from hospital to community care, except in cases where special care available only in hospital is needed. This new concept of the care of the mentally disordered in the community stems from the outstanding recent advances in the knowledge of the aetiology and of the treatment of mental disease and from the changing outlook of the general public towards it, and its success will depend on the co-operation achieved between the hospital, local health authority and general practitioner.

Although a few local health authorities in Wales had fairly well developed mental health services before the inception of the Act, a number of others had not. It will be necessary for all, however, considerably to expand their services to fulfil their new obligations for the community care of the mentally disordered. There are 15 training centres in Wales, the majority of which cater for children though a number also provide accommodation for adults. There is only one adult industrial training centre (Swansea). These centres provide places for 997 persons in all. Three centres were opened in 1959. At the end of the year 757 persons under 16 and 1,017 over 16 were considered suitable for training in such centres though, with better ascertainment, these numbers are likely to increase.

In the autumn, officers of the Department made informal visits to all local health authorities to discuss the provisions of the Act in so far as it related to them and to outline their responsibilities. These discussions, which were mutually helpful, showed that local health authorities in general would be faced with at least two main difficulties: firstly that of obtaining trained staff, and, secondly, that of accurately assessing the demand on their services, particularly in rural areas. The response, nevertheless, was very encouraging.

With regard to the staffing difficulties, eight South Wales local health authorities commenced, in September, 1959, a joint course of training for assistant supervisors of training centres.

The Anglesey County Council method of tackling the problems of ascertaining the mental health needs of their area is noteworthy in that they have arranged to carry out a survey in conjunction with the Nuffield Provincial Hospital Trust, and with the help of the Social Science Department of Liverpool University.

Geriatrics

During the year there has been a fundamental change in the approach to the hospital care of geriatric patients. The Welsh Hospital Board decided that full-time geriatric physicians should be appointed where this was opportune. As these appointments would have to be over a period of time, this would enable the Board to evaluate the results of the appointments made and help to determine whether or not this system of geriatric care should be extended to all areas. It was also decided that the local health authorities should be invited to be partners in the appointment and use of the consultant. Discussions were held to this end with the local health authorities concerned. Three joint appointments have been made of Consultant Geriatricians, for the Merthyr and Aberdare Hospital Management Committee, the Caernarvon and Anglesey Hospital Management Committee and the Glantawe Hospital Management Committee. It is likely that more appointments will be made in the near future.

As a matter of policy it has been decided that new general hospitals should incorporate acute geriatric units. In areas where no new hospitals are planned in the near future provision of such units, either by conversion or extension of existing accommodation is under consideration.

There has been in increase in the number of beds for geriatric care amounting to over 200 additional beds. This number includes those in hospitals where no geriatric beds previously existed, such as Glan Ely Hospital (77), Adelina Patti Hospital (80), and Tregaron Chest Hospital (24). These units were made possible by the transfer of the use of beds from the care of the tuberculous patient to the care of the geriatric long stay patient.

Infectious Diseases

Tuberculosis

Notification

In 1958 there were 2,109 formal notifications (806 per million of the population) and in 1959 the figure was 1,863 (710 per million of the population). This is a reduction of 11·9 per cent. in the notification rate. Respiratory notifications show the greater fall, 12 per cent. compared with non-respiratory 9·2 per cent.

Mortality

During the year, 323 persons died from tuberculosis, a mortality rate of 123 per million living. The mortality rate for the respiratory disease was 109 and the non-respiratory 14; compared with 1958 the former decreased by 6·0 per cent. while the latter increased by 27·3 per cent. It should be recorded that in 1948 the mortality rate for the respiratory disease was 548 and the non-respiratory 82.

Chest Clinics

The number of attendances at clinics during the year was 185,117, a decrease of 4,085 compared with the previous year. The number of persons on clinic registers at the end of 1959 was 23,900, a decrease of 943 compared with the previous year.

Hospital Accommodation

During 1959 the number of beds for the treatment of tuberculosis fell by 522 to 2,080. The average number of these beds occupied was 1,409. This continuing lessening of demand is enabling the Welsh Hospital Board to continue their policy of disposing of uneconomic and unsuitable hospitals and of diverting tuberculosis beds to other uses.

Mass Radiography

In 1959 181,888 persons were examined of whom 3,726 were referred to chest clinics for further observation. Of those examined, 285 (1·6 per 1,000) were subsequently classified as suffering from active pulmonary tuberculosis and 244 had not been finally diagnosed by the end of the year. Nine units operated during the year and examined an average of 3,498 persons a week. Of the total number examined, (*a*) 110,120 were examined by three mobile units, (*b*) 25,363 by two semi-static units and (*c*) 46,405 by four static units (Cardiff, Swansea, Newport and Carmarthen). The rates per thousand examined in these groups of units and subsequently classified as suffering from new active pulmonary tuberculosis were 0·69 (with 107 waiting final diagnosis), 2·52 (with 42 waiting final diagnosis) and 3·12 (with 95 waiting final diagnosis) respectively.

The two semi-static units work in North Wales, one in the west and the other in the east; one commenced work in 1952 and the other in 1957. Both work on the circuit system visiting each location at fixed intervals. In this way seven counties are covered and because their itineraries are known, general practitioners are able to refer their patients for X-ray with a minimum of delay and inconvenience. In addition both units during the year carried out a number of special surveys of hospitals, schools, old people's homes and one industrial establishment.

B.C.G. Vaccination

During the year the B.C.G. vaccination scheme was extended to include children of 14 years and upwards who are still at school and to students, and by the end of the year all but two local health authorities had sought approval for this extension.

	Numbers given B.C.G. Vaccination		
Period	*Contacts*	*School Children*	*Total*
Year ended 31st December, 1955 ..	5,756	10,412	16,168
Year ended 31st December, 1956 ..	5,068	12,088	17,156
Year ended 31st December, 1957 ..	6,248	14,527	20,775
Year ended 31st December, 1958 ..	6,561	11,112	17,673
Year ended 31st December, 1959 ..	7,531	16,986	24,517

The following table shows the number of children of school leaving age found to be positive to the tuberculin test in 1959:

Local Health Authority	Number Skin Tested	Percentage positive
Anglesey C.C.	498	18·5
Breconshire C.C. ..	475	23·4
Caernarvonshire C.C. ..	1,019	10·6
Cardiganshire C.C. ..	388	7·5
Carmarthenshire C.C. ..	—	—
Denbighshire C.C. ..	—	—
Flintshire C.C.	1,372	25·4
Glamorgan C.C.	6,371	15·8
Merioneth C.C.	320	13·1
Monmouthshire C.C. ..	2,569	15·2
Montgomeryshire C.C. ..	455	13·2
Pembrokeshire C.C. ..	651	16·9
Radnorshire C.C. ..	280	10·4
Cardiff C.B.C.	3,421	21·3
Merthyr C.B.C.	455	29·0
Newport C.B.C. ..	1,030	9·4
Swansea C.B.C.	2,975	13·6
Wales	22,279	16·6

During the year many local health authorities gave priority to poliomyelitis vaccination and had considerable difficulty, mainly owing to lack of staff, in maintaining their B.C.G. vaccination programmes. Two were forced temporarily to suspend operations but have since resumed. The value of B.C.G. vaccination in preventing many from developing tuberculosis has been shown (M.R.C. 1959) but it is a sad reflection that less than half of the children in the age group eligible for vaccination are tuberculin tested.

The percentage of tuberculin positive children in the 13-year old age group is regarded as a good indication of the amount of infectious tuberculosis in the community. Recent work (M.R.C. 1959[1]; Sutherland[2] 1959) suggests that as the incidence of infectious tuberculosis in the community decreases, a point will be reached when the value of B.C.G. vaccination begins to decline.

A report was published (Griffith 1959)[3] during the year on trials in Cardiff and in Pembrokeshire using the multiple puncture method of B.C.G. vaccination. This method was simple and painless, giving rise to minimal lesions, negligible scars and no complications, but tuberculin conversion rates were disappointing—83 per cent. in Pembrokeshire and 93 per cent. in Cardiff. If further trials with an improved technique show better conversion rates, multiple puncture vaccination may prove to be an acceptable alternative to the present intradermal method.

Tuberculin testing is being used by several local health authorities in Wales as a means of contact tracing. Newport County Borough Council have carried it out for several years in their infant welfare clinics and schools and now, in addition, offer it to expectant mothers in their antenatal clinics instead of a routine X-ray. In 1959, Cardiff County Borough Council introduced a serial tuberculin testing scheme in which the aim is annually to test every child between the ages of 1 and 15 years. This will show how many children become infected

[1] M.R.C., 1959. *Brit. Med. J.*, 2, 379.
[2] Sutherland, Ian, 1959. *Tubercle*, 40, 413.
[3] Griffith, A. H., 1959. *Lancet*, 1, 1170.

annually which will, in turn, give accurate information about the prevalence of tuberculous infection in the community during the current year. It will reveal those children who require X-ray examination and, if necessary, treatment, and will also serve as a valuable means of tracing the contacts of positive reactors.

The epidemiological value of tuberculin testing was demonstrated in bringing to light a small outbreak of tuberculosis in children in one area in South Wales during the year. The Medical Officer of Health, on learning that a 1-year old child had died of miliary tuberculosis, found from his records that a man living in the same vicinity had recently been admitted to hospital with extensive pulmonary disease. He arranged for all the children at risk to be tuberculin tested and those who were positive to be X-rayed. As a result of this examination seven children were discovered to be suffering from tuberculosis and were admitted to hospital, and a further three were put under observation by the Chest Clinic.

Poliomyelitis

There were 13 paralytic and 5 non-paralytic cases in Wales giving a combined incidence rate of 0·69 per 100,000 population which is the lowest in Wales since formal notification of this disease commenced. Unfortunately, however, there were three deaths giving a paralytic fatality rate of 16·7 per cent. as compared with 5·9 per cent. in 1958.

Vaccination against Poliomyelitis

The 15–26-year old group, whose inclusion in local health authority vaccination schemes had been approved in the previous September, were slow in coming forward until spurred by the publicity given to the tragic death of a popular footballer from poliomyelitis in April. Great credit is due to local health authority staff, to general practitioners and to industrial medical officers for the way in which they met the considerable demand which resulted. In the 1958 Report concern was expressed at the low acceptance rate for vaccination from expectant mothers. The rate is still too low and every effort should be made to improve it in view of the increased suspectibility of pregnant women to the disease, to its frequently increased severity if they are attacked, and to the need to protect the infant during its first six months of life by means of immunity derived from the maternal blood stream.

By the end of the year more than half a million (502,541) children up to and including the age of 16 years had each received two injections of poliomyelitis vaccine. With those who had received one injection (4,787) and those who were awaiting their first injection (4,100), this meant that 77·8 per cent. of eligible children had registered for vaccination.

The number of young adults who had registered for vaccination was just under half of those who were eligible (46 per cent.). 145,679 young adults had received two injections, 4,422 had received one injection and 1,770 were awaiting their first injection. There has been considerable improvement in the acceptances from this group since the end of 1958 when only about 5 per cent. of young adults in Wales had registered.

Diphtheria

For the second year running no case was notified in Wales. The immunization indices for Welsh local health authorities are still low in some instances.

Food Poisoning

Six hundred and eighty-six cases of food poisoning were notified during 1959, of which 113 occurred in the first quarter, 136 in the second, 196 in the third and 241 in the fourth. The number of notifications was more than double that for the previous year. In addition, 317 cases were otherwise discovered.

There were 71 outbreaks, an increase of 129 per cent. over 1958. In 46 (65 per cent.) of these, involving 443 people, the agent was identified and in 25 involving 386 people, it was not. Thirty-three of the former and 21 of the latter were " family " outbreaks. Of the 168 single cases the agent was identified in 132 (79 per cent.). Salmonella typhi-murium was isolated in 54 per cent. of the outbreaks in which the organism was identified and staphylococci in 13 per cent. Of the single cases salmonella typhi-murium was isolated in 61 per cent. It is interesting to note that 19 different salmonellae serotypes were isolated from cases during the year which is more than ever before.

The largest outbreak of food poisoning involved 223 children who had attended a school Christmas party in East Glamorgan. The majority (96 per cent.) had severe diarrhoea with vomiting and abdominal pain while 42 per cent. had varying degrees of delirium. The average incubation period was 26 hours. Twenty-five children were admitted to hospital and all recovered. Early investigation indicated that trifle was the only common factor and a sample from one of the discarded containers subsequently grew both *Salmonella typhi-murium* (phage type 2C) and *Salmonella thompson* (phage type 4). The former organism was isolated from 131 of the cases while the latter was isolated from 27; in 42 both were found. The bakery which made the trifles was systematically investigated and initially two of the employees were found to be excreting *Salmonella typhi-murium* of the same phage type though, subsequently, two more became positive. In addition, the organism was found in the bakery drains though not in the utensils, equipment or samples of ingredients investigated. It is interesting to note that a number, though not by any means all, of the children had also eaten pork luncheon meat sandwiches and on investigating the staff of the grocery which had prepared the sandwiches it was found that one of them was also excreting the organism. This girl incidentally admitted to eating trifles shortly before, which, though suggestive, was not conclusive. How the infection got into the bakery was not discovered but it seems more likely to have been introduced by an infected ingredient rather than by an infected member of the staff. This outbreak illustrates the immense amount of detailed and painstaking investigation required of a medical officer of health and his public health inspectors which, in this case, was unusually difficult because much of it was done during the week-end.

In August another outbreak occurred in the same area, involving 32 people, in which the causative organism was *Salmonella typhi-murium* and the presumed vehicle of infection was also trifle, though from a different bakery. Again an infected ingredient was thought to have been the likely cause but all samples submitted for bacteriological examination were negative.

There were three other outbreaks worthy of mention, all of which were probably due to infection with staphylococcal enterotoxin though in none of them was this proved. The first involved 206 children in four schools. Almost all had eaten meat which had been cooked in one of the school kitchens, allowed to cool slowly and reheated the following day. The incident served to draw attention to and stop this dangerous practice. The second presumptive staphylococcal outbreak involved 36 people in a guest house. The vehicle of infection in this case was thought to have been milk, from which the organism was subsequently isolated. The third outbreak involved 43 school children, and again milk was thought to have been the vehicle of infection. These three outbreaks underline the importance of good kitchen hygiene particularly in those which cook for large numbers of people and draw attention to the need for adequate refrigeration and avoidance of the hazardous practice of allowing meat to remain in a warm atmosphere between cooking one day and serving the next.

As a result of investigations carried out by Dr. R. W. S. Harvey, of the Public Health Laboratory in Cardiff, of a number of sporadic cases of *Salmonella typhi-murium* infection in the Cardiff area (Annual Report for 1958) a correlation in time was found between the phage types of typhi-murium found in farm animals, abattoir sewer swabs and cases of human illness. The inference was that the human disease was possibly carried by infected locally produced meat. No other sources of infection could be found by epidemiological inquiry. As a sequel to this investigation, phage-typing of all typhi-murium strains isolated from abattoir drain swabs and cases of human illness continued throughout 1959. In January and February, 1a var. 3 strains were isolated from infected persons corresponding with isolation of this phage type from an abattoir in December, 1958. In May, phage type 1a was isolated both from the abattoir and from humans. The same phage type was again isolated from both sources in August. In September, the abattoir strains were 2b and 2c and in the same month the identical types were encountered in cases of human illness. In October, type 1 var. 5 was isolated from the abattoir and this same type was found in sporadic infections in human beings in October and November. The timing of these isolations was very suggestive of infection carried by meat. It was noted that where the same phage type was found in isolations from the abattoir swabs and cases of human illness, the latter were of a sporadic nature. Parallel observations on other salmonella serotypes sometimes showed a similar pattern. For instance, the isolation of *Salm. agama* from an abattoir was followed a week later by an outbreak due to this serotype in a children's hostel. Two separate isolations of *Salm. saint paul* in calves were followed in a matter of days by two human infections with the same serotype. Both these latter serotypes are rarely isolated in Glamorgan.

Paratyphoid Fever

During the year, 68 cases of paratyphoid B fever were notified, the majority of which occurred in three outbreaks which are worthy of note. Two of them occurred simultaneously in the boroughs of Barry and Rhondda and involved five and three cases respectively. Both outbreaks were associated epidemiologically with local bakeries, from the drains of which the causative organism (phage type 2) was isolated. The fact that two bakeries in different areas were involved at the same time suggested a common infected ingredient but, despite exhaustive search, none was found. The bakery staffs were not infected. As phage type 2 is comparatively rare in this country a possible association was sought between these outbreaks and two which had occurred in Scotland a short while before and one which subsequently occurred in Newcastle-upon-Tyne, but no association was found.

The third and largest outbreak occurred in North-West Wales during the summer; the onset of the first case was on 7th June and that of the last on 20th September. Twenty-five cases and 15 symptomless excretors were discovered. The outbreak spread over three counties, involving two boroughs, three urban districts and seven rural districts. It is interesting to note that ten of the patients were admitted initially to general hospitals. All recovered, although nine on discharge were still excreting the organism. In only one instance was there more than one case in a house, although in seven households there were one or more symptomless excreters. It is noteworthy that although the ages of the cases ranged from three months to 67 years, only six were under 25 years. Owing to its wide distribution it was thought probable that the outbreak was food-borne in origin although the phage type of the causative organism (1 var. 6) had not been isolated in food before. The only positive food sample obtained was of meat delivered to a school canteen (same phage type) but in spite of investigation no carrier was found in the school canteen, butcher's shop or abattoir. At about the same time cases caused by this phage type occurred in Liverpool and South Lancashire, London and Manchester, but no connection could be discovered between any of them and the North Wales cases. Although investigations unfortunately failed to find the source of this outbreak, notable co-ordination was achieved among the medical officers of health and public health inspectors of the county and district authorities involved, the bacteriologists and the general practitioners.

Dysentery

Notifications of dysentery (*Sh. sonne*) in Wales amounted to 858 in 1950 and 3,033 in 1959, an increase of 253 per cent. and the highest number of notifications yet recorded in one year. There were 890 more notifications in 1959 than in the previous year. The average annual number of notifications during the first five years of this decennial period was 625 and in the second 1,709. The experience of one local authority (Rhondda M.B.), which recorded a total of 48 notifications of dysentery in the 20 years prior to 1939 compared with a total of 1,244 in subsequent years is typical of many. This formidable increase, which is not peculiar to Wales, results from the increasing number of outbreaks, chiefly associated with nurseries and junior schools, which have occurred in recent years, outbreaks which build up to a peak in a district and then slowly wane before passing on to the next community. In the latter months of 1958 a wave of infection, originating in mid-Glamorgan, spread eastwards throughout 1959, affecting most of the local authority areas in the east Glamorgan and Monmouthshire valleys, in addition to Cardiff and Newport. In January in Rhondda M.B., 187 cases were notified, followed by 138 in February; thereafter the outbreak waned slowly although at the end of the year there was evidence of a secondary rise. The age and sex distribution of the notified cases is shown in the following table:—

Age group	Males	Females	Total
0+	15	20	35
1–4	100	86	186
5–9	57	72	129
10–14	43	36	79
15–24	37	43	80
25–44	76	66	142
45–64	35	38	73
65+	13	16	29
All ages	376	377	753

Thus in the Rhondda the morbidity was highest in the pre-school children and high, though less so, in the primary school children as is common. However, it is interesting to note the high incidence in the 25–44 age group. Many of these are clearly parents who had been infected by their children. The reason for the high proportion of males infected in this age group is obscure but one is tempted to suspect that with the mother frequently out at work, they have had to attend to the needs of sick children more frequently than before and that they have been less adept, perhaps, than their wives in avoiding infection.

In Rhondda M.B. all cases notified in 1959 were investigated by the Medical Officer of Health and his staff and it is interesting to note that the diagnoses were confirmed bacteriologically in only 191 cases (26 per cent.). In 53 per cent. of the notifications, however, the diagnoses were not confirmed and in the remaining 21 per cent. no specimens were obtained for investigation.

Although the extent of the disruption of the routine of nurseries and schools and the amount of work which devolves on the Medical Officer of Health and his staff and on the Public Health Laboratory on these occasions is far out of proportion to the severity of the illness, it is necessary to investigate each case and its home contacts with a view to limiting the spread of infection; it may be, for example, that some of the contacts are food-handlers.

Pneumoconiosis

During the year ended 31st December, 1959, 9,242 men were called for examination by the Pneumoconoisis Medical Panels of the Ministry of Pensions and National Insurance in connection with initial claims (including re-examination where the disease was not previously diagnosed) for disablement benefit under the National Insurance (Industrial Injuries) Act, 1946. Of these, 944 received assessments under the Act.

The following gives the result of the examinations in detail:—

1. (*a*) Total number examined by X-ray	9,242
(*b*) Number of applicants for X-ray in whom pneumoconiosis was not diagnosed	6,810
(*c*) Number of first examinations by medical boards (including re-examinations where the disease was not previously diagnosed)	2,765
2. Number of men diagnosed as having pneumoconiosis or pneumoconiosis with tuberculosis	944
Percentage of 1 (*a*)	10·2
Percentage of 1 (*c*)	34·1
Number with pneumoconiosis only	918
Number with pneumoconiosis and tuberculosis	26
Number with tuberculosis only	13
3. Letters of advice issued recommending men to follow surface employment in approved dust free conditions in mines or elsewhere	29
Percentage of 2	3·0

4. Letters of advice issued recommending men to carry on underground in approved dust free conditions and subject to periodic medical examinations	768
Percentage of 2	81·3
5. Modified letters of advice (i.e., containing advice to the applicant's own doctor)	5
Percentage of 2	0·5

The Pneumoconiosis and Byssinosis Benefit Scheme, 1952 and 1954, provides for payments out of the Industrial Injuries Fund for partial or total disablement or death from Pneumoconiosis or Byssinosis in certain cases not covered by the Workmen's Compensation Acts or the Industrial Injuries Act. Under this Scheme during the year 1959, the pneumoconiosis medical panels dealt with applications from 678 persons and of these 125 were found to be partially disabled and 36 totally disabled.

One hundred and seventy-one death claims were dealt with during the period.

Acute Rheumatism

This is essentially a disease of school children as first attacks are rare below 5 or over 15 years of age. Although both the mortality and morbidity have declined in recent years, the reason for which is not completely clear, the disease remains an important cause of death and disability in the younger age groups. While the combination of poverty, overcrowding, bad housing and malnutrition was formerly more closely associated with the disease, it is still more prevalent in the industrial areas of England and Wales.

The Acute Rheumatism (Amendment) Regulations, 1959, extended The Acute Rheumatism Regulations, 1953, to Cardiff, making acute rheumatism notifiable in the area of the county borough. This created no significant administrative difficulties. The only difference was that formal notification of the defined condition in the specified age groups, took the place of the informal arrangements by telephone, letter, or direct referral of cases to the supervisory clinics by general practitioners, etc., which has been the practice in the city since 1929.

During the first year of operation of the new Regulations, 15 cases of acute rheumatism were notified. Nine of these were in the 5–14 year age group, six being boys and three girls, and all suffered from active rheumatic heart disease with polyarthritis. The remaining cases consisted of three with active rheumatic heart disease alone, two with rheumatic chorea alone and one with rheumatic pains without heart involvement. The final diagnoses and classifications of the 15 cases notified in 1959 were made after consultations between the Medical Officer of Health, the general practitioners and hospital staffs concerned, after a period of observation of the cases either at home or at a follow-up rheumatism clinic. It is interesting to compare these figures with those for 1933, the peak year of informal notifications of rheumatism in Cardiff, when 524 new cases were referred for diagnosis and treatment or observation to the rheumatism supervisory clinics.

Venereal Disease

The numbers of patients under treatment or observation in Wales at 31st December, 1959, as compared with the two previous years, are shown in the following table:

	1957	1958	1959	Increase or Decrease compared with 1958	Percentage Variation compared with 1958
(a) Patients under treatment or observation on 31st December					
Syphilis	725	698	565	−133	−19·1
Gonorrhoea	253	276	297	+ 21	+ 7·6
Other conditions ..	874	864	732	−132	−15·3
Total (all conditions) ..	1,852	1,838	1,594	−244	−13·3
(b) New Cases					
Syphilis	276	205	178	− 27	−13·2
Gonorrhoea	599	676	835	+159	+23·5
Other conditions ..	2,642	2,345	2,759	+414	+17·7
Total (all conditions) ..	3,517	3,226	3,772	+546	+16·9

From the above table it will be seen that while there has been a welcome decrease in 1959 in the number of cases of syphilis under treatment and of new cases, there has been an appreciable increase in the number of new cases of gonorrhoea and of "other conditions" (mostly non-specific urethritis).

With regard to gonorrhoea, increases over 1958 occurred chiefly in Carmarthenshire, Glamorgan, Monmouthshire, Swansea and Cardiff, the increases in the last named area being by far the greatest (130 cases or 61 per cent.). The increase for Wales as a whole was 23·5 per cent. Among the decreases, those in Flintshire (12) and Newport (9) are worthy of note.

Compared with 1958 the number of new cases suffering from "other conditions" showed an increase in Breconshire, Carmarthenshire, Denbighshire, Monmouthshire, Merthyr Tydfil, Swansea and Glamorgan. The increase in Glamorgan (374 cases or 60·2 per cent.) was by far the greatest. The increase for Wales as a whole was 17·7 per cent. Among the areas which showed a decrease in the number of cases were Pembrokeshire (4), Cardiff (50) and Newport (23).

With regard to the reasons for the rise in the number of fresh cases classified under the heading of "other conditions", there are probably a number of factors at work, the chief of which is thought to be an improvement in propaganda resulting in less reluctance on the part of the public to seek examination. Many are found not to require treatment. It should be noted too that local variations occur which are influenced by such factors as the existence of seaports, the practice of certain hospitals frequently to refer patients for examination, or again the presence of establishments such as remand homes where a number of routine examinations are carried out. The rise in the number of new cases of gonorrhoea, particularly in Cardiff, is more serious. Not only the United Kingdom, but also many other countries are experiencing a similar increase at present and it is a medico-social problem of considerable complexity. In Cardiff, as elsewhere, much of the increase has been in the teenage group, particularly in girls of 18 and 19.

Main Causes of Death

As shown in Table III, Appendix D, the main causes of death were again malignant diseases, coronary disease, vascular lesions of the central nervous system, other heart diseases and bronchitis.

The number of deaths from coronary disease and angina has again risen but whereas the percentage increase during each of the years 1956, 1957 and 1958 over the figures in the preceding years was 6·5, 7·6 and 6·2, it was only 1·2 in 1959; on the other hand, the percentage decrease in the number of deaths from other heart diseases during each of the corresponding years (1956–58) was 9·1, 5·1, 2·1 and 7·7 in 1959. The combined number of deaths annually from these causes has therefore not varied greatly over the past six years.

There was a small reduction in the total number of deaths from cancer of all sites (5,522), compared with 1958 (5,558); mortality from leukaemia was only a little higher, but that from cancer of the lung and bronchus showed a large increase, 15 per cent. more than in any one of the preceding three years.

Artificial Limb and Appliance Centre

The Welsh Board of Health now provides medical services for the whole of Wales, except limb fitting for North Wales patients which continues to be done at Liverpool. During the year, liaison with surgeons has improved, particularly with regard to pre-amputation consultations, and there has been a marked increase in attendances at limb-training classes.

Public Health Laboratory Service

Owing to recent outbreaks of Q fever in Wales, reported elsewhere (page 62), the Regional Laboratory in Cardiff is investigating this disease, particularly its mode of spread and the incidence of rickettsial endocarditis, of which four cases were identified during the year. Autopsy material from fatal cases was examined but no evidence was found to lead to the suspicion that rickettsial endocarditis is comparatively common in South Wales.

At the beginning of 1959 the Cardiff laboratory investigated an explosive outbreak of neo-natal diarrhoea in St. James Hospital, Tredegar. Of babies at risk, five died. In spite of exhaustive laboratory tests no causative infective agent was identified. Specimens of tissue from the dead babies and of secretions, and other material, from the living babies were examined to see if a virus could be isolated but none was found. At the same time the strains of *E. coli* present in all the babies were identified. None of the known pathogenic O groups was isolated. The laboratory was in the fortunate position of being able to identify precisely all the O groups isolated, and as these were of many different groups no evidence was obtained that the outbreak was caused by a group of *E. coli* not previously incriminated as a cause of gastro-enteritis.

The investigation into the relationship of bakehouses and food poisoning continued. For several years specimens have been collected from the gulleys of the floor of a large bakehouse as a means of sampling the materials being handled in the bakehouse. Nearly one-third of the samples yielded salmonellae including *Salm. paratyphi B* and *Salm. typhimurium.* It was clear that dangerous salmonellae are almost constantly present in bakehouses, and it is surprising that outbreaks of disease are as rare as they are. In the South Wales area where the survey was made only one sizeable outbreak of food poisoning, spread by baker's confectionery, occurred in five years.

The Cardiff laboratory carried out a study of the properties of 114 strains of " anonymous " mycobacteria isolated in the laboratory during the years 1932–1959 in order to consider the classification of these organisms, to improve techniques for their recognition in routine work and to see how strains suspected of causing disease in man differed from the rest.

Trials were also made of combining agents which neutralize the toxicity of silica dust with anti-tuberculous drugs in the treatment of mice subjected to silicotuberculosis. In addition the laboratory continued to assist the Medical Research Council trial of long-term chemotherapy in tuberculosis. The main emphasis is now on cases complicating pneumoconiosis. A sputum survey is being made of the general public in a town in a mining area. The yield of cases positive for tubercle bacilli so far compares favourably with that afforded by mass radiography.

Staphylococci continue to give rise to cross-infection in hospitals and, in addition to the development of sepsis in over 5 per cent. of surgical wounds, many problems arise in maternity hospitals and geriatric units. Staphylococci isolated from hospitals are mostly resistant to penicillin and some other antibiotics, and many belong to a comparatively small number of bacteriophage types. Strains isolated from lesions of patients arriving at casualty departments of hospitals, though more sensitive to penicillin than those isolated from in-patients, showed more resistance to penicillin than would have been expected some years ago. Thus, in a survey in Cardiff, 32 per cent. of strains isolated from out-patients showed a high degree of resistance. An examination of the nasal flora of out-patients yielded little evidence that patients had infected themselves. In such patients, 55 per cent. yielded a negative nasal swab and of the other 45 per cent. who were positive, 18 per cent. harboured a different phage type in the nose. Nasal swabs taken from the normal population showed a great variety of phage types, but again there was more resistance to penicillin than would have been expected some years ago.

The Swansea Public Health Laboratory became a reference laboratory for the diagnosis of toxoplasmosis and a considerable amount of research into the epidemiology and serology of this disease is being carried out. The laboratory also commenced the phage-typing of *Staph. pyogenes.*

XIV

INTERNATIONAL HEALTH

The Health Assembly

The 12th World Health Assembly was held in Geneva from the 12th to the 29th May. The participants included delegations of 80 member states and representatives of two associate members (Nigeria and Sierra Leone). The United Kingdom delegation consisted of Sir John Charles (Chief Delegate); Dr. Wilson Rae (Chief Medical Officer, Colonial Office); Mr. W. H. Boucher (Ministry of Health). Sir Kenneth Cowan (Chief Medical Officer, Department of Health for Scotland), Mr. P. V. Muston and Mr. J. Hegarty of the Ministry of Health and Mr. E. Sniders (Permanent Delegate of the United Kingdom to the European Office of the United Nations) attended as advisers.

Sir John Charles was unanimously elected President of the 12th World Health Assembly and gave his presidential address at the third plenary meeting on 13th May.

The proceedings of the 12th World Health Assembly are reported in full in W.H.O. Official Record No. 95.

Executive Board

Two meetings of the Board were held in 1959. The 23rd Session met from 20th January to 3rd February, and the 24th Session on 1st and 2nd June. On both occasions the meetings were held in Geneva. At the 23rd Session Sir John Charles attended as the member designated by the United Kingdom. Dr. Wilson Rae and Mr. W. H. Boucher attended as alternates.

In May, 1959, the three-year period for which the United Kingdom was entitled to designate a member of the Executive Board came to an end and in consequence there was no one from the United Kingdom at the Board's 24th Session.

The resolutions passed at these two meetings were published in the World Health Organization's Official Records, Numbers 91 and 96 respectively.

The Budget

The 12th W.H.O. Assembly adopted an effective working budget for 1960 of U.S. $16,918,700. The working budget for 1959 was U.S. $14,287,600.

United Kingdom Membership of W.H.O. Expert Advisory Panels on 15th December, 1959

Addiction-producing Drugs.—Dr. M. G. Eggleton, Professor A. D. Macdonald, Mr. L. D. Macleod, Mr. J. R. Nicholls.[1]

Antibiotics.—Professor E. B. Chain (working in Italy), Dr. R. V. Christie.

Biological Standardization.—Dr. D. G. Evans,[1] Professor J. H. Gaddum, Dr. J. H. Humphrey, Dr. D. A. Long, Professor A. A. Miles, Dr. W. L. M. Perry, Dr. A. W. Stableforth.

Brucellosis.—Sir Weldon Dalrymple-Champneys, Dr. A. W. Stableforth.

Cancer.—Dr. G. M. Bonser, Professor D. C. Cappell, Professor A. Haddow, Dr. J. Knowelden, Professor R. Scarff, Dr. A. C. Thackray.

Cardiovascular Diseases.—Dr. D. G. Abrahams (working in Nigeria), Professor J. B. Duguid, Dr. J. N. Morris, Dr. P. Wood.

Cholera.—Dr. C. C. B. Gilmour.

Chronic Degenerative Diseases.—Dr. W. S. C. Copeman, Dr. R. Doll, Dr. J. H. Kellgren, Professor C. B. Perry, Dr. W. Tegner.

Dental Health.—Professor R. D. Bradlaw, Dr. Jean R. Forrest, Dr. A. M. Horsnell (working in Australia), Dr. G. H. Leatherman.

Evironmental Sanitation.—Mr. M. Aziz (Cyprus—working in Lebanon), Mr. R. Johnson, Professor H. D. Kay, Professor G. Macdonald, Dr. O. J. S. Macdonald, Dr. R. J. Macwalter,[2] Sir George McNaughton, Dr. A. Parker, Sir Harold E. Wittingham.

Food Additives.—Sir Charles Dodds, Professor A. C. Frazer.

Health Education of the Public.—Dr. J. C. R. Buchanan, Dr. J. Burton, Miss N. C. Daniels, Dr. G. G. Murphy (working in Uganda), Dr. R. Sutherland, Miss W. M. Warden.

Health Laboratory Services.—Dr. W. D'A. Maycock, Dr. K. B. Rogers, Dr. R. E. O. Williams, Dr. G. S. Wilson.

Health Statistics.—Professor A. Bradford Hill, Dr. D. W. Horn, Dr. W. P. D. Logan, Dr. P. McKinlay, Dr. C. J. Martin, Dr. C. A. L. Myburgh, Professor L. S. Penrose, Dr. A. H. T. Robb-Smith, Dr. Percy Stocks.

Insecticides.—Mr. M. Aziz (Cyprus—working in Lebanon), Dr. J. M. Barnes, Dr. J. R. Busvine[3], Dr. F. P. Coyne, Dr. S. H. Fryer, Dr. R. A. E. Galley, Mr. A. E. H. Higgins, Mr. K. S. Hocking (working in Tanganyika), Dr. H. G. H. Kearns, Dr. J. T. Martin, Dr. E. A. Parkin, Dr. C. Potter, Mr. A. J. Reid (working in Malaya), Mr. C. B. Symes, Dr. V. B. Wigglesworth.

International Pharmacopoeia and Pharmaceutical Preparations.—Mr. F. W. Adams, Dr. H. Davis, Mr. T. C. Denston[4], Professor D. M. Dunlop, Dr. F. Hartley, Dr. T. D. Whittet.

International Quarantine.—Dr. R. Barrett, Mr. W. H. Boucher, Mr. W. Dalgarno, Dr. M. Mackenzie, Dr. M. T. Morgan, Dr. L. H. Murray[5], Dr. P. C. Murray (working in Jamaica), Mr. C. Parry, Dr. P. G. Stock, Sir Harold Whittingham.

Leprosy.—Dr. P. W. Brand (working in India), Dr. J. A. Kinnear Brown[1] (working in Uganda), Dr. R. Cochrane, Dr. E. Muir, Dr. J. Ross Innes.

Malaria.—Mr. M. Aziz (Cyprus—working in Lebanon), Sir Gordon Covell, Dr. J. W. Field (working in the Fed. of Malaya), Sir Neil Hamilton Fairley, Professor P. C. C. Garnham, Dr. G. Giglioli (working in Brit. Guiana), Dr. H. P. S. Gillette (working in Trinidad), Professor G. Macdonald, Dr. J. McArthur, Dr. B. J. Maegraith, Professor H. E. Shortt, Dr. D. B. Wilson (working in Tanganyika), Dr. T. Wilson.

Maternal and Child Health.—Dr. V. Mary Crosse, Professor A. Moncreiff, Professor Wm. C. Nixon, Sir Harry Platt, Dr. Dorothy M. Taylor.

Mental Health.—Dr. J. Bowlby, Dr. H. Craigie, Professor G. R. Hargreaves, Dr. L. T. Hilliard, Dr. Maxwell S. Jones, Professor Sir Aubrey Lewis, Dr. the Hon. W. S. Maclay, Dr. J. R. Rees, Dr. T. P. Rees, Professor T. F. Rodger, Dr. K. Soddy, Professor E. Stengel[6].

Nursing.—Miss O. Baggallay, Miss M. O. C. Bonthron (working in Uganda), Miss D. C. Bridges, Dame E. Cockayne, Miss A. A. Graham, Miss O. F. Griffith, Miss M. B. Powell, Miss E. Stephenson, Miss F. N. Udell.

Nutrition.—Professor E. Cruickshank (working in Jamaica), Dr. H. Cullumbine, Dr. R. F. A. Dean (working in Uganda), Dr. R. Passmore, Professor B. S. Platt, Dr. H. Sinclair, Dr. J. C. Waterlow (working in British West Indies).

Occupational Health.—Dr. I. J. Corbett, Dr. D. Hunter, Professor R. E. Lane, Dr. L. G. Norman, Miss D. Pemberton, Dr. R. S. F. Schilling, Dr. D. Stewart, Dr. H. Stott (working in Kenya), Dr. R. F. Tredgold.

Organization of Medical Care.—Dr. C. M. Fleming, Dr. J. R. Gregory (working in Kenya), Dr. H. M. C. Macaulay, Captain J. E. Stone.

Parasitic Diseases.—Dr. G. C. Ainsworth, Professor J. J. C. Buckley, Dr. H. Fairbairn (living in Union of South Africa), Mr. P. Freeman, Professor P. C. C. Garnham, Dr. G. Giglioli (working in British Guiana), Professor R. M. Gordon, Dr. F. Hawking, Dr. R. B. Heisch (working in Kenya), Dr. C. Hoare (working in Malaya), Dr. R. Kirk, Dr. D. J. Lewis, Sir Philip Manson-Bahr, Mr. P. F. Mattingly, Dr. A. R. McKelvie (working in Kenya), Dr. K. R. S. Morris (working in Uganda), Dr. T. A. M. Nash (working in Nigeria), Dr. J. W. R. Sarkies, Professor H. E. Shortt, Professor J. M. Watson.

Plague.—Mr. S. A. Barnett, Professor P. C. C. Garnham, Mr. G. H. E. Hopkins.

Professional and Technical Education of Medical and Auxiliary Personnel.—Sir David Campbell, Rt. Hon. Lord Cohen of Birkenhead, Sir Harold Himsworth, Dr. R. M. Morris (working in the Federation of Rhodesia and Nyasaland), Professor G. Payling Wright, Sir George W. Pickering, Professor W. S. Walton.

Public Health Administration.—Professor C. F. Brockington, Dr. C. O. B. Brooke, Sir John A. Charles, Sir Kenneth Cowan, Sir Andrew Davidson[7], Dr. F. F. Main, Sir Samuel Manuwa (working in Nigeria), Dr. R. M. Morris (working in the Federation of Rhodesia and Nyasaland).

Rabies.—Dr. I. A. Galloway.

Radiation.—Mr. W. Binks, Sir Ernest Rock Carling, Dr. I. S. Eve, Dr. L. H. Gray, Mr. A. W. Kenny, Dr. J. F. Loutit, Professor W. V. Mayneord, Dr. A. S. McLean[8], Dr. E. C. Pochin, Dr. A. C. Stevenson, Dr. Katharine Williams[8], Dr. F. J. Woodman.

Rehabilitation.—Dr. F. S. Cooksey, Dr. R. Langdale-Kelham.

Trachoma.—Mr. A. J. Boase, Sir Stewart Duke-Elder, Professor Ida Mann (working in Australia), Professor A. Sorsby, Dr. V. Tabone (working in Malta).

Tuberculosis.—Dr. P. M. d'Arcy Hart, Dr. B. W. Anderson, Dr. B. R. Clarke, Dr. I. M. MacGregor,[1] Dr. A. S. Moodie (working in Hong Kong).

Venereal Infections and Treponematoses.—Dr. G. L. M. McElligott[1] (living in Ireland); Dr. G. M. Thomson (working in Hong Kong).

Serology and Laboratory Aspects.—Col. L. W. Harrison.

Virus Diseases.—Dr. C. H. Andrewes, Professor W. I. B. Beveridge, Professor A. W. Downie, Dr. F. Fulton, Dr. L. Grant (working in the British West Indies), Dr. A. J. Haddow (working in Uganda), Professor J. H. Hale (working in Singapore), Dr. L. Hoyle, Dr. A. Isaacs, Dr. F. O. MacCallum, Dr. F. N. MacNamara (working in Nigeria), Professor Wilson Smith, Professor C. H. Stuart-Harris, Dr. G. L. Timms (working in Kenya).

Zoonoses.—Sir Daniel Cabot, Dr. W. C. Cockburn, Dr. E. W. Hurst, Dr. M. G. P. Stoker, Dr. H. Thornton.

References

[1] Attended Expert Committee (same name as that of Advisory Panel concerned).
[2] Attended Joint FAO/WHO Expert Committee on Milk Hygiene.
[3] Attended Expert Committee on Insecticides.
[4] Attended Expert Committee on Specifications for Pharmaceutical Preparations and Sub-Committee on Non-Proprietory Names.
[5] Attended Committee on International Quarantine.
[6] Attended Expert Committee on Mental Health/Virus Diseases (Epidemiology of Mental Disorders).
[7] Attended Expert Committee on Public Health Administration (Local Health Service).
[8] Attended Expert Committee on Radiation (Medical Supervision in Radiation Work).

Western European Union

The Public Health Committee of Western European Union held its 8th session in Edinburgh from the 7th to the 10th April and its 9th session in Toulouse from the 6th to the 9th October. Representatives from the Department of Health for Scotland and the Ministry of Health and Local Government of Northern Ireland were included in the United Kingdom delegations.

Sir Kenneth Cowan was chairman of the 8th meeting of the Committee. During this session it continued its consideration of methods for cancer control. It discussed the report of its working party on cancer statistics which had met in London under the chairmanship of Dr. W. P. D. Logan (General Register Office) on the 27th and 28th January and accepted the working party's recommendation to initiate a comparative study of cancer statistics available in the countries of Western European Union. It had before it reports of the 5th meeting of the sub-committee on the health control of foodstuffs which dealt with possible carcinogenic effects of food additives, and the report of the 3rd meeting of the working party on poisonous substances in agriculture which dealt with possible carcinogenic effects of pesticides. The committee requested delegations to keep it informed of national progress in measures taken against pollution of the atmosphere and to reduce tobacco smoking, as potential causes of cancer. Various technical aspects of poliomyelitis and salmonellosis were considered. The committee reviewed national reports of the activities of other international organizations on the public health aspects of the peaceful uses of atomic energy. It considered a collective report on the measures adopted in each of the member countries to control the publicity given by press and radio to narcotics and medicines and on the regulations regarding the admission of foreign nationals to practise and study medicine. It also undertook preliminary consideration of the public health aspects of a campaign against noise and for the prevention of congenital malformations in diseases of early infancy and the fluoridation of water.

At the 9th meeting the committee devoted a large part of its time to discussion of the proposed transfer of the social activities of Western European Union to the Council of Europe. The committee prepared a memorandum for the Council of Western European Union requesting it in its further consideration of this question to bear in mind that the close and successful collaboration which had been developed between the public health authorities of the seven countries in recent years had been due largely to the limited membership of the committee and to the fact that these countries had attained comparable standards in many fields of public health. The committee felt that the transfer of these activities to a wider and less homogeneous organization would inevitably reduce the value and effectiveness of its work. It made a number of recommendations with the object of ensuring, if the proposed transfer were made, that work and studies of the kind started by Western European Union should continue as effectively as possible under the changed arrangements. Amongst these recommendations were that the specialist sub-committee structure should be preserved and that there should be continued the present practice of holding some meetings away from the Organization's headquarters so that participants can study, on the spot, questions within their competence.

The committee decided to initiate a comparative study of the measures being taken in each of the countries to campaign against noise. It is interesting to record that about this time the Minister announced in the House the setting up of a committee to examine the nature, sources and effects of the problem of noise and to advise what further measures can be taken to mitigate it. The Public Health Committee started its consideration of the prevention of congenital malformations and diseases of early infancy by requesting the United Kingdom delegation to collect any relevant figures which exist in the countries concerned and, after study of them, to put forward proposals for their further investigation. It received the report of the 5th meeting of the working party on the health aspects of civil defence. No further meetings of this working party are at present envisaged and the committee requested the Secretary General to transmit its reports to the North Atlantic Treaty Organization. There was further consideration of certain technical aspects of poliomyelitis and rabies and of the activity of other international organizations on the public health aspects of the peaceful uses of atomic energy.

Council of Europe

The Committee of Experts on Public Health of the Committee of Ministers of the Council of Europe held its 9th session from the 3rd to 5th March and its 10th session from the 17th to the 19th November. The meetings of both sessions were held in Strasbourg.

At its 9th Session the committee decided to draw up an agreement on the exchange of blood grouping sera and requested the Secretary-General to convene a group of experts to meet in London under the chairmanship of

Dr. A. E. Mourant (United Kingdom Blood Group Reference Laboratory) to draw up specifications for these reagents for incorporation in a protocol to be annexed to the proposed agreement. The committee continued its discussion of the draft of an agreement dealing with the duty-free importation on a temporary basis of medical, surgical and laboratory equipment for use in hospitals and other medical institutions. It received a report on medical fellowships from its selection committee. The fellowship programme, which had been introduced in 1957, had been enthusiastically received by member countries and the committee proposed to the Council that the funds allocated should be increased to enable the programme to provide 180 fellowship months in 1960 compared with 140 authorized for 1959. Nineteen fellows came to the United Kingdom under this scheme during the year and four fellowships were granted to doctors in the U.K. for study in Council of Europe countries. In addition, the committee decided to place before the Committee of Ministers a memorandum dealing with a proposed co-ordinated research fellowship for 1960 on the problem of blood transfusion under which three fellows from different countries would study certain aspects.

At its 10th Session the Committee received the report of the London working group proposing a draft protocol of specifications for blood grouping reagents of human origin. The committee decided to extend the draft protocol to cover blood grouping reagents of non-human origin and requested the working group to prepare additional specifications for such sera. In addition, it established a working group to prepare the draft of the text of the proposed agreement on the exchange of blood grouping reagents. The committee approved the latest draft of its proposed agreement dealing with the temporary import free of duty of medical, surgical and laboratory equipment for use on free loan in hospitals and other medical institutions and that the draft be submitted to the Committee of Ministers.

It appointed a supervisor for the 1960 Co-ordinated Research Fellowship on blood transfusion, which had been approved by the Committee of Ministers, and elected its selection committee for the medical fellowship programme for 1960. It examined the working of the agreement for the exchange of war cripples to see whether there were any obstacles which prevented greater use of the agreement than had been made so far. Preliminary consideration was also given to French proposals for a wide-ranging study of the public health aspects of automation. For consideration at future meetings the committee added four new items to its agenda: the possibility of exchange appointments of health personnel between hospitals and laboratories in different countries; a study of methods of providing specialist care other than in hospitals; the post-graduate training of doctors and the training of other health workers; housing policies in their relation to physical and mental health. The United Kingdom delegation accepted the task of preparing an introductory memorandum on the second of these items.

Overseas Visitors to the United Kingdom in 1958 and 1959

World Health Organization Fellowships

The largest group of sponsored visitors to the United Kingdom were holders of fellowships awarded by the World Health Organization. Those who arrived in 1958 numbered 227 and in 1959, 257.

The Ministry, on behalf of the World Health Organization, undertook responsibility for arranging post-graduate study or programmes of appropriate experience and observation for these visitors, with the co-operation of teaching and professional organizations and all sections of the health services. As in previous years, the British Council undertook the financial arrangements on behalf of the World Health Organization, administered English language tests and assisted the visitors with arrangements for accommodation and travel in this country.

More than 50 countries throughout the world were represented. Taking 1958 and 1959 together, the largest national groups came from India (52), Yugoslavia (33), Eire (24), Poland (23) and U.S.S.R. (21). In 1959 Czechoslovakia was represented for the first time, with 11 fellowships in the United Kingdom.

About 70 per cent. of the W.H.O. fellows were medically qualified men and women. The remainder included nurses, midwives, laboratory scientists, dental surgeons, public health engineers, statisticians and other professions.

The majority of these visitors required individually planned programmes in a wide range of subjects. Less than one quarter came to participate in a definite academic course, e.g., for the D.P.H., D.T.M. & H., D.C.H., D.P.M., etc.

The subjects of study ranged over the whole field of medicine and allied interests. In each year roughly 100 were mainly concerned with the various branches of clinical medicine, about 60 or 70 mainly in health administration, about 30 or 40 in laboratory sciences, about 20 in nursing subjects and the remainder in various technologies.

The duration of stay in the United Kingdom varied from a few days to a year and occasionally up to two years.

In addition to the above, a group of about 20 Fellows attended each year a W.H.O.-assisted course on radiation hazards arranged by the Isotope School in Oxford.

CENTO Fellowships

Under H.M. Government's programme for technical aid to member states of the Baghdad Pact (later termed the Central Treaty Organization), 21 fellowship holders came to the U.K. in 1958 and 11 in 1959, i.e., 12 from Iran, 3 from Iraq (in 1958 before Iraq withdrew from the Pact), 9 from Pakistan and 8 from Turkey.

Most of these fellowships were for nine to 12 months, frequently for training in tropical medicine and hygiene, public health administration and public health engineering in connection with malaria eradication programmes. Other subjects included nursing, tuberculosis and health education.

Council of Europe Fellowships

These numbered 10 commencing studies in the United Kingdom in 1958 and 19 in 1959, mostly for fellowships of two or three months' duration and mainly in clinical subjects or nursing.

Other visitors

In addition to the above fellowship schemes, the help of the Ministry was sought by, or on behalf of, many other visitors coming to the country to study medical, nursing and allied subjects under arrangements sponsored by their own governments or other organizations or as independent travellers.

XV

THE ARTIFICIAL LIMB SERVICE

We are living in an age when the expectation of life is better than ever before in the history of the nation. The Registrar General gives the estimated total population of England and Wales as approximately 45,000,000, of whom about 8,000,000 are over the age of 60.

The total number of primary amputees attending the various limb centres during the year was 3,262 and a careful analysis of 2,803 cases whose rehabilitation was completed during the year, showed that 50·9 per cent. were over the age of 60. There are approximately 80,000 amputees in the country made up of 30,000 who lost a limb in two world wars, and 50,000 who have lost one or more limbs in civilian life from the effects of trauma, disease or developmental causes.

Of the new cases fitted during 1959, disease accounted for 67·6 per cent. of all cases, trauma for 26·4 per cent. and congenital deformities for 6 per cent. Males outnumbered females by 2·8 to 1. The following table gives the sex and age distribution.

New Cases Fitted, 1959

Analysis by Sex and Age Group

	Male		Female		Total	Per cent.
	Single	Double	Single	Double		
0-9 years	63	7	41	3	114	4·1
10–19 years ..	99	6	63	2	170	6·0
20–29 years ..	165	7	35	3	210	7·5
30–39 years ..	142	5	42	4	193	6·9
40–49 years ..	178	8	62	3	251	9·0
50–59 years ..	333	20	80	1	434	15·6
60–69 years ..	384	38	163	3	588	20·9
70–79	417	22	215	11	665	23·7
Over 80 years ..	108	2	67	1	178	6·3
	1,889	115	768	31	2,803	

It will be seen that as in previous years most cases occur between the ages of 50 and 80—the major cause of amputation in these groups being peripheral vascular disease and its complications.

The total number of leg cases was 2,794, of whom 2,223 had an amputation of one leg and 117 had amputations of both legs. There were 36 cases with a single congenital or acquired leg deformity requiring a walking prosthesis and seven cases had deficiencies or deformities of both legs requiring such prosthesis. The arm cases numbered 411, and of these 285 had amputations of one arm, four had amputation of both arms, while congenital abnormalities or acquired deformities numbered 124, made up of 113 with unilateral and 11 with bilateral anatomical or physiological defects. A considerable number of the cases with paralysed or partially paralysed arms were referred to the limb service for the fitting of light functional appliances actuated by shoulder, chest or leg movement. The leg amputations outnumbered the arm amputations in the ratio of 8 to 1.

Trauma accounted for amputation of one or both limbs in only 491 or 21·4 per cent. of the leg cases, the important major traumatic causes being industrial accidents, responsible for 30·9 per cent., and traffic accidents for 50·3 per cent. Of the traffic accidents 31 per cent. were to pedestrians and 56 per cent. to drivers or passengers of private vehicles. Many of the latter were motor cycle users. Of the 287 cases with amputations at the arm, trauma accounted for 83·6 per cent., and disease and congenital deformities for 15 per cent. and 1·4 per cent. respectively. Of the 238 cases who lost an arm or part of an arm or hand from injury, 70·6 per cent. were due to industrial accidents and 14·1 per cent. to traffic accidents. Approximately one-third of the arm cases suffered from varying degrees of mutilation of one hand.

Only 938 cases, or one-third of the total, were under the age of 50, and looking at these younger age groups more carefully, we find that trauma accounted for 51 per cent., disease for 33 per cent., and congenital deformities for 16 per cent. Of the 477 cases under the age of 50 who suffered an amputation from trauma, industrial accidents accounted for 44 per cent. and traffic accidents for 41 per cent. Accidents in the home accounted for 4·6 per cent. of the cases in these younger age groups.

Of the 308 cases under the age of 50 who suffered an amputation from disease, 106 cases or 34·4 per cent. suffered an amputation because of malignant disease—many of the amputations being done for some form of sarcoma with a bad prognosis, especially in those where bone was involved. The other diseases contributing to amputation in this group were osteomyelitis 8·4 per cent., peripheral vascular disease 24·7 per cent., poliomyelitis 13·3 per cent.

Congenital defect

Of the 2,803 cases under review there were 166 cases with some form of congenital defect requiring an artificial limb or artificial limb-like prosthesis. Ninety-seven of the cases were male and 69 were female. One hundred and forty-eight of the cases had a single member affected, and 18 cases had two or more members affected; of the latter, 17 cases had 38 limbs affected, two having three limbs involved, and one having all four limbs absent or deformed. Of the total of 187 congenitally deformed or absent limbs only 40 were subjected to surgical amputation either before attendance or after consultation. It is generally accepted that amputation should, if possible, be avoided in the early years of life. Many cases can be very successfully fitted with a prosthesis and natural weight-bearing areas or portions of limbs with some function can often be used to advantage.

It is significant that only 54 per cent. of the congenital cases were referred to a limb centre during the first decade of life, one-sixth of these were seen for the first time during their first year, one-fifth during their second year, and a fifth during the third and fourth years of life. There can be no disagreement about the need to provide children who suffer absence of a lower limb or deformity of a lower limb entailing gross shortening, with some form of walking appliance at an early age if scoliosis and pelvic deformity are to be prevented. Most mentally normal children make some attempt at standing or walking soon after the age of nine months, and it would seem essential to fit some form of weight-bearing appliance as soon as the child makes an attempt at standing and taking its first tentative steps. A child of ten months with the absence of a portion of a leg equivalent to a below knee amputation has been successfully fitted with an appropriate limb, and many have been fitted and enabled to walk with an artificial limb or limb-like appliance before the age of 18 months. If a child has a normal leg on one side the problem of fitting it with a satisfactory prosthesis to enable it to stand upright and learn to walk is not a difficult matter, although regular and periodic review at three- to six-monthly intervals is necessary to check the length, fit and alignment of the appliance.

Opinion, especially in America and Britain, has changed during the last ten years about the problem of how best to handle children born with absence or deformities of their upper limbs. If a child is born with one normal arm it is important to try to prevent that child developing a pattern of living founded only on the use of that arm. It is now quite common to start to fit some form of simple arm prosthesis before the age of two. It is important to get the child accustomed to the wearing of a prosthesis which will enable it to push, pull and grip bi-manually. The full understanding and co-operation of the parents are essential if success is to be achieved, and it is just as important to educate the parents as it is to fit and educate the child. It is interesting to find that young children between the ages of two and three, or even younger, soon learn to use a simple appliance like a split hook activated by shoulder girdle movement, and by its use soon begin to realize that the artificial arm has functional value. It should not be impossible to make such cases fully competent in the use of an artificial arm long before school age. In this category the most difficult cases to treat are the children born without arms or with rudimentary digits at near shoulder level who have been allowed to depend on the use of their toes and feet. If shoulder movement is normal an attempt should be made to fit artificial arms within the first five years of life. It may have to be decided whether the fitting of a single prosthesis will be likely to be more successful than the fitting of prostheses to both sides at the same time. A good deal will depend on the intelligence of the child, the co-operation of the parents and the ability of the occupational therapist in getting the child interested in making progress.

Courses

Two courses for orthopaedic surgeons and senior orthopaedic registrars were held at Roehampton during the year, one in March and one in October, and were well attended. The value of such courses in bringing the surgeons performing the amputations more closely into contact with the work of the limb centres is generally recognized. The lively discussion that takes place during the lecture demonstrations is stimulating to everyone concerned, and the medical officers of the limb service are most grateful for the help they receive from surgeons and hospitals in not only initiating the programme of rehabilitation but in many cases completing it. More than ever it is being realized that full rehabilitation is only possible by a team effort, in which surgeons, nurses, physiotherapists and remedial therapists play a very important part before the prosthesis is fitted. There has been in recent years a definite improvement in the state of the stumps of the patients sent to the centres, and in the general preparedness of the patients physically, mentally and in morale for the effort required in learning to walk with an artificial limb.

In early November a short course for physical medicine consultants, which was also well attended, provided an opportunity for discussing, not only the methods employed in rehabilitating cases at the limb centres, but how these methods could be linked up with rehabilitation going on in other fields.

Many physiotherapists and remedial gymnasts continue to attend the training schools at Roehampton to gain some experience of the methods employed so that in their own hospitals they can help in the work of preparing the amputee towards independence.

Limb Fitting Centres

The long term policy of closer integration of the limb service with the orthopaedic service of the country will be greatly assisted as new limb centres are sited at hospitals with major orthopaedic departments. At the moment much of the limb fitting work is being done in unsuitable office-type buildings not within easy reach of orthopaedic out-patient clinics, but in co-operation with regional hospital boards plans for new centres in hospital grounds are well advanced at Liverpool, Birmingham, Leicester and Portsmouth. There is need for new centres in other towns, and with the help of the regional hospital boards it is hoped that suitable sites for new centres will be found to fit in with their long term hospital building programmes.

It is rarely possible to find sufficient space for new centres at hospitals in the middle of big cities. The medical officers at most of the centres are also engaged in the examination of patients recommended for the supply of invalid tricycles and of war pensioners requiring appliances and surgical boots, and a centre handling 40–50 cases daily occupies approximately 15,000 sq. ft. of which two-thirds must be ground floor space to accommodate the fitting rooms, examination rooms, training school, workshops and stores for equipment. Centres must be well served by public transport and sited near bus stops, as leg amputees, especially in the old age groups, cannot be expected to walk more than a few hundred yards. All these factors have combined in making the finding of suitable sites for new centres no easy problem and progress can only be made by fitting our needs into the broader planning of boards.

Visitors

Visitors from some 20 different countries abroad were welcomed at Roehampton during the year. These included consultants, para-medical personnel and administrators, all concerned with rehabilitation. In addition to visitors from within the Commonwealth, there were many from countries which are becoming more and more aware of the need for a total health service.

Research

During the year steady progress has been made in many directions. Contacts with workers in related fields have been strengthened and help from outside bodies interested in our particular problems has been generously accorded to the research officers.

Much help and advice, including the loan of equipment, have been given by the R.A.F. Research Unit at Farnborough, which has designed and made up an accelerated testing machine for the various ankle units under trial and has also given expert assistance in the use of electronic testing devices. In addition an engineer scientist on the staff of the Imperial College has undertaken to study the question of internal control of artificial arms, and the department has welcomed his attendance at the meetings of the Executive Committee on Research.

An important liaison has been formed through the Committee for Research on Apparatus for the Disabled which the research medical officer and engineer attend as observers. A project of particular interest is the application of external power to the control of artificial arms for the high level amputee, and of appliances to aid those with severely paralysed upper extremities. A working group has been formed based on the Medical Research Council's poliomyelitis unit at Hendon in association with our research workers, and with representation from the Royal National Orthopaedic Hospital, Stanmore, the physiology department of the Middlesex Hospital and the physics department of St. Thomas's Hospital, to study the particular problem of possible external power sources. During the year a visit by our research workers and research workers from the poliomyelitis research unit was made to Paris and to the University of Heidelberg to study similar efforts being made by French and German workers. Certain components used in the Heidelberg pneumatic arm were brought back for testing and critical examination.

The study of energy expenditure as a means of evaluating the performance of artificial limbs is now occupying attention. The assistance of the physiology department of the Middlesex Hospital Medical School has been enlisted and that department is to carry out pilot trials on our behalf.

Close liaison with research workers overseas continued, and the research medical officer was again invited to teach at a course in Copenhagen organized by the Committee on Prostheses and Technical Aids of the International Society for the Welfare of Cripples.

Existing projects continue to be advanced. The pilot trials of limbs for disarticulation of the hip and hindquarter amputations based on a design produced by the Canadian Research Department have been completed and extensive field trials at selected provincial centres are being organized. In addition, field trials of a stabilising knee unit for above-knee limbs developed by one of our contractors in conjunction with the research officers are about to commence. This idea has proved almost universally acceptable subjectively and objectively in pilot trials, and if the wider field trials are equally successful it is hoped that the unit will eventually be supplied to all above-knee cases to whom it might be of assistance. Experiments continue with various types of ankle units allowing movement similar to that of the human joint, and a means of applying interrupted friction to the knee joint of above-knee legs, as distinct from constant friction, is being evaluated. It is hope that the latter device may bring about a saving in the expenditure of energy. A friction device for the limbs of patients with a disarticulation at the knee is undergoing tests.

The idea of total bearing in fitting lower limb stumps, both above and below knee, has emerged from the stage of theory and its clinical exploitation is being developed. The co-operation of surgeons at Roehampton and at accident units in the provinces has been secured to try to provide stumps specifically suited surgically for total bearing. Closure of the end of the sectioned bone, and the fixation of muscles by the suture of opposing tendons over the end of the bone are the main features of the technique involved. It is hoped that in total bearing a degree of end bearing will always be possible so that by its sensory feed back the patient will have all the advantages it offers.

In April, 1959, the research officers contributed to a symposium on bio-mechanics at the Institute of Mechanical Engineers in London and this is to be repeated in 1960 at the Birmingham Branch of the Institute.

During the year several important contractual arrangements with the limb makers have been negotiated. It is hoped that our contractors will play a greater part in furthering the work of the research department, and to this end development contracts have been arranged with some of them. The major contractors are to set aside personnel in their factories who will concentrate on expediting work for the research department. It has also been agreed in principle that any device developed by one contractor which proves of value will be made available for incorporation in a limb made by another contractor, providing this is physically possible, and the medical officer in charge of the patient thinks it is indicated.

Once again the Service is greatly indebted to the Standing Advisory Committee and to its Executive Committee under the chairmanship of Sir Walter Mercer and Mr. H. Jackson Burrows respectively for much help, encouragement and advice.

XVI

DRUG THERAPY AND PHARMACY

The Therapeutic Substances Act, 1956

Part I and Part II of the above Act control respectively (i) the manufacture and importation for sale of certain therapeutic substances specified in the Act or brought under its control by regulations as substances of which the purity and potency cannot be adequately tested by chemical means, and (ii) the sale, supply, dispensing and administration of penicillin and other substances, e.g., various antibiotics and substances, such as cortisone and corticotrophin, brought under control by Regulations which appear to the Minister (acting jointly with the Health Ministers for Scotland and Northern Ireland and after consultation with the Medical Research Council) to be capable of causing danger to the health of the community if used without proper safeguards.

The introduction of new substances for the treatment of disease which fall within the scope of this legislation is an almost continuous process and this, together with scientific developments in methods of biological testing, necessitates frequent addition to or amendment of the existing regulations. Since the issue in 1952 of consolidated regulations applicable to Part I of the Act, it has already been found necessary to issue amendment regulations on no less than four occasions, namely in 1953, 1954, 1956 and 1957. Regulations under Part II of the Act were made in 1957, 1958 and the year under review. Earlier Regulations had been made under legislation now replaced by this part of the Act.

The drafting of amending legislation of this sort demands constant and close co-operation between the Ministry's medical staff and that of the Biological Standards Department of the National Institute for Medical Research, as well as consultation with manufacturers. During the year, progress was made in this way with the drafting of further amendment regulations under both parts of the Act which may be expected to come into force during 1960. This work is an extension of the co-operation between the two departments which continued throughout 1959 in connexion with the surveillance of the safety and potency of the products of manufacturers licensed under Part I of the Act.

Medicines and Legislation

Present legislation is diverse, complicated, confusing and, possibly, inconsistent or even, in some respects, inadequate. To examine the existing situation, to obtain the views of bodies and organizations that are involved and, in the end, to make considered recommendations, a working party has been set up with a membership drawn from the staff of the Ministry of Health, the Department of Health for Scotland, the Home Office, the Ministry of Health and Local Government for Northern Ireland and Parliamentary Counsel. It remains to be seen whether any changes that are proposed for altering the present legislation should be confined to simplification and be aimed at administrative convenience, or whether more fundamental alterations are desirable. The report of the Working Party will be submitted to the Minister of Health.

The Standing Joint Committee on the Classification of Proprietary Preparations

An account of the work of this Committee, which was appointed in 1954 by the Central and Scottish Health Services Councils to continue the work of the Joint Committee on Prescribing, was given in the last annual report. In 1959 the Committee advised that the categories in which proprietary preparations were classified should be revised in the sense that the original six, designated by numbers, should be replaced by five designated by letters as follows:—

Category N.—New drugs of proved value which are not yet " standard ". (The term " standard " is intended to mean preparations described in the British Pharmacopoeia, British Pharmaceutical Codex and British National Formulary.) (This replaces the former category 1.)

Category S.—All preparations whose active therapeutic constituents are identical with or modifications of those of " standard " preparations; elegant preparations of drugs in Category N; mixtures of drugs in Category N with drugs in Category S. (This replaces the former categories 2, 3 and 4.)

Category P.—Preparations which are not " standard " for which prima facie evidence of therapeutic value is presented, but which the Committee cannot accept as of proved therapeutic value without further evidence, which must be provided within a period stipulated by the Committee. (This is a new category.)

Category O.—Preparations not " standard " which in the committee's view have not been proved of therapeutic value. (This replaces the former category 5.)

Category H. Preparations which are a combination of drugs in Category O with those in Categories N, S or P. (This replaces the former category 6.)

The Committee on the Cost of Prescribing (Chairman, Sir Henry Hinchcliffe) in its Interim Report of May, 1958, recommended the issue to all practitioners of a " comprehensive prescribing handbook " which should contain the comparative costs of standard and proprietary preparations together with other information which might help doctors in their prescribing. This recommendation has been accepted and the one section of the looseleaf handbook which was distributed to all doctors in May, 1960, consisted of an up-to-date list of proprietary medicines classified by the Standing Joint Committee in categories O and H. This list supersedes the comparable list sent separately to doctors in 1957.

Allowing for changes in classification and for the deletion of some 2,300 preparations (mostly discontinued products) from lists previously issued, the classification of 4,615 proprietary preparations currently available is as follows:

Category	N	S	P	O	H	Total
Number of Preparations (at 1st May, 1960)	92	3,815	6	240	462	4,615

There is therefore a proportion, amounting to about 15 per cent. of the proprietary preparations classified by the Standing Committee, which, in their opinion, practitioners should be discouraged from prescribing because they contain drugs of questionable therapeutic value.

In recommending this revision the Standing Committee stated that, although they subscribed to the view already expressed in the Second Interim Report of the Joint Committee on Prescribing (1950) that " there should be no absolute restriction on the prescribing by a general practitioner of any drug which, in his opinion, was necessary for the treatment of his patients ", they felt that practitioners should be discouraged from prescribing preparations in Categories O and H and that it would be reasonable to call upon a practitioner to justify his action in so doing if the cost of his prescribing is being formally investigated.

Pharmacological Developments

The year 1959 witnessed no lessening of activity, but rather an intensification of effort, in the field of fundamental and experimental pharmacological research. Indeed, as a scientific discipline, pharmacology today is a subject of steadily increasing stature. At the same time, developmental and project research with a medical objective in view has been continued with even greater vigour, chiefly at the initiative of the pharmaceutical industry.

Current developments in antibiotics are of interest in this connection. For some years now one of the accepted procedures has been for investigators painstakingly to examine one mould after another to ascertain whether it elaborated any antimicrobial moiety. Given a successful finding the substance concerned would be separated and purified so far as possible, tested against the known organisms responsible for human disease and observed in the treatment of laboratory infections. If, after all this scrutiny, it promised both efficacy and safety, it might be tried out, cautiously at first, in clinical practice. There still seems, in fact, to be no lack of natural antibiotic substances that can be subjected to this searching procedure. Disappointingly, on the other hand, it is only a select few that emerge from this exhaustive examination with credentials that make them both effective and safe.

As might be expected, other manoeuvres have been used as a shorter route to therapeutic success. Chief among these has been the molecular modification of therapeutically proven antibacterial agents. In this way different penicillins have been produced, some of which have distinctive characteristics. It is in this very field, however, that a significant advance has now been recorded. By original and skilful chemical research in a British commercial laboratory the essential nucleus of the penicillin molecule has been isolated and produced on a substantial scale. To this nucleus other chemical radicals are now being added and the resulting compounds are being investigated pharmacologically, bacteriologically and therapeutically. As yet it is too early to be certain of the contribution this will ultimately make to clinical practice. Meanwhile there is no doubt about the outstanding quality of this work in terms of chemical and bacteriological research.

Again in the field of antibiotics is the discovery of griseofulvin. This is derived from several species of *Penicillium*. Originally it showed great promise as a systemic fungicide for the control of certain plant diseases. Then it was found to have the almost unique property of combating certain human dermatophytoses, including ringworm, being given to the patient for this purpose not locally but by mouth. So far it seems to be relatively non-toxic. Moreover, the fact that from oral administration it interferes with fungal invasion of the skin opens up great possibilities in dermatological research.

The study of new diuretics has also been very productive. Most of these are derivatives of the original chlorothiazide which was mentioned in this report for 1957. Some of these analogues are unquestionably more powerful but, unfortunately, this in itself is no particular virtue and the same hazards seem to attend the use of all these compounds in medical practice. Quite distinct among diuretics, however, is spironolactone. The mineralo-corticoid aldosterone was identified and its composition determined in the biochemical laboratories of a British medical school. Since the effect of this substance on the body was, amongst other things, antidiuretic, a search was then instituted for a steroid of similar molecular configuration which would act towards aldosterone as a blocking agent and which would then, in itself, be diuretic. Among the substances investigated in this way spironolactone is the first to be put to extensive clinical use. As yet its properties and therapeutic limitations are far from being elucidated but it seems likely to be a product of considerable promise.

The promotion of pharmaceuticals for treating disorders of the mind proceeds with undiminished vigour. Numerous new drugs have been offered for this purpose, many of them coming into the category of mono-aminoxidase inhibitors, and favourable reports on them abound in the literature. Often, however, these highly encouraging accounts are associated with improperly controlled trials or even uncritical clinical studies. Drug treatment has undoubtedly a large and beneficial part to play in the management of psychiatric disorders, but in this branch of medicine, where clinical conventions are so varied and the response so subjective, it is imperative that therapeutic trials should be impeccably designed and the findings examined with objective detachment. The detection, too, of side-effects and toxic reactions must never be neglected where, commonly, treatment may need to be continued indefinitely.

Pharmaceutical Developments

During 1959, pharmaceutical trends were shown by the proceedings of the British Pharmaceutical Conference at Bournemouth and the 19th Congress of Pharmaceutical Sciences at Zurich, at both of which the Department's Pharmaceutical Section was represented.

The business of the British Pharmaceutical Conference was opened by the chairman, Mr. H. Treves Brown, an industrial pharmacist, with an informative address on " Patents in Pharmacy and Medicine ". The Symposium Session on " Modification of Duration of Drug Action " dealt with modern developments of modifying the action of a drug in order to produce (*a*) a more rapid therapeutic effect; (*b*) a longer action with less frequent administration; or (*c*) a safer or less disturbing therapeutic effect less liable to be accompanied by other actions or side-effects. The " forward look " in pharmaceutical research was illustrated by the 36 scientific papers from the laboratories of schools of pharmacy and of pharmaceutical firms. The subjects included the relationship between stereochemistry and activity of analgesics, the synthesis and study of neuromuscular blocking agents, the storage and testing of sterilized catgut, and new methods of pharmaceutical analysis. As before, the proceedings of the Conference were published as a supplement to the Journal of Pharmacy and Pharmacology.[1]

In the Symposium Session of the 19th Congress of Pharmaceutical Sciences, developments in the stabilisation and storage of medicaments were discussed, by reference both to the requirements of modern pharmacopoeias and to the experience of practising pharmacists.

The discussion included the use of stabilising agents, the properties of materials of containers, especially plastics and rubber, and the determination of storage conditions through tests for stability of the finished preparations. Speakers emphasized the importance of these features of modern pharmaceutical practice, because of the need to ensure that preparations of the potent but often unstable drugs now in use should reach the patient in suitable condition. Papers in the general session, including several from research workers in the United Kingdom, dealt with a range of subjects, including methods of pharmaceutical analysis, the correlation of accelerated and field storage tests and the formulation of pharmaceutical products. An interesting communication related to the development at the School of Pharmacy, Chelsea College of Science and Technology, of a method for separating optically active compounds by forming " footprints " of their molecular arrangement in specially prepared adsorbents. This use of selective adsorbents, on which preliminary communications have been published,[2,3] may be important in studying the structure and activity of drugs such as analgesics with stereochemical structures.

A development in pharmaceutical standardization was the publication at the end of 1959 of a new edition of the British Pharmaceutical Codex, which provided the first official standards in this country for over fifty substances. Many of the formulae of the new Codex were being included in the British National Formulary 1960.

A significant pharmaceutical change was the requirement that aqueous eye-drops must, if the medicament will withstand this treatment, be heated to 98° to 100° for half an hour in their final containers. If the medicament is insufficiently stable, the drops must be prepared aseptically. These precautions are essential since drops may be instilled into an eye with a damaged surface, and serious consequences could result from bacterial growth. The increased use of milliequivalents for expressing the strength of electrolytes in intravenous perfusion fluids was recognized in the Codex by the inclusion of an appendix on this subject. In addition to other useful information, tables in this appendix gave (i) the weights of salts containing 1 mEq. of specified ions, and (ii) the ionic concentration (mEq. per litre) of intravenous fluids of the Pharmacopoeia and Codex.

An advance in the international standardization of pharmaceutical products was the publication in 1959 of a Supplement to the First Edition of the International Pharmacopoeia. This contained 94 further monographs, bringing the total in the Pharmacopoeia to 529 and providing international standards for a number of relatively new drugs and preparations. The Supplement included a revised appendix on International Biological Standards and International Biological Reference Preparations which took account of all changes made up to 31st January, 1959. Because of the growing importance of physico-chemical methods of characterizing drugs, a centre for authentic chemical substances used as standards of reference in such methods has been set up at the Apotekens Kontrollaboratorium, Stockholm. The Supplement listed the substances available at this centre during 1959, and explained that further substances may be added to the list on the advice of the WHO Expert Committee on Specifications for Pharmaceutical Preparations.

Shortly after the publication in 1959 of the report of the Medical Research Council's working party on sterilization by steam under pressure a symposium on the operation of sterilizing autoclaves was arranged at the School of Pharmacy, Brighton Technical College. This was well attended by a representative audience of persons interested in this subject, including hospital pharmacists and laboratory workers, teachers and manufacturers. The principal speakers, three of whom were members of the working party, provided a valuable amplification of matters considered in the report and, with speakers in the subsequent discussion, considered the respective responsibilities of medical, pharmaceutical and other staffs in schemes for sterilization in hospitals. The proceedings of the symposium were published[4], as a contribution to the present critical examination of sterilizing methods.

References

[1] *J. Pharm. Pharmacol.*, 1959, **11**, Supplement.
[2] Beckett, A. H. and Anderson, P., 1957, *Nature*, Lond., **179**, 1074.
[3] Beckett, A. H., and Anderson, P., 1959, *J. Pharm. Pharmacol.*, **11**, 258T.
[4] The Operation of Sterilising Autoclaves. Report of a Symposium, 1959. The Pharmaceutical Press, London.

XVII

THE BLIND AND THE PARTIALLY SIGHTED

England and Wales, 1959

The Blind

STATISTICAL TRENDS

At 31st December, 1959, the Blind Register stood at 96,949, and the number newly registered during the year was 11,594. Compared with the previous year, these figures showed an increase of 474 and 796 respectively. The actual numbers for the year in the different age groups are shown in Table I.

Age distribution

The increase in the number on the Blind Register is largely due to an increase by 858 in the age groups over 70 years, offset by a decline in most other age groups, except that there was an increase of 44 in the age group 5–20.

Of the increase by 796 in the newly registered, 720 were concentrated in the age groups over 70. Most other age groups showed a slight increase, but a reduction of 30 was recorded for the age group 5–15. The trend for infants shows little change over the last three years. Against 25 for 1957 and 35 for 1958 there were 31 new registrations under one year during 1959. The corresponding figures for children of 1 to 4 years were 104, 87 and 98.

ANALYSIS OF CERTIFICATES OF BLINDNESS

During the year, 11,296 certificates were submitted for analysis; 926 were excluded as incomplete or inadequate, leaving a total of 10,370. In 9,725 (93·8 per cent.) the same cause of blindness was shown in the two eyes, and in 645 (6·2 per cent.) the two eyes were blinded by different causes.

DEGREE OF BLINDNESS AND AGE DISTRIBUTION

The totally blind (those having no perception of light) accounted for 2·9 per cent. of all cases; perception of light only was present in 10·1 per cent. of cases; vision up to and including 3/60 Snellen was recorded for 58·3 per cent. whilst 28·7 per cent. had vision better than 3/60. This distribution does not differ substantially from that observed in recent years.

Those aged 70 years and over accounted for 72·5 per cent. of the total of cases, 33·7 per cent. being aged 70–79 years, 34·0 per cent. 80–89 years, and 4·8 per cent. aged 90 or over. It is noteworthy that, as in previous years, the age group of 90 years and over contributed only slightly less than all the age groups up to 40 (4·8 per cent. against 5·0 per cent.).

CAUSES OF BLINDNESS

Analysis of the 9,725 certificates with the same cause of blindness in the two eyes (Table II) gave no substantial differences from the data recorded in previous years. Affections of the retina continue to account for some 40 per cent. of

TABLE I

Age distribution of Registered Blind Population and of the newly registered

Age group (years)	0–1	1–4	5–15	16–20	21–29	30–39	40–49	50–59	60–64	65–69	70–79	80–84	85–89	90 and Over	Not Known	Total
Blind population at 31st December, 1959																
Males	9	202	1,098	513	1,183	2,325	3,630	5,205	3,539	3,981	9,638	4,872	2,869	990	9	40,063
Females	—	128	856	353	789	1,663	2,744	4,949	3,938	5,355	16,625	9,485	6,729	3,251	21	56,886
Persons	9	330	1,954	866	1,972	3,988	6,374	10,154	7,477	9,336	26,263	14,357	9,598	4,241	30	96,949
Registered during the year ended 31st December, 1959																
Males	22	56	53	42	62	121	188	329	314	418	1,409	849	425	106	4	4,398
Females	9	42	47	17	24	79	122	375	401	596	2,558	1,537	996	381	12	7,196
Persons	31	98	100	59	86	200	310	704	715	1,014	3,967	2,386	1,421	487	16	11,594

all cases, and affections of the lens for nearly 25 per cent. Some 80 per cent. of all cases of blindness are of undetermined aetiology, some 13·0 per cent. are aspects of general disorders and some 5 per cent. are caused by pre-natal influences (including genetic factors). Amongst the clinical entities some 50 per cent. were contributed by the two " senile " disorders—senile macular degeneration and senile cataract—whilst nearly 30 per cent. were contributed by three other affections: glaucoma, myopic chorioretinal atrophy and diabetic retinopathy. The overall distribution thus remains very much as last year.

TABLE II

Causes of blindness, 1959

Classification by site, aetiology and clinical entity

	Number	Percentage
(*a*) Diagnosis by site of affection :		
Eyeball in general	1,524	15·7
Conjunctiva	14	0·1
Cornea	208	2·1
Lens	2,282	23·5
Uveal tract	1,067	11·0
Retina	4,050	41·6
Optic nerve, optic pathway, and cortical visual centres ..	489	5·0
Vitreous	6	0·1
Ill-defined	85	0·9
	9,725	100·0
(*b*) Diagnosis by aetiology :		
Infectious diseases (excluding transmitted maternal infection)	46	0·5
Trauma	47	0·5
Poisonings*	23	0·2
Tumours	100	1·0
Systemic diseases not elsewhere classified	1,231	12·7
Pre-natal influences	513	5·3
Aetiology undetermined	7,765	79·8
	9,725	100·0
(*c*) Causes of blindness by clinical entity :		
Senile macular lesions	2,698	27·8
Senile cataract	2,139	22·0
Glaucoma	1,208	12·4
Myopic chorioretinal atrophy	811	8·3
Diabetic retinopathy	672	6·9
Optic atrophy	489	5·0
Vascular retinopathy	293	3·0
Retinitis pigmentosa and allied conditions (including macular dystrophy)	189	2·0
Iritis and iridocyclitis of undetermined origin	185	1·9
Congenital cataract	103	1·1
Retinal detachment (including myopic)	98	1·0
Congenital syphilis (excluding 1 case of optic atrophy) ..	42	0·4
Retrolental fibroplasia	17	0·2
All other causes	781	8·0
	9,725	100·0

* Including cases of retrolental fibroplasia, on the assumption that the administration of oxygen is the precipitating cause of this affection.

Some individual causes

Optic atrophy. The multitude of causes of optic atrophy are brought out in Table III, which gives the causes observed in the 489 cases recorded. These figures do not differ substantially from those recorded last year; some 45 per cent. of all cases of optic atrophy remain undetermined in origin, and more than 15 per cent. are caused by intracranial tumours.

TABLE III

Optic atrophy: by aetiology

		Number recorded
Tumours:		
Intracranial	78	
Adnexa	2	
Metastatic	2	
Site undetermined	3	
	—	85
Pre-natal influences:		
Genetic, established or presumed	11	
" Congenital "	39	
Congenital syphilis	1	
	—	51
Vascular diseases		62
Neurological disorders		
Multiple sclerosis	25	
Other affections	14	
	—	39
All trauma		12
Syphilis, acquired		8
Tuberculosis		6
Poisonings		3
Anaemia and other blood diseases		3
Meningococcal meningitis		2
Other specified affections		5
Undetermined		213
		489

Retrolental fibroplasia. In 1959 there were recorded 17 cases of retrolental fibroplasia, against 14 in 1958, 19 in 1957 and 47 in 1956. Of these 17 cases, five were over the age of 5; those aged 0–2 years contributed nine cases as against four in 1958, 10 in 1957 and 25 in 1956. (The actual distribution of these 17 cases was: Males: 0–1 year, five cases; 1–2 years, one case; over 5 years, two cases; Females: three cases in each age group 0–1, 2–3 and over 5 years.)

THE BLIND UNDER FIFTY YEARS OF AGE

Children (0–14 years)

Frankly congenital defects accounted for some 60 per cent. of the total of 188 children under 15 years. Presumedly acquired optic atrophy was responsible for some 15 per cent. of cases, and retrolental fibroplasia for some 9 per cent. of the total.

TABLE IV

Major causes of blindness at different age groups

1. Children under 15 years of age :—		
Congenital defects :		
Cataract	23	
Optic atrophy	35	
Other structural anomalies including nystagmus	55	
	—	113
Optic atrophy, presumed or known as acquired		25
Retrolental fibroplasia		17
Retinoblastoma		7
Retinitis pigmentosa and allied conditions including macular dystrophy		4
Retinal detachment		2
All others		20
		188
2. The young and middle-aged (15–49 years) :—		
Optic atrophy		115
Myopia :		
Chorioretinal atrophy	59	
Detachment	9	
	—	68
Retinitis pigmentosa and allied conditions		67
Diabetic retinopathy		67
Congenital defects :		
Cataract	33	
Other structural anomalies	33	
	—	66
Iritis and iridocyclitis		20
Detachment, presumably non-myopic		19
Glaucoma		15
Interstitial keratitis		8
Ophthalmia neonatorum		5
Vascular diseases		3
All others		121
		574

There were no cases of interstitial keratitis or of ophthalmia neonatorum.

The young and middle-aged (15–49 years)

This age group contributed 574 cases. As in last year's analysis, the major causes of blindness were concentrated in some five categories: optic atrophy, myopia, abiotrophic defects, diabetic retinopathy, and congenital defects. These accounted for over two-thirds of all cases.

All ages under 50

There are no substantial changes on last year. Optic atrophy remains the outstanding single cause. Congenital and abiotropic defects (including myopia), and diabetic retinopathy continue to be the major problems.

The Partially Sighted

STATISTICAL TRENDS

As can be seen from Table V, the number on the register at 31st December, 1959, was 23,038, an increase of 666 over the previous year, spread over almost all age groups. The new registrations at 4,712 show an increase of 306, spread mainly in the age groups over 20. Nearly 73 per cent. of the partially sighted population are over the age of 50, as against nearly 85 per cent. of those newly registered.

TABLE V

Age distribution of registered Partially Sighted Population and of the newly registered

	0–1	2–4	5–15	16–20	21–49	50–64	65 and over	Total
Partially sighted population at 31st December, 1959								
Males	4	54	1,275	603	1,662	1,268	3,965	8,831
Females	4	37	895	442	1,323	1,893	9,613	14,207
Persons	8	91	2,170	1,045	2,985	3,161	13,578	23,038
Registered during the year ended 31st December, 1959								
Males	8	34	146	25	229	261	1,064	1,767
Females	3	23	105	13	140	375	2,286	2,945
Persons	11	57	251	38	369	636	3,350	4,712

ANALYSIS OF CERTIFICATES OF PARTIAL SIGHT

A total of 4,702 certificates were submitted, of which 514 were rejected as incomplete or inadequate, leaving 4,188 for analysis. Of these, 3,823 (91·3 per cent.) showed the same cause in the two eyes, and in 365 (8·7 per cent.) the cause of partial sight was different in the two eyes.

DEGREE OF PARTIAL SIGHT

The proportions in the different categories of partial sight were substantially the same as last year. Those having vision better than permitting blind certification, but not more than 6/60, constituted 24·0 per cent. of the total; vision of 6/36 was recorded in 25·3 per cent., whilst vision of 6/24 and 6/18 was noted in 36·3 per cent.; vision as good as 6/12 or more was present in 14·4 per cent.

CAUSES OF PARTIAL SIGHT

As can be seen from Table VI (which refers to the same cause operative in the two eyes), the partially sighted population as a whole shows substantially the same distribution of causes as seen in the blind population: senile cataract, senile macular degeneration, myopic chorioretinal atrophy, glaucoma and diabetic retinopathy—the five major affections which account for 77·4 per cent. of the newly registered blind—accounted for 73·6 per cent. of the newly registered partially sighted. It is, however, noteworthy that, as last year, cataract—and not the senile macular lesions—figures as the first cause amongst the partially sighted, and that glaucoma is less significant than myopia. As the partially sighted are on the whole a younger population than the blind, these differences are not unexpected.

TABLE VI

Causes of partial sight, 1959

Classification by site, aetiology and clinical entity

	Number	Percentage
(*a*) Diagnosis by site of affection :		
Eyeball in general	513	13·4
Conjunctiva	6	0·2
Cornea	121	3·2
Lens	1,198	31·3
Uveal tract	529	13·8
Retina	1,215	31·8
Optic nerve, optic pathway, and cortical visual centres	141	3·7
Vitreous	5	0·1
Ill-defined	95	2·5
	3,823	100·0
(*b*) Diagnosis by aetiology :		
Infectious diseases (excluding transmitted maternal infection)	14	0·4
Trauma	18	0·5
Poisonings*	16	0·4
Tumours	17	0·4
Systemic diseases not elsewhere classified	407	10·6
Pre-natal influences	398	10·4
Aetiology undetermined	2,953	77·3
	3,823	100·0
(*c*) Causes of partial sight by clinical entity :		
Senile cataract	1,066	27·9
Senile macular lesions	782	20·5
Myopic chorioretinal atrophy	446	11·7
Glaucoma	300	7·8
Diabetic retinopathy	216	5·7
Congenital structural defects including nystagmus	142	3·7
Optic atrophy	141	3·7
Congenital cataract	105	2·7
Vascular retinopathy	91	2·4
Retinitis pigmentosa and allied conditions (including macular dystrophy)	70	1·8
Iritis and iridocyclitis of undetermined origin	59	1·5
Congenital syphilis	23	0·6
Retrolental fibroplasia	10	0·3
All other causes	372	9·7
	3,823	100·0

* Including cases of retrolental fibroplasia, on the assumption that the administration of oxygen is the precipitating cause of this affection.

Causes of Partial Sight in Relation to Age

The distribution of causes in the younger people is shown in Table VII. It will be seen that in children under 15 the congenital defects are the outstanding cause with myopia as the largest single cause, followed by retinitis pigmentosa and allied conditions (including macular dystrophy) and retrolental fibroplasia. In the young and middle-aged (those aged 15–49 years) a similar pattern is repeated, but diabetic retinopathy figures with almost as many cases as the abiotrophic lesions. In all age groups under 50 the problems are therefore almost entirely medical rather than surgical.

TABLE VII

Major causes of partial sight at different age groups

1. Children under 15 years of age:—		
Congenital defects:		
Cataract	49	
Optic atrophy	22	
Other structural anomalies including nystagmus	95	
	—	166
Myopic chorioretinal atrophy		25
Retinitis pigmentosa and allied conditions (including macular dystrophy)		11
Retrolental fibroplasia		10
Optic atrophy, presumed or known as acquired		6
Iritis		4
Corneal lesions: unspecified		5
All other causes		29
		256
2. The young and middle-aged (15–49 years):—		
Congenital defects:		
Cataract	31	
Optic atrophy	7	
Other structural anomalies including nystagmus	28	
	—	66
Myopic chorioretinal atrophy		76
Optic atrophy, presumed or known as acquired		38
Retinitis pigmentosa and allied conditions (including macular dystrophy)		33
Diabetic retinopathy		29
Glaucoma		12
Interstitial keratitis		11
Iritis and iridocyclitis		9
Retinal detachment (including 2 cases of known myopic detachment)		8
Corneal lesions: unspecified		11
All other causes		57
		350

SOME GENERAL OBSERVATIONS

The partially sighted are not a very homogeneous group. It has been seen that 14·4 per cent. of all those registered as partially sighted had vision of 6/12 or more. Amongst those affected by the same cause in the two eyes almost 50 per cent. of those with vision of 6/12 or more (Table VIII) were noted by the examiners as patients who will not be blind; actually, as the individual certificates showed, many of these patients had undergone successful cataract operations.

TABLE VIII

The partially sighted by the degree of visual defect

Vision:	6/36 and less	6/24 and 6/18	6/12 and more
All cases with known degree of vision: Proportion aged 60† years and over	75·8	82·2	77·6
Blindness from the same cause in the two eyes: Percentage distribution of the major causes (causes giving more than 5 per cent. of cases in any category):			
Senile cataract	22·3	32·2	38·8
Senile macular degeneration ..	24·5	20·4	7·2
Myopic chorioretinal atrophy ..	14·2	10·0	7·0
Glaucoma	5·4	8·4	15·1
Diabetic retinopathy	6·8	4·9	3·9
All other causes	26·8	24·1	28·0
	100·0	100·0	100·0
Prognosis:			
Will be blind	64·4	55·2	34·4
Will not be blind	20·6	24·3	49·8
Uncertain	15·0	20·5	15·8
	100·0	100·0	100·0
History of operation in cataract cases:			
None	75·9	59·8	45·7
Incomplete	21·3	32·0	39·6
Complete	2·8	8·2	14·7
	100·0	100·0	100·0

† In the corresponding table in the Report for 1958 (Table X, p. 222) the figure 60 should read 70.

The age distribution of this group with relatively good vision does not differ substantially from the groups with poorer vision, but the causes show distinct differences, for cataract—frequently treated successfully—dominates with some 40 per cent. of all cases. In contrast, in those with vision of 6/24 and 6/18, the incidence of cataract is lower, and a higher proportion have had no operation. Both these trends are still more marked in the groups with the poorest vision, 6/36 or less.

As can be seen from Tables I and V, dealing with the newly registered, the age group 5–15 years, which contributes only 0·86 per cent. of the blind, accounts for 5·3 per cent. of the partially sighted. The high rate of registration as partially sighted during school life suggests that where registration leads to definite action, such registration is readily sought.

XVIII

SERVICES AVAILABLE TO THE ELDERLY

The estimated mid-1959 population of England and Wales was 45,386,000, including 5,369,000 (11·8 per cent.) persons aged sixty-five years or more. Nearly two million, the majority being women, were aged seventy-five years or more. A similar picture is to be seen in other countries with well developed social and medical services but in Britain the rate of increase in the number and proportion of old people has been comparatively rapid and in the really advanced ages elderly women far outnumber the men. Professor Medawar[1] has drawn attention to the fallibility of predicting population changes but there seems little doubt that the total number of elderly people will increase over the next two decades by a further two million. This does not necessarily mean that the amount of ill health and chronic sickness obtaining now will be experienced in the future for it may well be that the improving standards of living and working conditions, and the increasing opportunities for leisure, will introduce a higher level of health in old age.

The existence in a community of a large and growing number of old people can create strains and tensions which appear formidable and these become aggravated by such factors as smaller families, dispersal and weakening of family ties, increasing opportunities for employment of women and a belief that the State should accept more responsibility for its dependants. It has been said that " An increase in living standards has been purchased by mobility of labour and the loosening of family ties ".[2] It is generally agreed that the right attitude to an aging population is one which aims to integrate the elderly with the life of the community, and convinces the remainder that the elderly are assets rather than liabilities.

Ninety-six per cent. of old people live at home and most of these are well and active, but there is always a small minority who for reasons of mental or physical frailty make heavy demands on the available services. Those living alone are always vulnerable for so often they exist without any effective human contacts and, even with elderly married couples, the breakdown of one can produce an unmanageable crisis for both. It is often said that old age is an attitude of mind and that those with well developed intellectual qualities maintain their vigour and prove the most socially acceptable. " The complexities of old people's needs are matched only by the complexity of the means and agencies available for dealing with them ",[3] but it is the general practitioner who is in the best position to detect the earliest signs of decline. He finds that his elderly patients need a high rate of consultation, that few require hospital admission but that he becomes increasingly involved with those who are just beginning to fail, socially as well as medically. To prevent or retard the consequences of infirmity he develops a preventive outlook and is aware that his success is dependent on his knowledge of the other services available and on his use of them. The care of the elderly who need assistance is an exercise in co-operation, and the general practitioner is a key figure in the local team.

Housing

It is well known that many of the elderly are unsuitably housed. They may be remaining in houses which have become too big for their physical limitations or where the amenities are inadequate or so badly sited that they are unable to make full use of them. The Rowntree Committee[4] recommended that five per cent. of all dwellings, whether private or municipal, should be suitable for and available to old people and an increasing proportion of new housing, usually in the form of bungalows or flats, is of this type. It is thought that the older person would be able to retain his independence far longer in the smaller suitably designed dwelling, particularly where a warden is appointed to a group of such dwellings. Thomson[5] has said: " Steep stairs can limit the ability to leave the home, and busy streets can limit places to visit. Lack of a bath or a piped supply of hot water may affect personal and domestic cleanliness ". The rehousing of old people in areas remote from their former environment presents its own problems and Droller[6] has given warning of the intense loneliness experienced during the day and of the comparatively high incidence of senile dementia and other illnesses among those transferred. A number of voluntary organizations and a few welfare authorities have developed " boarding out " schemes;[7] although the numbers involved are quite small the benefits can be great. In recognition of the fact that the health of old people does not usually remain static and that some in the course of time require rather more help, the concept of building a small welfare home in proximity to a group of old people's dwellings is beginning to gain ground. A wide variety of housing schemes is being devised and undoubtedly this emphasis can prove of vital importance; it enables the elderly to retain their independence and it relieves some unnecessary pressure on existing welfare accommodation.

Domiciliary Services

The main problem presented by an aging population is that of infirmity rather than illness, resulting sometimes in immobility with all its social consequences. Local surveys have suggested that about 10 per cent. of old people at home are housebound through infirmity, including some who are bedfast. Some of the elderly seem to be existing in isolation while others are proving an immense burden to be borne by their immediate relatives and to some extent by their neighbours. The local authority services are stretched to, and in some areas beyond, their limits and in distributing his resources the administrator has to " choose between a person who is adequately looked after, with very great strain, by a family and another who has no family ".[3] The home help service enables many quite frail people to maintain their independence, and its contribution has a far greater effect than that solely of domestic duties. In Rotherham[8] the home helps provide regular visitors, evening and night services, domiciliary meals and laundry. Experience of this scheme combined with the local home nursing, chiropody and occupational services suggests that the pressure on welfare accommodation and on the hospitals can be relieved by the development of well organised domiciliary services. The washing and drying of clothing and bedding is an onerous task for most people, and for old people particularly heavy; its importance in the welfare of old people was stressed in an Edinburgh survey,[3] and many local authorities and voluntary organizations have developed schemes to meet this need. Modern disinfecting and laundry equipment was installed in the treatment centre at Islington and in 1958 this plant cleansed 1,300 articles of clothing and bedding in addition to providing a similar service for the adjoining borough of Holborn. A personal cleansing service is also provided at the same centre. More of the time and responsibilities of the home nurse is being devoted to the care of elderly sick patients. She is concerned not only with acute illness but with chronic sickness often complicated by social breakdown or mental confusion. An important part of her responsibility is to encourage and instruct relatives in the care and nursing of their elderly sick, and the loan of simple nursing equipment and of such items as mattresses, walking aids, wheel chairs and hoists can prove invaluable to the home nurse, the patient and the relative.

Elderly patients are still admitted to hospital in a state of malnutrition and their response to proper diet is often dramatic. Malnutrition often results from the patient being unable or unwilling to purchase sufficient food or to prepare proper meals. Many local voluntary organizations have developed a mobile meals service which sets out to provide a hot mid-day meal for such persons, often housebound. It is usually available only on a limited scale and a comparatively small number benefit but it is considered to be an aid to maintaining health. Many of the elderly become housebound and immobile by reason of painful and deformed feet, and the approval of chiropody services under Section 28 of the National Health Service Act, 1946, will undoubtedly make a substantial contribution to health and happiness. Chiropody will become available at local authority clinics, in some instances at the chiropodist's premises and, when necessary, by means of domiciliary visits.

In spite of the variety of agencies already concerned with the care of old people, some local authorities feel that a few of their health staff should be specially designated for this work in order to achieve the best results. In Bristol health visitors are appointed with a special responsibility for the elderly; in Walsall a scheme was started in 1955 with the appointment part-time of three nurses who in the following twelve months paid 2,749 visits, advising on the prevention of illness and accidents, diet, other available services, and sometimes assisting with bathing and other toilet procedure. The St. Pancras Association for the Care of the Aged started ten years ago and now employs five full-time nurses. A few local authorities have established advisory health clinics with the object of detecting early and unsuspected disease, maintaining health and giving advice on social problems. These, such as the clinics at Teddington, Dagenham and Salford, are in no way intended to replace the responsible work of the general practitioner but recognize the fact that some old people need the kind of attention which demands much time and investigation, and aim to give relief to the general practitioner with whom they work in close co-operation. Such clinics are a form of preventive medicine, and Tunbridge[9] has said: " We must begin to think preventively about the diseases of the latter half of life as we have done in regard to infectious fevers ".

These statutory services need the support of voluntary effort, and invaluable help is being given by individuals and by voluntary organizations. There are more than 1,500 local old people's welfare committees in England and Wales. Visiting is an important feature of their work and there has been a considerable development of clubs and day centres to combat the apathy and loneliness of old age. Holiday schemes, radio repair service, library service and the mending of clothes may also be part of their practice.

A reorientation of the mental health services away from hospital care and towards community care will mean a considerable expansion of the domiciliary services already provided by the local authorities. More people, including elderly sufferers, will be living at home and with relatives or in hostels; they will remain under the care of the general practitioners and there will need to be the closest liaison between them, the local authority services and the hospitals.

Welfare Services

Welfare officers increasingly act as a link between the other local services, including the voluntary organizations, which are concerned with old people. They receive and consider applications for admission to residential homes, and their authorities have a permissive power to assist persons substantially and permanently handicapped by illness or injury by arranging for the adaptation of their homes to help them to maintain their independence. The demand for residential accommodation for those in need of care and attention not otherwise available to them is very great; in most areas there is a waiting list and it is found that the average age of the applicants and their degree of infirmity are steadily rising. More ground floor accommodation, or its equivalent by means of lifts, is clearly needed and the advantages of some staff with nursing experience are clearly indicated. A report on 195 residents in welfare accommodation in the Lancaster area[10] showed that nearly half were aged eighty years or more and that the average age on admission was seventy-five years. These homes are expected to cater for those who need a lot of assistance and to retain those who are temporarily ill as well as those who are not expected to live more than a few weeks and who would not benefit from hospital admission. Since the end of the war more than 1,100 " small homes " have been opened, including 159 new homes built for the purpose. The pressure on welfare accommodation is increasing and there is no doubt that some are caring for chronic sick patients who, if hospital admission could be arranged, should be transferred. It is also considered that some homes are admitting old people who do not require care and attention and who could live independently with the assistance of the domiciliary services if suitable housing were available.

Hospitals

More of the patients in the medical and surgical wards, including the orthopaedic wards, and in the out-patient departments are elderly. Response to treatment is slower than in younger patients and discharge is often delayed for sociological reasons. Some of the patients become long-term cases who require constant nursing attention with medical supervision. Ninety-five geriatric units have now developed within the former chronic sick wards of hospitals in the main hospital centres, two of them being in teaching hospital groups. It is hoped that plans of new general hospitals will include the admission wards of a geriatric unit within their orbit. The hospital geriatric service to be fully effective needs to work in partnership with the domiciliary and with the welfare services. Some areas have developed admirable co-ordination which suggests that a shortage of beds is not necessarily the main problem. The Sunderland Geriatric Unit[11] was established in 1950; there were in the previous year 573 beds into which were admitted 331 patients, and the average length of stay was 632 days. The number of beds was reduced to 491 and, in 1958, there were 3,518 admissions and the average length of stay was 47 days. Godber[12] has said that " No geriatric service can be really effective unless it is run as a safety valve for a service mainly of home care ". All geriatric units are concerned with the importance of ensuring that the patient after recovery and rehabilitation can be discharged to suitable conditions; the longer the patient remains in hospital the more difficult it is to secure this discharge, and the successful geriatric physician is aware of the need to keep in close contact with the relatives and the local authority services. The geriatric unit is an active part of the hospital service and not merely a depository for the chronic sick beset by social problems. The value of temporary admissions to relieve relatives and of "follow-up" clinics is often reported and there could be advantage in linking the short-stay psychiatric units for elderly patients and the long-stay annexes with the geriatric units, for the mental state is often influenced by physical lesions.

References

[1] Medawar, P. B., 1959. Reith Lectures.
[2] Dalzell-Ward, A. J. Lecture for Central Council for Health Education.
[3] Gordon Cecil, Thomson, J. G., and Emerson, A. R., 1957, *Med. Off.*, **98**, 19 and 35.
[4] Old People. Report of Survey Committee, 1947. O.U. Press.
[5] Thomson, W. O., 1959, *Med. Press*, **CCXLII**, No. 23, p. 477–480.
[6] Droller, H., 1959, *Med. Press*, **CCXLI**, No. 8, p. 162–168.
[7] "Boarding-Out Schemes for Old People" National Old People's Welfare Council. Ref. No. 573.
[8] Donaldson, R. J. and Mrs. R. E. Whales, 1956, *Med. Off.*, **96**, 93.
[9] Tunbridge, R. E., 1958. Report of Ninth National Conference of National Old People's Welfare Council.
[10] Farquhar, R. W., 1958, *J. Roy. Soc. Health*, **78**, 824.
[11] Woodford-Williams, E., 1959, Personal Communication.
[12] Godber, G. E., 1956, *Practitioner*, **177**, 5.

XIX

RECENT DEVELOPMENTS IN UROLOGY

There is historical evidence to show that urology was recognized as a specialty in ancient times. One version of the oath of Hippocrates states " I will not use the knife, even on sufferers from stone, but will give place to such as are craftsmen therein ". Until a hundred years ago treatment of disease of the genito-urinary system was confined to treatment for stone, stricture and venereal disease.

The dawn of modern urology rose some 80 years ago. Many of the operations, now so successfully performed on the genito-urinary tract, had been thought out and even attempted before the turn of the century. In 1869 Simon of Heidelberg performed the first nephrectomy yet by 1888 Sir Henry Thompson, who was one of the first to confine his surgical skill to urology, could find reports of only 14 nephrectomies. In 1874 Billroth performed the first cystectomy for tumour of the bladder. In 1880 the first nephrolithotomy was reported by Sir Henry Morris. The first plastic operation on the dilated renal pelvis was reported by Küster in 1892 and in the same year Cabot reported his work on the ureter. The mortality rate at this time was high and progress was held in check pending technical innovations. Those that were most important were asepsis, anaesthesia, visualization of the urinary tract and adaptation of discoveries in the fundamental sciences. Recent advances, both diagnostic and therapeutic, have only been made possible by the development of antibiotics for the control and prevention of urinary tract infection, of techniques of modern anaesthesia which enable patients safely to be submitted to complicated operative procedures, by the effective counter-action of surgical shock and haemorrhage by resuscitation and by radiology.

DIAGNOSTIC ADVANCES

A most important factor in the development of modern urology was visualization of the urinary tract. Perhaps the greatest step forward was the development of the cystoscope by Max Nitze in 1879 which paved the way toward precision in urological diagnosis. The now routine investigative techniques of cystoscopy, intravenous pyelography, catheterisation of the ureters and retrograde pyelography may be supplemented in a number of ways.

Cine-radiography, with image intensification, is used in special urological departments in conditions where motion in relation to time and place is important. It has great potentialities for the future as the radiation dose is greatly reduced and it can be incorporated in a closed television circuit.

Renal angiography has a limited application in the clarification of equivocal findings; for example, in cases of congenital renal abnormalities and in the differential diagnosis between tumour and cyst. In hypertension of suspected renal origin it is an essential method for the detection of abnormalities of the renal artery which have not been elucidated by more simple procedures.

Percutaneous renal puncture and biopsy are becoming increasingly important as diagnostic and prognostic measures especially in patients with pyelonephritis, with hypertension of possible renal origin and in cases of acute renal failure where improvement gained after haemodialysis is not maintained.

Biochemical tests to determine renal function have been used for many years. With increasing interest in endocrine and metabolic diseases, particularly in relation to the parathyroid and adrenal glands, chemical determinations of blood are becoming increasingly important. Recurrent renal stones without skeletal upset are the most frequent manifestations of hyperparathyroidism, a fact that has recently been recognized.

Estimations of calcium, phosphatase and phosphorus are important in suspected parathyoid disease and in carcinoma of the prostate, though in the latter disease the recently developed exfoliative cytological and smear methods of diagnosis of tumours of the genito-urinary tract and prostatic biopsy are being used to supplement the biochemical investigations.

Determinations of sodium, potassium, chlorides and sulphates have become increasingly useful in determining the exact functional state as knowledge of the retention and excretion of these ions in disease has been gained. These investigations are important in the pre- and post-operative management of patients.

The determination of nuclear sexing is now recognized as of fundamental importance in its bearing on male infertility.

THERAPEUTIC ADVANCES

Renal calculus. Hyperparathyroidism as a cause of recurrent kidney stones has been mentioned; removal of the parathyroid adenoma or excess parathyroid tissue is the method of prevention. Surveys of the late results of operations for renal calculi have shown a high recurrence rate especially after nephrolithotomy. This may be due to debris, ulceration or metaplastic change of the epithelium or stagnation in a dilated calyx. Removal of the affected portion of the kidney by partial nephrectomy under antibiotic cover has reduced the possibility of recurrence.

Recently attempts have been made through diet and drugs to alter the biochemical conditions of the urine so that precipitation of stone-producing substances is no longer possible. Oestrogens, aluminium hydroxide gel, aspirin and salicylamide have been used. Some of these drugs have undesirable side effects and require careful control. Long term results are as yet unknown.

Renal tuberculosis. There has been a radical change in the outlook of patients suffering from genito-urinary tuberculosis in the last 12 years. Streptomycin, para-amino-salicylic acid and isoniazid have a specific action against tuberculosis; at least two drugs should be given at any one time. These, combined with early and accurate diagnosis, have almost supplanted surgery in the early case. Treatment remains lengthy and follow up is essential. Surgery is more commonly used to correct obstruction; nephrectomy is still the operation of choice in advanced unilateral disease. Partial nephrectomy and more recently renal cavernotomy under antibiotic cover are suitable for the more localised type of lesion. Severe contracture of the bladder can be overcome by the use of an intestinal graft to enlarge it.

Bladder tumours. The treatment continues to depend on surgical, electro-surgical and radiotherapeutic measures, alone or in combination, after assessment by cystoscopy, bimanual pelvic examination and biopsy. The benign papilloma is usually treated by electrocoagulation or electro-excision transurethrally unless the size and position of the tumour require an open operation. Repeated treatment and follow-up are essential. Papillary carcinoma can be treated in this manner provided the growth is superficial and of low malignancy.

Supplementary irradiation is usually given in the infiltrating and highly malignant tumours. This may be carried out by implantation into the tumour area of radium, radon seeds or of one of the radioactive isotopes. Partial cystectomy may be used in a small group and total cystectomy is often curative in diffuse non-infiltrating growths. The insertion of radioactive isotopes in the form of solids or fluids into the lumen of the bladder and external irradiation with supervoltage X-rays are still in the experimental stage. Carcinoma of the bladder still constitutes a formidable challenge to the urologist; it should only be treated in the first instance in a centre where all special facilities are available.

Urinary diversion. When continuation of bladder function is no longer compatible with life or with comfort the urine may be diverted by transplantation of the ureters into the colon or an isolated loop of ileum. The indications are certain congenital abnormalities causing incontinence, trauma, contracture of the bladder and malignancy. The bowel becomes the urinary reservoir or conduit; in the former case biochemical disturbances may occur and the upper urinary tract may become adversely affected. Urinary diversion is therefore only performed when simpler measures are not efficacious, but is of increasing use in the palliation of late recurrences of uterine as well as vesical growths.

Prostate.—Marked advances have occurred because of modern ideas of pre- and post-operative care, control of infection, decompression of the bladder, administration of parenteral fluids and anaesthesia.

The indications for surgery in prostatic hypertrophy are based upon urological investigation. Various routes, the suprapubic, the retropubic, the perineal and the per-urethral, are available for removing the obstructing prostate. In this country most urologists prefer the open operation for the larger obstructions and many are using the retropubic approach as advocated by Millin in 1945. There is a growing awareness of the difference between acute and chronic forms of retention and their complications. Whereas in the former immediate operative treatment may often be carried out safely, the latter requires more careful biochemical assessment and correction before surgical relief of the obstruction is attempted. Median bar formation and bladder neck sclerosis are best dealt with by the per-urethral route.

Carcinoma of the prostate. During the last two decades the value of oestrogen therapy or bilateral orchidectomy in the management of inoperable carcinoma of the prostate has received general acceptance. Before this therapy was developed few patients with prostatic carcinoma survived 5 years; now 36 per cent. outlive that period. Recently attention has been directed to the influence of the adrenal and pituitary hormones on the stimulation of prostatic carcinoma. It is too early to assess the results of adrenalectomy and hypophysectomy.

ARTIFICIAL KIDNEY

Although the concept of the artificial kidney is not new, little clinical progress was made until Kolff, working in Holland during the second world war, produced a practical machine. Although designs differ the principle of the machines is similar. Heparinised blood from the patient is circulated through a cellophane tube immersed in a bath of dialysing fluid. Molecular and ionic exchange takes place between the blood and the fluid. Haemodialysis is indicated in situations where rapid removal of circulating toxic substances is required, provided they are in a diffusible state. It is of use in removing exogenous toxins such as salicylates, bromides, thiocyanates and phenobarbitone.

The chief indication is however the removal of endogenous toxins in acute renal failure and the correction of the electrolyte state in the oliguric or anuric phase resulting from conditions such as shock, trauma, pregnancy and acute nephritis, after adequate conservative treatment has failed. On occasions haemodialysis is life saving and in other circumstances it is a useful adjunct to clinical management. Dialysis does not affect the underlying cause of the renal failure and therefore improvement in chronic renal disease is only temporary.

Permanent destruction of both kidneys or the sole functioning kidney presents an interesting problem to the urologist in the research field. Renal transplantation experiments are being carried out and the day may come when such transplantations become a practical proposition in treatment.

CONCLUSION

The general aspects of urology must be considered. The report of the British Association of Urological Surgeons on " The Place and Scope of Urology as a Speciality " (1959) states that in a large general hospital disease of the genito-urinary tract accounts for 20–25 per cent. of all the surgical work. It is probable that much of the urology is at present being carried out by general surgeons, with a special interest in this field. Special centres and departments for urology have been established and a number of surgeons, all of whom have had a good all round general surgical training, devote their entire surgical skill to urology.

The extent to which separate urological departments have developed has previously been a matter for the surgeons themselves. All the special departments within surgery have had to demonstrate that they have something to give, over and above what can be achieved in an ordinary general surgical department. There can be no disputing the success of the small number of specialized departments which now exist. The real problem is therefore the extent to which there should be further development. Available statistics do not distinguish departments of urology from the earliest years of the hospital service. The first year in which that distinction was made was 1950 but the first year in which an estimate was available was 1951 when 1,053 beds were allocated, the number of discharges and deaths was 16,236 and the number of annual out-patient sessions was 7,679. In 1958 the relevant figures were 1,218 beds, 27,237 discharges and deaths and 7,559 annual out-patient sessions. There has been a substantial increase in the amount of work done in these departments.

It has been claimed that some of these special units find much of their time taken up with reparative work and this alone would suggest that their number is insufficient. It seems likely that the trend will be toward an increase in the number of special departments, although it may not yet be practicable to segregate all surgery of the genito-urinary tract in this way. The advantages of much more readily available consultative facilities in this special surgical field are becoming more widely recognized. Most major hospital centres are likely to develop such departments before long even if some of the younger surgeons working in them still continue to do their share of general surgery as well as urology.

The use of the artificial kidney calls for consideration on somewhat different lines. The number of beds for which this apparatus is required is not very large, but the small number of special centres which have this apparatus now take cases from so large an area that they are becoming progressively overburdened. Rapid increase is not likely because the specialized team is even more important than the specialized apparatus and time is required for its establishment. It seems likely that a wider geographical distribution and increased use of this apparatus will be seen in the near future.

APPENDIX A

Tables of Vital Statistics: England and Wales

I

Population of England and Wales, 1801—1959

Year	Population: Males	Females	Persons
1801	4,254,735	4,637,801	8,892,536
1851	8,781,225	9,146,384	17,927,609
1901	15,728,613	16,799,230	32,527,843
1911	17,445,608	18,624,884	36,070,492
1921	18,075,239	19,811,460	37,886,699
1931	19,133,010	20,819,367	39,952,377
1941	17,228,000	21,515,000	38,743,000
1951	21,044,000	22,771,000	43,815,000
1952	21,110,000	22,845,000	43,955,000
1953	21,206,000	22,903,000	44,109,000
1954	21,288,000	22,986,000	44,274,000
1955	21,389,000	23,052,000	44,441,000
1956	21,517,000	23,150,000	44,667,000
1957	21,648,000	23,259,000	44,907,000
1958	21,744,000	23,365,000	45,109,000
1959	21,885,000	23,501,000	45,386,000

Note.—1801 to 1931 : Census population.
1941 : Estimated mid-year civilian population.
1951 onwards : Estimated mid-year home population (i.e., including armed forces stationed in England and Wales).

Population estimates shown above for years 1951 to 1953 have been revised in the light of final data from the 1951 Census, and therefore differ from estimates shown for these years in previous volumes.

II

England and Wales : Births, Birth Rates, Still birth Rates, Deaths, Death Rates, Infant Mortality Rates and Neonatal Mortality Rates, 1936 to 1959

Year	Number of Live Births(1) (1936–1950 Annual Averages)	Live Birth Rate per 1,000 Living(2) (1936–1950 Mean Annual Rates)	Still birth Rate per 1,000 Total Live and Still births (1936–1950 Mean Annual Rates)	Number of Deaths(3) (1936–1950 Annual Averages)	Death Rate per 1,000 Living(4) (1936–1950 Mean Annual Rates)	Infant Mortality Rate per 1,000 Live Births(5)	Neonatal Mortality Rate per 1,000 Live Births(5)
1936–1940	608,330	14·7	38·5	513,155	12·5	55·3	29·2
1941–1945	669,269	15·9	30·5	499,403	12·8	49·8	26·0
1946–1950	780,933	18·0	24·0	500,128	11·8	36·4	21·1
1951 ..	677,529	15·5	23·0	549,380	12·5	29·7	18·8
1952 ..	673,735	15·3	22·7	497,484	11·3	27·6	18·3
1953 ..	684,372	15·5	22·4	503,529	11·4	26·8	17·7
1954 ..	673,651	15·2	23·5	501,896	11·3	25·4	17·7
1955 ..	667,811	15·0	23·2	518,864	11·7	24·9	17·3
1956 ..	700,335	15·7	22·9	521,331	11·7	23·7	16·8
1957 ..	723,381	16·1	22·5	514,870	11·5	23·1	16·5
1958 ..	740,715	16·4	21·5	526,843	11·7	22·5	16·2
1959 ..	748,501	16·5	20·8	527,651	11·6	22·2	15·9

(1) The births are the numbers registered in years prior to 1939 and the numbers of occurrences from 1939 inclusive.

(2) Live birth rates for years 1939–1949 are based on total population including armed forces and mercantile marine at home and abroad. For 1950 onwards they are based on home population.

(3) Deaths include those of non-civilians registered in England and Wales throughout.

(4) Death rates are for civilians only from 3rd September, 1939, for males, and from 1st June, 1941, for females, to 31st December, 1949. For 1951 onwards they are based on home population.

(5) Based on related live births prior to 1957.

III

England and Wales, Deaths (All Causes), 1959, and rates 1957-1959 by sex and age

	Death rates per 1,000 living						Number of deaths	
	1957		1958		1959		1959	
	M.	F.	M.	F.	M.	F.	M.	F.
Under 1 year*	25·8	20·3	25·3	19·6	24·5	19·8	9,454	7,175
1–	1·04	0·90	0·99	0·77	1·00	0·81	1,391	1,070
5–	0·48	0·34	0·49	0·31	0·49	0·33	818	533
10–	0·44	0·30	0·39	0·24	0·39	0·29	721	512
15–	0·91	0·45	0·83	0·35	0·94	0·37	1,400	532
20–	1·15	0·54	1·07	0·54	1·14	0·53	1,593	751
25–	1·19	0·86	1·17	0·80	1·13	0·79	3,331	2,324
35–	2·50	1·92	2·43	1·80	2·42	1·78	7,483	5,682
45–	7·51	4·56	7·40	4·50	7·23	4·36	22,928	14,380
55–	22·3	11·2	21·9	10·9	21·8	10·8	52,025	30,530
65–	54·0	30·9	54·3	30·9	53·6	30·5	75,128	62,655
75–	119·9	84·2	124·6	87·5	122·2	86·3	72,003	90,060
85 and over	226·8	199·2	242·6	215·6	240·0	215·4	21,603	41,569
All ages	12·3	10·7	12·4	11·0	12·3	11·0	269,878	257,773

* Per 1,000 live births.

IV

England and Wales: Deaths from Principal Causes, 1954–59

Cause of Death (classified by 1955 Revision of International List)	Number of Deaths registered in England and Wales					
	1954	1955	1956	1957	1958	1959
Tuberculosis, respiratory (001–008)	7,069	5,837	4,853	4,249	3,999	3,474
Tuberculosis, other (010–019) ..	828	655	522	535	481	380
Syphilitic disease (020–029) ..	1,206	1,163	1,150	1,072	1,041	958
Diphtheria (055)	8	12	3	4	8	—
Whooping cough (056)	139	87	92	87	27	25
Meningococcal infections (057)	259	205	189	184	145	159
Acute poliomyelitis (080).. ..	112	241	114	226	129	66
Measles (085)	45	174	28	94	49	98
Other infective, etc., diseases (rdr 001–138)	1,079	1,055	1,067	1,026	981	973
Malignant neoplasm:						
Stomach (151)	14,050	14,088	13,875	13,917	14,112	14,076
Lung, bronchus (162, 163) ..	16,264	17,199	18,097	19,028	19,820	21,063
Breast (170)	8,395	8,526	8,591	8,622	9,022	8,770
Uterus (171–174)	3,827	3,844	3,921	3,912	4,115	4,003
Other malignant and lymphatic neoplasms (rdr 140–203, 205) ..	45,399	45,459	45,911	46,144	46,349	46,671
Leukaemia, aleukaemia (204) ..	2,160	2,224	2,315	2,394	2,386	2,534
Diabetes (260)	3,028	3,291	3,242	3,137	3,315	3,193
Vascular lesions of nervous system (330–334)	72,142	74,152	74,487	73,669	76,177	75,150
Coronary disease, angina (420) ..	67,844	71,670	75,776	77,176	84,041	84,922
Hypertension with heart disease (440–443)	12,353	13,154	13,033	12,592	12,283	11,375
Other heart disease (410–416, 421–434)	82,945	83,525	81,308	76,228	77,395	71,837
Other circulatory disease (444–468)	22,527	23,360	23,210	22,180	23,795	23,572
Influenza (480–483)	1,811	2,983	2,626	6,716	2,401	7,862
Pneumonia (490–493, 763) ..	18,876	21,816	23,220	23,562	24,575	27,340
Bronchitis (500–502)	25,788	28,993	29,909	27,097	29,396	29,051
Other diseases of respiratory system (470–475, 510–527) ..	5,432	5,717	5,559	5,344	5,273	5,049
Ulcer of stomach and duodenum (540, 541)	5,478	5,517	5,342	5,029	4,898	4,563
Gastritis, enteritis and diarrhoea (543, 571, 572, 764)	2,304	2,361	2,193	2,288	2,375	2,376
Nephritis and nephrosis (590–594)	5,098	4,742	4,679	4,195	4,078	3,685
Hyperplasia of prostate (610) ..	4,334	4,090	3,852	3,645	3,577	3,505
Pregnancy, childbirth, abortion (640–689)	446	405	374	333	328	290
Congenital malformations (750–759)	4,493	4,563	4,575	4,930	4,890	4,911
Other defined and ill-defined diseases	45,288	46,287	45,348	43,694	42,926	42,885
Motor vehicle accidents (E810–E835)	4,589	4,923	5,036	4,898	5,439	6,026
All other accidents (E800–E802, E840–E962)	10,956	11,249	11,269	11,000	11,438	11,278
Suicide (E963, E970–E979) ..	5,043	5,000	5,282	5,316	5,298	5,207
Homicide, operations of war (E964, E965, E980–E999)	281	297	283	347	281	324
All causes	501,896	518,864	521,331	514,870	526,843	527,651

V

Deaths and death rates from Principal Infective Diseases, 1940–59

Diseases (1955 Int. Classn. Nos.)	1940–* 1944	1945–* 1949	1955		1956		1957		1958		1959	
	Mean annual death rate per million population all ages		No. of deaths	Death rate	No. of deaths	Death rate	No. of deaths	Death rate	No. of deaths	Death rate	No. of deaths	Death rate
Diphtheria (055)	48	8	12	0	3	0	4	0	8	0	—	—
Dysentery (045–048)	5	2	40	1	33	1	22	0	32	1	33	1
Gastro-enteritis (571, 764)	109	98	943	21	771	17	787	18	758	17	768	17
Influenza (480–483)	198	88	2,983	67	2,626	59	6,716	150	2,401	53	7,862	173
Measles (085)	18	11	174	4	28	1	94	2	49	1	98	2
Meningococcal infections (057) ..	36	10	205	5	189	4	184	4	145	3	159	4
Poliomyelitis, acute, including late effects (080, 081)	3	9	270	6	137	3	255	6	154	3	87	2
Post-abortive and puerperal sepsis (651, 680–684)	13	6	104	2	80	2	81	2	84	2	73	2
Scarlet fever (050)	3	1	2	0	1	0	3	0	4	0	1	0
Smallpox (084)	0	0	—	—	—	—	2	0	1	0	—	—
Tuberculosis (respiratory) (001–008)	563	459	5,837	131	4,853	109	4,249	95	3,999	89	3,474	77
Tuberculosis (other forms) (010–019)	113	76	655	15	522	12	535	12	481	11	380	8
Typhoid and paratyphoid fevers (040, 041)	2	1	14	0	7	0	8	0	4	0	5	0
Typhus and other rickettsial diseases (100–108)	0	0	—	—	—	—	—	—	—	—	1	0
Whooping cough (056)	31	18	87	2	92	2	87	2	27	1	25	1

* Excluding non-civilian males from 1940 to 1949 inclusive, and non-civilian females from mid-1941 to 1949 inclusive.

VI

England and Wales: Standardized mortality ratios (all ages) and death rates per million population at ages under 15 years from certain diseases, 1901–1959

Period	Standardized mortality ratios (base years 1950–1952 taken as 100)											Death rates per million population at ages under 15 years						
	Tuberculosis (all forms) 001–019	Syphilis 020–029	Typhoid and paratyphoid fevers 040, 041	Meningococcal infections 057	Cancer 140–205	Diabetes mellitus 260	Diseases of heart 410–443	Influenza 480–483	Pneumonia (all forms) 490–493, 763	Peptic ulcer 540–542	Suicide E970–E979	Scarlet fever 050	Diphtheria 055	Whooping cough 056	Poliomyelitis 080, 081	Measles 085	Rheumatic fever 400–402	Diseases of heart 410–443
1901–1910 ..	649	—	23,581	—	—	156	—	254	—	—	147	271	571	815	—	915	56	132
1911–1920† ..	541	—	8,926	246	—	162	—	605	—	90	120	123	437	554	13	838	54	117
1921–1930 ..	362	—	2,729	157	—	154	—	345	—	99	136	64	298	405	11	389	56	88
1931–1939† ..	245	—	1,180	343	97	176	—	222	—	110	142	46	290	197	11	217	43	60
1940–1949† ..	196	150	387	355	98	129	91	90	125	102	100	7	112	111	11	62	23	28
1945† ..	200	138	262	210	97	125	87	42	112	102	93	7	67	79	4	80	26	32
1946† ..	178	138	285	187	97	113	89	81	110	96	104	3	40	91	5	22	18	25
1947† ..	179	125	158	188	98	106	95	50	120	95	104	3	23	99	33	69	19	19
1948† ..	165	110	255	103	98	95	86	18	91	91	110	2	14	80	8	33	22	24
1949† ..	149	107	169	99	99	99	97	80	105	93	109	2	7	55	29	30	17	20
1950	119	102	83	96	100	104	101	55	91	96	102	1	4	41	33	22	17	17
1951	103	104	115	101	100	104	106	222	114	105	101	1	2	46	8	30	9	12
1952	79	94	102	103	100	92	94	24	95	99	97	1	2	18	10	14	11	10
1953	66	83	24	105	100	87	92	88	105	93	106	0	2	24	14	24	10	10
1954	58	81	36	94	101	81	92	24	90	98	112	1	1	13	5	5	8	8
1955	48	78	83	75	101	87	93	39	103	98	110	0	1	9	8	17	5	7
1956	39	76	41	69	101	85	93	34	108	94	115	0	0	9	4	2	5	8
1957	35	71	47	67	101	81	89	85	107	86	115	0	0	8	6	9	3	6
1958	32	68	23	52	101	84	92	30	111	84	113	0	1	3	4	5	2	7
1959	28	61	29	56	102	80	88	98	122	77	111	0	—	2	2	8	2	5

† Civilian mortality only in 1915–1920 and from 3rd September, 1939, to 31st December, 1949, for males, and from 1st June, 1941, to 31st December, 1949, for females.

VII

Deaths and death rates per 1,000 Live and Still births, ascribed to—
(a) Pregnancy and childbearing, excluding abortion.
(b) Abortion (including criminal), 1949 to 1959.

Year	Live and Still births	Pregnancy and Childbearing (Nos. 640–649, 660–689 of International List, 1955)				Abortion (Nos. 650–652 of International List, 1955)			
		No. of deaths	Rate per 1,000 births			No. of deaths	Rate per 1,000 births	Rate per million women aged 15–44	
			Infections (640, 641, 681, 682, 684)	Others	Total			Septic (651)	Other (650, 652)
1949	747,465	609	0·12	0·70	0·81	118	0·16	8	4
1950	713,181	517	0·12	0·60	0·72	103	0·14	7	4
1951	693,514	419	0·10	0·50	0·60	107	0·15	7	4
1952	689,371	373	0·09	0·45	0·54	90	0·13	5	5
1953	700,053	419	0·09	0·50	0·60	76	0·11	4	4
1954	689,851	370	0·09	0·44	0·54	76	0·11	3	5
1955	683,640	339	0·11	0·39	0·50	66	0·10	4	3
1956	716,740	302	0·06	0·36	0·42	72	0·10	4	4
1957	739,996	272	0·07	0·30	0·37	61	0·08	4	3
1958	757,003	265	0·07	0·28	0·35	63	0·08	4	3
1959	764,402	243	0·06	0·26	0·32	47	0·06	3	2

VIII

Causes of deaths ascribed to pregnancy and childbearing, excluding abortion, 1953–1959.

1955 Int. Classn. Nos.	Cause of death	1953	1954	1955	1956	1957	1958	1959
642	Toxaemias of pregnancy ..	132	90	82	82	72	58	50
643, 644	Antepartum haemorrhage before delivery	6	3	3	10	7	9	3
645	Ectopic pregnancy ..	35	24	20	21	21	13	12
646–649	Other complications of pregnancy	10	21	26	26	12	21	28
670	Antepartum haemorrhage complicating delivery ..	33	29	21	23	20	16	18
671, 672	Postpartum haemorrhage..	51	44	41	24	22	33	23
660, 673–678	Other complications of delivery	68	78	55	50	57	47	48
682, 684	Puerperal phlebitis, thrombosis and pulmonary embolism	49	51	55	32	32	40	30
640, 641, 681	Other sepsis of pregnancy, childbirth and puerperium	17	13	17	13	18	13	17
685, 686	Puerperal toxaemia ..	11	14	9	11	5	8	7
680, 683, 687–689	Other complications of the puerperium	7	3	10	10	6	7	7
	Total ..	419	370	339	302	272	265	243

England and Wales: Infant Mortality by Age and Legitimacy, 1953 *to* 1959

	Deaths per 1,000 live births*						
	1953	1954	1955	1956	1957	1958	1959
All Causes							
All infants							
Under 4 weeks ..	17·7	17·7	17·3	16·8	16·5	16·2	15·9
4 weeks–3 months	3·4	3·0	2·9	2·7	2·6	2·6	2·4
3–6 months ..	3·0	2·6	2·6	2·3	2·1	2·1	2·1
6–12 months ..	2·7	2·1	2·1	1·8	1·9	1·7	1·8
Total under 1 year	26·8	25·4	24·9	23·7	23·1	22·5	22·2
All male infants							
Under 4 weeks ..	19·9	20·2	19·5	19·2	18·7	18·3	17·7
4 weeks–3 months	3·8	3·3	3·3	3·1	2·9	2·8	2·7
3–6 months ..	3·3	2·9	2·8	2·6	2·2	2·3	2·3
6–12 months ..	2·9	2·3	2·5	2·0	2·0	1·9	1·9
Total under 1 year	29·9	28·7	28·1	26·9	25·8	25·3	24·5
All female infants							
Under 4 weeks ..	15·3	15·1	14·8	14·3	14·1	13·8	14·0
4 weeks–3 months	3·1	2·7	2·5	2·3	2·4	2·3	2·1
3–6 months ..	2·8	2·3	2·3	2·1	2·0	1·9	2·0
6–12 months ..	2·5	1·9	1·9	1·7	1·8	1·6	1·7
Total under 1 year	23·6	22·0	21·5	20·4	20·3	19·6	19·8
Illegitimate infants							
Under 4 weeks ..	22·5	23·7	23·9	21·6	22·7	20·6	20·7
4 weeks–3 months	4·7	3·7	3·1	3·4	3·0	3·7	2·7
3–6 months ..	3·4	2·8	3·1	2·5	2·6	2·1	2·4
6–12 months ..	2·6	1·8	1·6	1·2	1·7	1·4	1·6
Total under 1 year	33·0	32·0	31·7	28·7	30·0	27·8	27·4
Legitimate infants							
Under 4 weeks ..	17·4	17·4	16·9	16·6	16·1	15·9	15·6
4 weeks–3 months	3·4	3·0	2·9	2·7	2·6	2·5	2·4
3–6 months ..	3·0	2·6	2·6	2·3	2·1	2·1	2·1
6–12 months ..	2·7	2·1	2·2	1·9	1·9	1·7	1·8
Total under 1 year	26·5	25·1	24·6	23·5	22·8	22·3	21·9

* Based on related live births prior to 1957.

X

England and Wales: Infant Mortality by Sex and Cause. Rates per 1,000 *live births,** 1911–1959

Cause (Nos. in 1955 Int. Classification)		1911–1920	1921–1930	1931–1939	1940–1949	1954	1955	1956	1957	1958	1959
Whooping cough (056)	M.	3·31	2·61	1·35	0·74	0·14	0·10	0·07	0·06	0·02	0·02
	F.	3·85	2·92	1·64	0·87	0·14	0·08	0·11	0·13	0·03	0·02
Tuberculosis (001–019)	M.	2·88	1·39	0·80	0·47	0·07	0·03	0·02	0·02	0·02	0·02
	F.	2·26	1·09	0·65	0·41	0·04	0·05	0·01	0·01	0·02	0·02
Measles (085)	M.	2·57	1·40	0·78	0·27	0·03	0·05	0·01	0·03	0·02	0·03
	F.	2·21	1·13	0·66	0·25	0·01	0·06	—	0·02	0·02	0·03
Convulsions (780·2–·4)	M.	†	†	1·73	0·65	0·03	0·03	0·02	0·01	0·02	0·01
	F.	†	†	1·17	0·46	0·02	0·02	0·01	0·01	0·01	0·01
Bronchitis and pneumonia (500–502, 490–493, 763)	M.	21·33	17·34	13·62	10·35	4·57	4·65	4·40	3·80	3·96	3·88
	F.	16·43	13·12	10·28	8·07	3·45	3·32	3·09	3·00	3·17	3·07
Gastro-enteritis (571, 764)	M.	†	8·55	6·22	5·05	0·76	0·75	0·53	0·51	0·44	0·49
	F.	†	6·12	4·31	3·64	0·59	0·55	0·38	0·36	0·29	0·31
Congenital malformations (750–759) ..	M.	4·29	5·00	6·03	5·43	4·74	4·80	4·75	4·72	4·70	4·47
	F.	3·56	4·08	5·22	4·87	4·64	4·47	4·47	4·53	4·44	4·61
Immaturity (774, 776)	M.	21·48	20·19	16·40	11·16	5·36	5·21	5·08	4·86	4·49	4·17
	F.	17·48	16·18	13·32	8·94	4·13	4·26	3·98	3·70	3·47	3·52
(Associated immaturity)‡	M.	†	†	†	†	5·12	5·00	4·97	5·14	5·21	5·21
	F.	†	†	†	†	3·48	3·41	3·33	3·59	3·46	3·55
Injury at birth (760, 761)..	M.	1·34	1·96	3·02	3·17	3·36	3·36	3·22	3·10	2·98	3·04
	F.	0·91	1·27	1·82	2·01	2·12	2·07	2·14	2·04	1·86	1·87
Post-natal asphyxia and atelectasis (762)	M.	1·89	1·77	2·26	2·86	4·44	4·27	4·22	4·55	4·17	4·27
	F.	1·38	1·36	1·63	2·16	2·92	2·90	2·83	3·17	2·93	2·93
Haemolytic disease (770)..	M.	†	†	†	0·85	0·80	0·56	0·50	0·53	0·48	0·48
	F.	†	†	†	0·55	0·56	0·52	0·50	0·49	0·54	0·49
Accidental mechanical suffocation (E924, E925)	M.	†	0·66	0·34	0·53	0·32	0·33	0·30	0·24	0·26	0·21
	F.	†	0·59	0·25	0·37	0·21	0·20	0·25	0·20	0·21	0·16
Other causes	M.	†	†	†	8·90	4·05	3·96	3·73	3·31	3·75	3·42
	F.	†	†	†	6·67	3·15	2·98	2·65	2·64	2·60	2·75
All causes	M.	111·70	81·46	66·17	50·43	28·68	28·12	26·88	25·76	25·29	24·51
	F.	88·66	62·66	51·03	39·27	21·97	21·50	20·44	20·31	19·60	19·78

* Related live births from 1931–1956.
† Not available.
‡ Deaths assigned to another cause, but with immaturity (prematurity) mentioned on the death certificate as an associated condition.

Deaths of Women not classed to Pregnancy or Childbearing, but certified as associated therewith, 1956, 1957, 1958 and 1959

	Cause of Death	1956	1957	1958	1959
I.	Infective and Parasitic Diseases (001–138)	9	7	8	4
II.	Neoplasms (140–239)	15	11	15	9
III.	Allergic, Endocrine System, Metabolic and Nutritional Diseases (240–289)	5	5	5	3
IV.	Diseases of Blood and Blood-forming Organs (290–299)	1	3	1	—
V.	Mental, Psycho-neurotic and Personality Disorders (300–326)	—	—	—	—
VI.	Diseases of the Nervous System and Sense Organs (330–398)	7	5	6	5
VII.	Diseases of the Circulatory System—				
	Rheumatic fever and Chronic Rheumatic Heart Disease (400–416)	39	35	27	15
	Other Diseases of the heart (420–434)	3	4	5	3
	Hypertensive Disease (440–447)	1	1	2	3
	Other diseases of the circulatory system (450–468)	7	5	4	4
VIII.	Diseases of the Respiratory System (470–527) ..	14	32	7	17
IX.	Diseases of the Digestive System (530–587)	10	5	11	7
X.	Diseases of the Genito-Urinary System (590–637) ..	3	5	1	3
XII.	Diseases of the Skin and Cellular Tissue (690–716)	1	1	—	—
XIII.	Diseases of the Bones and Organs of Movement (720–749)	2	—	2	1
XIV.	Congenital Malformations (750–759)	1	1	2	4
EXVII.	Accidents, Poisoning and Violence (E800–E999) ..	7	8	2	4
	Total	125	128	98	82
	Associated with abortion (included above)	6	6	4	7

(80926)

XI

Neonatal mortality according to certified cause, 1921–1959

Deaths at ages under 4 weeks per 1,000 live births*

Cause (Nos. in 1955 Int. Classification)	1921–1930	1931–1939	1940–1949	1953	1954	1955	1956	1957	1958	1959
All infective and parasitic diseases (001–138)	0·63	0·31	0·13	0·05	0·02	0·02	0·05	0·05	0·02	0·03
Bronchitis (500–502)	0·61	0·33	0·16	0·06	0·04	0·04	0·04	0·04	0·03	0·03
Pneumonia (763)	0·71	0·83	1·49	1·30	1·13	1·17	1·15	0·99	1·13	1·00
Diarrhoea of newborn (764)	0·74	0·50	0·60	0·09	0·06	0·06	0·07	0·05	0·05	0·06
Immaturity (774–776)	16·54	15·82	9·59	5·08	4·70	4·68	4·50	4·26	3·93	3·81
Congenital malformations (750–759)	2·86	3·66	3·27	2·67	3·05	2·87	2·85	2·83	2·89	2·84
Asphyxia and atelectasis (762)	1·52	1·82	2·43	3·59	3·66	3·55	3·51	3·86	3·54	3·59
Congenital debility and other ill-defined diseases of early infancy (773)	†	†	†	0·30	0·31	0·31	0·24	0·20	0·36	0·39
Other causes	9·04	7·12	6·59	4·53	4·76	4·55	4·42	4·18	4·22	4·12
All causes	32·65	30·37	24·33	17·66	17·73	17·26	16·84	16·46	16·16	15·87

* Related live births from 1931–1956.

† Not available.

K 4

310

XII

Infant and Child Mortality 1936–1959

Period	Per 1,000 live births*	Per 1,000 living at ages specified			
	Under 1 year	1	2	3	4
1936–1940	55·3	8·66	4·23	3·13	2·68
1941–1945	49·8	5·85	3·21	2·60	2·18
1946–1950	36·4	2·99	1·64	1·25	1·05
1951	29·7	2·45	1·36	1·00	0·79
1952	27·6	2·07	1·22	0·86	0·67
1953	26·8	2·01	1·19	0·88	0·70
1954	25·4	1·57	0·94	0·71	0·56
1955	24·9	1·61	1·03	0·75	0·61
1956	23·7	1·45	0·91	0·68	0·60
1957	23·1	1·55	0·89	0·77	0·65
1958	22·5	1·41	0·93	0·65	0·50
1959	22·2	1·44	0·87	0·71	0·56

* Based on related live births prior to 1957.

XIII

England and Wales: Notifications in each year 1957, 1958 *and* 1959

Disease	No. of original notifications			Totals after diagnosis revision(1)		
	1957	1958	1959	1957	1958	1959
Continued and relapsing fevers ..	1	1	—	1	1	—
Diphtheria	202	193	269	37	78	102
Dysentery	31,913	42,343	39,825	28,899	38,098	35,612
Acute encephalitis (infective) ..	187	174	152	171	170	140
Acute encephalitis (post infectious)	161	120	137	155	119	140
Erysipelas	3,617	3,328	3,229	3,587	3,291	3,201
Food poisoning	10,716	11,246	12,503	9,179	8,790	9,964
Malaria(2)	1	—	—	1	—	—
Measles	633,949	259,568	539,820	633,587	259,234	539,447
Meningococcal infections ..	1,351	1,082	1,074	1,016	836	745
Ophthalmia neonatorum ..	1,492	1,317	1,188	1,483	1,304	1,179
Paratyphoid fevers	326	218	485	310	199	376
Pneumonia (acute primary) Pneumonia (influenzal) ..	33,268	22,674	27,187	32,696	22,298	26,806
Acute poliomyelitis (paralytic) ..	3,298	1,598	927	3,175	1,417	733
Acute poliomyelitis (non-paralytic)	2,172	741	444	1,666	575	289
Puerperal pyrexia	11,815	10,828	10,709	11,833	10,814	10,699
Scarlet fever	29,860	39,066	48,129	29,541	38,848	47,914
Smallpox	4	7	—	4	5	1
Typhoid fever	153	167	146	123	147	119
Typhus fever	—	—	—	—	—	—
Whooping cough	85,215	33,555	33,468	85,017	33,400	33,252

(1) Excluding cases from Port Health Districts for which no revision of diagnosis is received.
(2) The figures are for malaria contracted at home only, and revised figures exclude such notifications as were not confirmed on investigation.

England and Wales: Total Corrected Notifications by Sex and Age, excluding Port Health Districts, 1959

Age	Scarlet fever		Whooping cough		Diphtheria		Measles		Acute poliomyelitis paralytic and non-paralytic		Dysentery		Meningococcal infections	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
0–	96	83	1,683	1,636	1	—	8,185	8,323	29	24	812	746	126	103
1–	1,806	1,512	3,736	3,967	4	—	59,246	56,088	110	79	3,073	2,512	98	42
3–	5,180	4,505	3,710	4,048	4	1	72,090	68,325	107	72	2,565	2,176	53	27
5–	13,386	13,640	6,046	6,587	30	31	125,643	120,398	128	85	5,065	4,292	65	44
10–	2,999	3,245	613	666	9	7	7,545	7,671	47	47	1,884	1,528	25	25
15–	487	394	73	123	1	4	1,257	1,355	46	57	834	1,578	26	29
25 and over ..	188	245	68	214	2	8	790	1,025	119	71	3,173	4,866	44	35
Unstated ..	71	77	30	52	—	—	760	746	1	—	208	300	1	2
All ages	24,213	23,701	15,959	17,293	51	51	275,516	263,931	587	435	17,614	17,998	438	307

Age	Typhoid and paratyphoid fevers		Acute pneumonia		Erysipelas	
	M.	F.	M.	F.	M.	F.
0–	39	46	1,838	1,568	21	20
5–	50	66	1,610	1,416	54	54
15–	83	108	2,890	2,622	361	411
45–	30	48	4,641	3,096	681	786
65 and over ..	4	18	3,247	3,605	298	470
Unstated ..	—	3	130	143	18	27
All ages	206	289	14,356	12,450	1,433	1,768

APPENDIX B

Tables relating to Tuberculosis: England and Wales

XV

England and Wales: Deaths from Tuberculosis per annum, including those of non-civilians

Year	Respiratory			Other forms		
	Males	Females	Persons	Males	Females	Persons
1851–1860	23,931	26,962	50,893	8,311	6,683	14,994
1861–1870	25,696	27,247	52,943	9,078	7,323	16,401
1871–1880	26,177	25,333	51,510	10,082	8,165	18,247
1881–1890	24,646	22,751	47,397	10,380	8,820	19,200
1891–1900	23,434	19,188	42,622	10,181	8,860	19,041
1901–1910	22,595	17,093	39,688	8,838	7,990	16,828
1911–1920	21,555	17,220	38,775	6,614	6,007	12,621
1921–1930	17,513	14,127	31,640	4,057	3,682	7,739
1931–1939	14,504	10,755	25,259	2,638	2,334	4,972
1940–1944	13,141	8,804	21,945	2,357	2,132	4,489
1945–1949	11,644	7,592	19,236	1,695	1,521	3,216
1950	8,934	5,145	14,079	988	902	1,890
1951	7,903	4,128	12,031	923	852	1,775
1952	6,421	2,914	9,335	693	557	1,250
1953	5,447	2,466	7,913	517	472	989
1954	4,944	2,125	7,069	448	380	828
1955	4,172	1,665	5,837	361	294	655
1956	3,534	1,319	4,853	270	252	522
1957	3,150	1,099	4,249	264	271	535
1958	2,949	1,050	3,999	258	223	481
1959	2,620	854	3,474	190	190	380

Note.—Deaths for 1851–1939 according to classification in use before 1940. (4th Revision.)
Deaths for 1940–1959 according to classification in use from 1958. (7th Revision.)

XVI

England and Wales: Tuberculosis: Standardized mortality ratios (base years 1950–1952 taken as 100) 1851–1959

Year	Respiratory			Other forms			All forms		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
1851–1860 ..	1,027	1,752	1,336	2,060	1,779	1,926	1,182	1,758	1,438
1861–1870 ..	980	1,580	1,236	2,006	1,728	1,872	1,134	1,610	1,346
1871–1880 ..	886	1,300	1,063	1,923	1,659	1,796	1,043	1,372	1,190
1881–1890 ..	743	1,024	863	1,766	1,594	1,682	897	1,137	1,004
1891–1900 ..	618	746	675	1,584	1,463	1,525	758	882	815
1901–1910 ..	508	576	540	1,252	1,212	1,232	610	692	649
1911–1920 ..	439	523	479	932	869	898	502	583	541
1921–1930 ..	297	394	336	529	521	524	323	415	362
1931–1939 ..	209	271	233	342	330	336	223	281	245
1940–1944 ..	198	222	209	321	299	309	210	234	221
1945–1949 ..	158	189	169	205	204	204	162	191	174
1950	115	127	119	113	117	115	115	125	119
1951	102	102	102	106	110	108	103	103	103
1952	83	72	79	80	73	77	82	72	79
1953	70	61	67	60	62	61	69	61	66
1954	63	52	59	52	50	51	62	52	58
1955	53	41	49	42	38	40	52	41	48
1956	44	32	40	31	33	32	43	33	39
1957	39	27	35	30	34	32	38	28	35
1958	36	26	33	29	29	29	36	26	32
1959	32	21	28	21	24	23	31	21	28

NOTE.—Civilian mortality only in 1915–1920 and from 3rd September, 1939, to 31st December, 1949, for males and from 1st June, 1941, to 31st December, 1949, for females.

XVII

Tuberculosis deaths by Sex and Age, 1959

Sex and Age	Respiratory tuberculosis	Tuberculosis of meninges and central nervous system	Other tuberculosis
Males—			
0–	7	26	6
15–	12	4	2
25–	316	9	29
45 and over ..	2,285	11	103
Total	2,620	50	140
Females—			
0–	10	18	5
15–	13	3	5
25–	236	7	26
45 and over ..	595	9	117
Total	854	37	153
All persons ..	3,474	87	293

XVIII

England and Wales: Formal Notifications of Tuberculosis and Deaths from tuberculosis of persons not notified before death, 1940–1959

Year	Formal notifications			Deaths of tuberculous persons not notified before death
	Males	Females	Persons	Persons
1940	26,260	20,312	46,572	3,395
1941	28,966	21,998	50,964	4,383
1942	29,560	23,059	52,619	3,971
1943	30,121	24,221	54,342	3,780
1944	30,044	24,269	54,313	3,468
1945	29,124	22,986	52,110	3,603
1946	29,003	22,286	51,289	3,580
1947	28,879	22,846	51,725	3,682
1948	28,863	23,713	52,576	3,551
1949	28,981	23,060	52,041	3,282
1950	26,969	22,389	49,358	2,704
1951	27,383	22,057	49,440	2,606
1952	26,557	21,536	48,093	2,239
1953	25,927	20,619	46,546	2,286
1954	23,694	18,654	42,348	1,627
1955	21,684	16,450	38,134	1,495
1956	20,683	14,821	35,504	1,465
1957	19,185	13,474	32,659	1,474
1958	17,955	11,883	29,838	1,335
1959	16,447	10,653	27,100	1,171

This table has been compiled from Annual Returns submitted by Tuberculosis Authorities in accordance with the Public Health (Tuberculosis) Regulations, 1912–30.

The figures differ from those given in previous Reports in that they comprise only the formal notifications of new cases and deaths of persons who had escaped notification. They exclude transfers between areas, in so far as they could be ascertained, duplicate notifications, and a few cases brought to the notice of Medical Officers of Health otherwise than by formal notification under the regulations. For details of the latter see following page.

In 1954 tuberculosis notifications were for the first time added to the quarterly returns of infectious diseases submitted by Medical Officers of Health to the General Register Office. The number of tuberculosis notifications in 1959 recorded on these forms was :—

Males, 16,567 ; Females, 10,711

Tuberculosis Notifications by Sex and Age, deaths of persons not notified and transfers between areas. 1947 *to* 1959

Sex	Year	Numbers of formal notifications according to age*					Deaths of tuberculous persons not notified before death	Transfers between areas other than formal notifi-cations†
		0—	15—	25—	45 and over	All ages	All ages	All ages
Respiratory tuberculosis								
Males	1947	2,217	5,864	9,193	7,399	24,673		
	1948	2,297	5,417	9,235	7,763	24,712		
	1949	2,320	5,396	9,322	8,303	25,341		
	1950	2,504	4,727	8,613	7,908	23,752		
	1951	2,482	4,663	8,782	8,330	24,257		
	1952	2,558	4,477	8,393	8,283	23,711	males and	males and
	1953	2,461	4,243	7,856	8,782	23,342	females.	females.
	1954	2,051	3,895	7,268	8,162	21,376		
	1955	1,785	3,411	6,444	8,001	19,641		
	1956	1,471	3,152	5,963	8,215	18,801		
	1957	1,262	2,652	5,762	7,856	17,562		
	1958	1,175	2,483	5,066	7,696	16,420		
	1959	981	2,008	4,747	7,471	15,207		
Females ..	1947	1,978	7,043	7,119	2,346	18,486	2,615	6,028
	1948	2,422	7,158	7,328	2,351	19,259	2,664	6,239
	1949	2,321	6,945	7,474	2,399	19,139	2,600	7,089
	1950	2,299	6,892	7,263	2,229	18,683	2,113	7,859
	1951	2,429	6,542	7,120	2,348	18,439	2,067	8,140
	1952	2,475	6,134	7,120	2,464	18,193	1,816	8,448
	1953	2,386	5,695	6,955	2,539	17,575	1,751	‡
	1954	2,022	5,260	6,054	2,261	15,597	1,330	‡
	1955	1,812	4,381	5,437	2,309	13,939	1,224	‡
	1956	1,486	3,829	4,975	2,251	12,541	1,244	‡
	1957	1,395	3,185	4,516	2,212	11,308	1,250	‡
	1958	1,245	2,728	3,854	2,144	9,971	1,106	‡
	1959	1,000	2,369	3,572	2,132	9,073	980	‡
Non-respiratory tuberculosis								
Males	1947	2,407	691	754	354	4,206		
	1948	2,405	736	658	352	4,151		
	1949	2,052	631	620	337	3,640		
	1950	1,720	552	617	328	3,217		
	1951	1,627	538	633	328	3,126		
	1952	1,379	534	580	353	2,846	males and	males and
	1953	1,178	445	541	421	2,585	females.	females.
	1954	979	405	586	348	2,318		
	1955	742	421	533	347	2,043		
	1956	628	362	525	367	1,882		
	1957	468	330	469	356	1,623		
	1958	387	308	507	333	1,535		
	1959	286	237	415	302	1,240		
Females ..	1947	2,031	951	969	409	4,360	1,067	777
	1948	2,160	985	930	379	4,454	887	758
	1949	1,853	890	848	330	3,921	682	740
	1950	1,614	836	926	330	3,706	591	677
	1951	1,497	858	866	397	3,618	539	693
	1952	1,305	688	884	466	3,343	423	590
	1953	1,082	679	835	448	3,044	535	‡
	1954	970	691	897	499	3,057	297	‡
	1955	707	570	803	431	2,511	271	‡
	1956	569	524	743	444	2,280	221	‡
	1957	519	454	778	425	2,176	224	‡
	1958	375	396	695	443	1,912	229	‡
	1959	280	318	548	434	1,580	191	‡

* Included in the Annual Returns furnished by Local Authorities.

† Includes also a few cases brought to notice from miscellaneous sources otherwise than in preceding columns. The numbers in this column should be disregarded when a measure of new cases diagnosed during the year is required. Some transfers of cases formally notified in the same year, whose total cannot be accurately ascertained are included with the formal notifications.

‡ No longer available.

XX

Tuberculosis

Notifications per 100,000 *of the Population*

	Respiratory		Non-Respiratory	
	Average 1954–58	1959	Average 1954–58	1959
England and Wales	73·5	57·1	10·0	6·8
English County Councils				
Bedford	73	53	12	7
Berks.	63	43	10	7
Bucks.	52	35	10	6
Cambridge	47	30	8	2
Chester	45	26	8	3
Cornwall	67	55	9	7
Cumberland..	109	60	17	6
Derby	47	34	8	5
Devon	48	32	13	5
Dorset	50	43	8	7
Durham	75	49	12	8
Essex	53	36	8	3
Gloucester	61	40	13	6
Hampshire	58	41	11	4
Hereford	57	36	12	4
Herts.	67	47	9	4
Hunts.	53	44	9	6
Isle of Ely	49	56	8	6
Isles of Scilly				
Isle of Wight	52	37	16	9
Kent	66	49	7	6
Lancs.	58	47	10	5
Leicester	44	24	11	8
Lincs. (Holland)	33	28	9	4
Lincs. (Kesteven)	56	32	9	5
Lincs. (Lindsay)	43	35	10	8
London	111	87	10	8
Middlesex	75	50	9	6
Norfolk	39	27	11	3
Northampton	53	36	10	7
Northumberland	71	48	16	6
Nottingham	68	46	8	5
Oxford	61	44	13	8
Rultand	42	43	13	9
Salop	41	27	11	6
Soke of Peterborough	63	45	6	9
Somerset	54	37	9	7
Stafford	69	44	8	4
Suffolk (East)	41	23	13	4
Suffolk (West)	34	21	8	5
Surrey	54	40	7	4
Sussex (East)	53	35	7	4
Sussex (West)	37	31	5	4
Warwick	74	47	12	9
Westmorland	43	42	10	8

Tuberculosis

Notifications per 100,000 *of the Population*

English County Councils	Respiratory		Non-Respiratory	
	Average 1954–58	1959	Average 1954–58	1959
Wilts.	54	27	12	9
Worcester	60	39	8	6
Yorks. (E.R.)	39	26	11	5
Yorks. (N.R.)	49	31	7	5
Yorks. (W.R.)	57	37	11	7
English County Boroughs				
Barnsley	74	37	10	5
Barrow-in-Furness	82	50	3	5
Bath	59	42	7	7
Birkenhead	91	68	9	6
Birmingham..	94	65	12	8
Blackburn	70	54	9	5
Blackpool	52	29	6	3
Bolton	49	36	7	4
Bootle	131	134	7	2
Bournemouth	80	56	9	3
Bradford	87	80	11	8
Brighton	87	48	5	3
Bristol	76	50	10	11
Burnley	83	86	13	10
Burton-on-Trent	74	51	4	4
Bury	36	45	9	5
Canterbury	52	47	10	7
Carlisle	101	80	15	7
Chester	83	72	10	5
Coventry	115	66	14	12
Croydon	68	53	8	6
Darlington	87	52	4	—
Derby	73	46	9	5
Dewsbury	34	43	16	9
Doncaster	83	49	5	7
Dudley	101	70	6	2
East Ham	98	81	9	7
Eastbourne	50	40	7	4
Exeter	87	90	19	13
Gateshead	164	113	22	16
Gloucester	99	56	12	12
Great Yarmouth	46	37	7	2
Grimsby	82	59	17	6
Halifax	86	41	7	6
Hastings	76	45	5	2
Huddersfield	56	48	14	6
Ipswich	47	30	10	9
Kingston-upon-Hull	89	61	8	5
Leeds	74	66	12	7
Leicester	82	49	9	7

Tuberculosis

Notifications per 100,000 *of the Population*

English County Boroughs	Respiratory		Non-Respiratory	
	Average 1954–58	1959	Average 1954–58	1959
Lincoln	73	57	9	12
Liverpool	138	216	13	6
Manchester	91	71	11	6
Middlesbrough	121	72	12	4
Newcastle-upon-Tyne	126	82	20	9
Northampton	61	32	11	8
Norwich	61	34	9	5
Nottingham	122	83	10	6
Oldham	56	47	11	3
Oxford	88	64	13	11
Plymouth	93	71	10	7
Portsmouth	68	43	6	4
Preston	53	42	13	3
Reading	89	62	10	5
Rochdale	58	41	4	5
Rotherham	58	43	6	2
Salford	84	78	10	4
Sheffield	87	64	9	7
Smethwick	153	144	13	17
Southampton	113	64	11	8
Southend-on-Sea	49	50	7	9
Southport	49	27	7	5
South Shields	161	121	13	11
Stockport	60	43	7	3
Stoke-on-Trent	92	48	8	7
Sunderland	108	75	12	9
St. Helens	85	61	9	8
Tynemouth	91	65	13	7
Wakefield	57	13	15	7
Wallasey	70	66	10	13
Walsall	106	60	9	4
Warrington	90	54	9	1
West Bromwich	101	64	16	13
West Ham	82	52	8	6
West Hartlepool	78	48	6	4
Wigan	70	69	11	11
Wolverhampton	94	63	10	4
Worcester	87	55	10	8
York	40	14	12	2

TABLE XXI

England and Wales — *Numbers of some non-tuberculous conditions diagnosed following examinations made by Mass Radiography Units, distinguishing Age and Type of Examinee* — 1958

Code No.		Sex	AGE GROUPS Under 14	14	15–	20–	25–	35–	45–	55–	60–	65 and over	Not stated	All ages
All	Non-tuberculous conditions	M.	40	39	181	191	442	794	2,146	1,656	1,322	1,805	2	8,618
		F.	64	28	147	217	432	549	1,100	833	579	992	2	4,943
2	Malignant neoplasms ..	M.	1	2	5	4	26	104	439	441	376	497	—	1,895
		F.	1	1	2	1	6	23	70	57	45	87	—	293
3	Non-malignant neoplasms	M.	2	1	6	9	25	47	73	50	35	40	—	288
		F.	—	1	6	8	21	34	85	53	32	62	—	302
4	Lymphadenopathies, excluding sarcoids	M.	2	2	8	9	12	7	7	2	—	2	—	51
		F.	7	1	3	8	13	5	5	2	—	1	—	45
5	Sarcoids (including enlarged hilar glands)	M.	1	2	23	51	118	49	32	9	8	4	—	297
		F.	6	—	14	55	96	56	36	17	3	5	—	288
6	Congenital cardiac abnormalities and abnormalities of the vascular system	M.	19	21	66	46	59	38	29	17	10	4	—	309
		F.	28	15	49	43	53	41	29	16	4	6	—	284
7	Acquired cardiac abnormalities and abnormalities of the vascular system	M.	15	11	73	72	161	281	681	542	460	862	1	3,159
		F.	22	10	73	102	239	369	791	634	478	818	2	3,538
8	Pneumoconiosis without P.M.F.	M.	—	—	—	—	40	253	806	518	376	333	1	2,327
		F.	—	—	—	—	4	17	79	51	17	8	—	176
9	Pneumoconiosis with P.M.F.	M.	—	—	—	—	1	15	79	77	57	63	—	292
		F.	—	—	—	—	—	4	5	3	—	5	—	17

Code No.		Sex	Hospital out-patients and in-patients	H.M. Forces Intakes	General Prac-titioner Referrals	School Children: Mantoux Test	School Children: School Groups	Contacts	Special Surveys	Persons in Prisons, Borstals	Factories and Offices	General Public Volunteers	Ante-natal cases	Mental Hospitals and Institutions
			EXAMINEE GROUPS											
All	Non-tuberculous conditions	M.	48	102	2,694	3	70	68	112	90	2,691	2,553		187
		F.	64	—	1,254	5	59	56	111	41	1,231	1,797	97	228
2	Malignant neoplasms ..	M.	14	1	1,052	—	3	11	12	17	358	413		14
		F.	7	—	159	—	1	—	5	3	14	91	—	13
3	Non-malignant neoplasms	M.	—	4	37	1	1	4	5	4	153	69		10
		F.	—	—	37	—	1	2	5	5	84	145	2	21
4	Lymphadenopathies, excluding Sarcoids	M.	—	2	11	—	4	3	—	—	20	11		—
		F.	—	—	11	1	1	—	—	—	22	10	—	—
5	Sarcoids (including enlarged hilar glands)	M.	2	13	51	—	1	4	1	3	141	80		1
		F.	1	—	73	—	3	3	4	2	65	129	6	2
6	Congenital cardiac abnormalities and abnormalities of the vascular system	M.	—	40	39	1	37	10	1	—	130	44		7
		F.	2	—	62	1	31	8	4	—	91	69	13	3
7	Acquired cardiac abnormalities and abnormalities of the vascular system	M.	31	42	967	1	24	20	54	51	1,114	774		81
		F.	54	—	859	3	22	43	93	30	832	1,340	73	189
8	Pneumoconiosis without P.M.F.	M.	1	—	472	—	—	14	38	11	697	1,030		64
		F.	—	—	46	—	—	—	—	—	118	10	2	—
9	Pneumoconiosis with P.M.F.	M.	—	—	65	—	—	2	1	4	78	132		10
		F.	—	—	7	—	—	—	—	1	5	3	1	—

England and Wales

TABLE XXII

Mass Miniature Radiography, 1958

Records are received for every reportable abnormality discovered. The number of examinations given below are based on a 10 per cent. random sample of normal and abnormal cases

Males

Examinee Group		Under 14	14	15–	20–	25–	35–	45–	55–	60–	65 and over	Not stated	All ages
Out-patients and In-patients of Hospitals (0)	Total number of examinations	70	110	380	690	1,350	1,440	1,950	740	530	920	—	8,180
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	2	2	—	3	3	—	—	5	—	15
	Rate per 1,000 examinations	0·0	0·0	5·3	2·9	0·0	2·1	1·5	0·0	0·0	5·4	—	1·8
	Number with tuberculosis requiring occasional supervision only (1)	1	—	—	—	3	2	3	3	2	9	—	23
	Rate per 1,000 examinations	14·3	0·0	0·0	0·0	2·2	1·4	1·5	4·1	3·8	9·8	—	2·8
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	14·3	0·0	5·3	2·9	2·2	3·5	3·1	4·1	3·8	15·2	—	4·6
H.M. Forces Intakes (1)	Total number of examinations	10	170	50,230	41,120	1,390	50	—	—	—	—	70	93,040
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	66	76	4	—	—	—	—	—	—	146
	Rate per 1,000 examinations	0·0	0·0	1·3	1·8	2·9	0·0	—	—	—	—	0·0	1·6
	Number with tuberculosis requiring occasional supervision only (1)	—	—	55	53	2	—	1	—	—	—	—	111
	Rate per 1,000 examinations	0·0	0·0	1·1	1·3	1·4	0·0	0·0	—	—	—	0·0	1·2
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·0	0·0	2·4	3·1	4·3	0·0	0·0	—	—	—	0·0	2·8
General Practitioner Referrals (2)	Total number of examinations	5,100	1,020	7,330	9,060	19,660	18,910	19,690	9,440	7,420	7,460	50	105,140
	Number with tuberculosis requiring treatment or close supervision (0)	20	4	67	121	237	211	279	137	99	109	1	1,285
	Rate per 1,000 examinations	3·9	3·9	9·1	13·4	12·1	11·2	14·2	14·5	13·3	14·6	20·0	12·2
	Number with tuberculosis requiring occasional supervision only (1)	5	1	10	18	86	126	167	123	84	96	—	716
	Rate per 1,000 examinations	1·0	1·0	1·4	2·0	4·4	6·7	8·5	13·0	11·3	12·9	0·0	6·8
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	4·9	4·9	10·5	15·3	16·4	17·8	22·7	27·5	24·7	27·5	20·0	19·0
School Children (School Groups) (3)	Total number of examinations	39,460	38,810	32,140	40	—	—	—	—	—	—	10	110,460
	Number with tuberculosis requiring treatment or close supervision (0)	23	18	14	—	—	—	—	—	—	—	—	55
	Rate per 1,000 examinations	0·6	0·5	0·4	0·0	—	—	—	—	—	—	0·0	0·5
	Number with tuberculosis requiring occasional supervision only (1)	43	25	3	—	—	—	—	—	—	—	—	71
	Rate per 1,000 examinations	1·1	0·6	0·1	0·0	—	—	—	—	—	—	0·0	0·6
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	1·7	1·1	0·5	0·0	—	—	—	—	—	—	0·0	1·1
Contacts (4)	Total number of examinations	7,450	2,840	5,220	2,500	4,680	3,770	2,760	780	370	390	20	30,780
	Number with tuberculosis requiring treatment or close supervision (0)	10	6	6	8	22	12	6	8	1	6	—	85
	Rate per 1,000 examinations	1·3	2·1	1·1	3·2	4·7	3·2	2·2	10·3	2·7	15·4	0·0	2·8
	Number with tuberculosis requiring occasional supervision only (1)	10	1	2	6	13	14	20	6	6	7	—	85
	Rate per 1,000 examinations	1·3	0·4	0·4	2·4	2·8	3·7	7·2	7·7	16·2	17·9	0·0	2·8
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	2·7	2·5	1·5	5·6	7·5	6·9	9·4	17·9	18·9	33·3	0·0	5·5
Special Surveys (5)	Total number of examinations	1,960	570	1,410	1,220	2,720	2,660	2,690	860	750	1,350	—	16,190
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	2	1	4	5	5	3	3	7	—	30
	Rate per 1,000 examinations	0·0	0·0	1·4	0·8	1·5	1·9	1·9	3·5	4·0	5·2	—	1·9
	Number with tuberculosis requiring occasional supervision only (1)	—	1	—	1	2	9	11	6	3	4	—	37
	Rate per 1,000 examinations	0·0	1·8	0·0	0·8	0·7	3·4	4·1	7·0	4·0	3·0	—	2·3
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·0	1·8	1·4	1·6	2·2	5·3	5·9	10·5	8·0	8·1	—	4·1
Factories/offices (General Surveys) (6)	Total number of examinations	—	—	88,650	110,080	255,400	243,670	197,270	70,430	39,670	14,080	360	1,019,610
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	84	131	305	268	318	127	78	22	—	1,333
	Rate per 1,000 examinations	—	—	0·9	1·2	1·2	1·1	1·6	1·8	2·0	1·6	0·0	1·3
	Number with tuberculosis requiring occasional supervision only (1)	—	—	37	73	281	412	519	255	182	64	—	1,823
	Rate per 1,000 examinations	—	—	0·4	0·7	1·1	1·7	2·6	3·6	4·6	4·5	0·0	1·8
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	—	—	1·4	1·9	2·3	2·8	4·2	5·4	6·6	6·1	0·0	3·1
Persons in Prisons, Borstals, etc. (6x)	Total number of examinations	360	320	2,470	2,550	2,960	2,130	1,590	740	480	1,910	20	15,530
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	3	5	11	19	23	13	19	27	—	120
	Rate per 1,000 examinations	0·0	0·0	1·2	2·0	3·7	8·9	14·5	17·6	39·6	14·1	0·0	7·7
	Number with tuberculosis requiring occasional supervision only (1)	—	—	1	2	13	25	16	10	5	34	—	106
	Rate per 1,000 examinations	0·0	0·0	0·4	0·8	4·4	11·7	10·1	13·5	10·4	17·8	0·0	6·8
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·0	0·0	1·6	2·7	8·1	20·7	24·5	31·1	50·0	31·9	0·0	14·6
General Public Volunteers (7)	Total number of examinations	8,270	4,090	33,600	36,160	96,470	95,030	76,690	26,480	19,710	26,980	100	423,580
	Number with tuberculosis requiring treatment or close supervision (0)	6	2	44	83	174	164	159	88	46	92	—	858
	Rate per 1,000 examinations	0·7	0·5	1·3	2·3	1·8	1·7	2·1	3·3	2·3	3·4	0·0	2·0
	Number with tuberculosis requiring occasional supervision only (1)	—	2	18	22	99	196	250	117	96	180	1	981
	Rate per 1,000 examinations	0·0	0·5	0·5	0·6	1·0	2·1	3·3	4·4	4·9	6·7	10·0	2·3
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·7	1·0	1·8	2·9	2·8	3·8	5·3	7·7	7·2	10·1	10·0	4·3
Ante-natal cases (8)	Total number of examinations	—	—	—	—	—	—	—	—	—	—	—	—
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	—	—	—	—	—	—	—	—	—	—
	Rate per 1,000 examinations	—	—	—	—	—	—	—	—	—	—	—	—
	Number with tuberculosis requiring occasional supervision only (1)	—	—	—	—	—	—	—	—	—	—	—	—
	Rate per 1,000 examinations	—	—	—	—	—	—	—	—	—	—	—	—
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	—	—	—	—	—	—	—	—	—	—	—	—
Mental Hospitals and Mental Institutions (9)	Total number of examinations	670	60	1,000	2,110	5,700	7,450	7,960	3,480	2,560	4,810	30	35,830
	Number with tuberculosis requiring treatment or close supervision (0)	1	—	1	6	9	17	29	15	14	24	—	116
	Rate per 1,000 examinations	1·5	0·0	1·0	2·8	1·6	2·3	3·6	4·3	5·5	5·0	0·0	3·2
	Number with tuberculosis requiring occasional supervision only (1)	—	1	2	5	20	41	49	23	24	38	—	203
	Rate per 1,000 examinations	0·0	16·7	2·0	2·4	3·5	5·5	6·2	6·6	9·4	7·9	0·0	5·7
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	1·5	16·7	3·0	5·2	5·1	7·8	9·8	10·9	14·8	12·9	0·0	8·9
All Groups	Total number of examinations	63,350	47,990	222,430	205,530	390,330	375,110	310,600	112,950	71,490	57,900	660	1,858,340
	Number with tuberculosis requiring treatment or close supervision (0)	60	30	289	433	766	699	822	391	260	292	1	4,043
	Rate per 1,000 examinations	0·9	0·6	1·3	2·1	2·0	1·9	2·6	3·5	3·6	5·0	1·5	2·2
	Number with tuberculosis requiring occasional supervision only (1)	59	31	128	180	519	825	1,036	543	402	432	1	4,156
	Rate per 1,000 examinations	0·9	0·6	0·6	0·9	1·3	2·2	3·3	4·8	5·6	7·5	1·5	2·2
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	1·9	1·3	1·9	3·0	3·3	4·1	6·0	8·3	9·3	12·5	3·0	4·4

Females

Examinee Group		Under 14	14	15–	20–	25–	35–	45–	55–	60–	65 and over	Not stated	All ages	Persons All Ages
Out-patients and In-patients of Hospitals (0)	Total number of examinations	80	90	670	850	1,700	1,890	2,260	850	520	1,080	—	9,990	18,170
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	—	1	1	2	1	—	2	1	—	8	23
	Rate per 1,000 examinations	0·0	0·0	0·0	1·2	0·6	1·1	0·4	0·0	3·8	0·9	—	0·8	1·3
	Number with tuberculosis requiring occasional supervision only (1)	—	—	—	1	5	—	6	1	1	6	—	20	43
	Rate per 1,000 examinations	0·0	0·0	0·0	1·2	2·9	0·0	2·7	1·2	1·9	5·6	—	2·0	2·4
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·0	0·0	0·0	2·4	3·5	1·1	3·1	1·2	5·8	6·5	—	2·8	3·6
H.M. Forces Intakes (1)	Total number of examinations	—	—	20	20	—	10	—	—	—	—	—	50	93,090
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	—	—	—	—	—	—	—	—	—	—	146
	Rate per 1,000 examinations	—	—	0·0	0·0	—	0·0	—	—	—	—	—	0·0	1·6
	Number with tuberculosis requiring occasional supervision only (1)	—	—	—	1	—	—	—	—	—	—	—	1	112
	Rate per 1,000 examinations	—	—	0·0	50·0	—	0·0	—	—	—	—	—	20·0	1·2
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	—	—	0·0	50·0	—	0·0	—	—	—	—	—	20·0	2·8
General Practitioner Referrals (2)	Total number of examinations	4,480	1,090	10,560	13,220	23,100	17,930	13,920	5,030	3,760	4,710	40	97,840	202,980
	Number with tuberculosis requiring treatment or close supervision (0)	18	5	91	104	179	107	70	32	32	20	—	658	1,943
	Rate per 1,000 examinations	4·0	4·6	8·6	7·9	7·7	6·0	5·0	6·4	8·5	4·2	0·0	6·7	9·6
	Number with tuberculosis requiring occasional supervision only (1)	6	1	21	25	102	117	91	50	37	33	—	483	1,199
	Rate per 1,000 examinations	1·3	0·9	2·0	1·9	4·4	6·5	6·5	9·9	9·8	7·0	0·0	4·9	5·9
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	5·4	5·5	10·6	9·8	12·2	12·5	11·6	16·3	18·4	11·3	0·0	11·7	15·5
School Children (School Groups) (3)	Total number of examinations	38,390	37,730	29,240	10	—	—	—	—	—	—	20	105,390	215,850
	Number with tuberculosis requiring treatment or close supervision (0)	25	18	15	—	—	—	—	—	—	—	—	58	113
	Rate per 1,000 examinations	0·7	0·5	0·5	0·0	—	—	—	—	—	—	0·0	0·6	0·5
	Number with tuberculosis requiring occasional supervision only (1)	51	30	10	—	—	—	—	—	—	—	—	91	162
	Rate per 1,000 examinations	1·3	0·8	0·3	0·0	—	—	—	—	—	—	0·0	0·9	0·8
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	2·0	1·3	0·9	0·0	—	—	—	—	—	—	0·0	1·4	1·3
Contacts (4)	Total number of examinations	6,520	2,640	5,440	2,250	3,210	3,270	2,960	810	420	360	40	27,920	58,700
	Number with tuberculosis requiring treatment or close supervision (0)	18	6	13	10	10	11	4	—	1	—	—	73	158
	Rate per 1,000 examinations	2·8	2·3	2·4	4·4	3·1	3·4	1·4	0·0	2·4	0·0	0·0	2·6	2·7
	Number with tuberculosis requiring occasional supervision only (1)	11	1	4	5	16	10	8	2	2	2	—	61	146
	Rate per 1,000 examinations	1·7	0·4	0·7	2·2	5·0	3·1	2·7	2·5	4·8	5·6	0·0	2·2	2·5
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	4·4	2·7	3·1	6·7	8·1	6·4	4·1	2·5	7·1	5·6	0·0	4·8	5·2
Special Surveys (5)	Total number of examinations	2,100	540	1,890	1,280	3,100	3,130	3,020	1,170	880	1,570	—	18,680	34,870
	Number with tuberculosis requiring treatment or close supervision (0)	1	2	1	2	3	7	1	—	3	4	—	24	54
	Rate per 1,000 examinations	0·5	3·7	0·5	1·6	1·0	2·2	0·3	0·0	3·4	2·5	—	1·3	1·5
	Number with tuberculosis requiring occasional supervision only (1)	2	—	—	1	3	10	10	7	3	3	—	39	76
	Rate per 1,000 examinations	1·0	0·0	0·0	0·8	1·0	3·2	3·3	6·0	3·4	1·9	—	2·1	2·2
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	1·4	3·7	0·5	2·3	1·9	5·4	3·6	6·0	6·8	4·5	—	3·4	3·7
Factories/offices (General Surveys) (6)	Total number of examinations	—	20	134,580	116,440	106,130	97,370	79,930	22,500	6,960	2,580	210	566,720	1,586,330
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	140	151	137	101	64	10	4	1	—	508	1,941
	Rate per 1,000 examinations	—	0·0	1·0	1·3	1·3	1·0	0·8	0·4	0·6	0·4	0·0	1·1	1·2
	Number with tuberculosis requiring occasional supervision only (1)	—	—	62	91	139	185	180	66	17	9	—	749	2,572
	Rate per 1,000 examinations	—	0·0	0·5	0·8	1·3	1·9	2·3	2·9	2·4	3·5	0·0	1·3	1·6
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	—	0·0	1·5	2·1	2·6	2·9	3·1	3·4	3·0	3·9	0·0	2·4	2·9
Persons in Prisons, Borstals, etc. (6x)	Total number of examinations	90	90	310	170	290	310	300	250	210	1,310	10	3,340	18,870
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	1	—	—	2	—	—	—	5	—	8	128
	Rate per 1,000 examinations	0·0	0·0	3·2	0·0	0·0	6·5	0·0	0·0	0·0	3·8	0·0	2·4	6·8
	Number with tuberculosis requiring occasional supervision only (1)	—	—	—	1	—	1	2	2	—	8	—	14	120
	Rate per 1,000 examinations	0·0	0·0	0·0	5·9	0·0	3·2	6·7	8·0	0·0	6·1	0·0	4·2	6·4
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·0	0·0	3·2	5·9	0·0	9·7	6·7	8·0	0·0	9·9	0·0	6·6	13·1
General Public Volunteers (7)	Total number of examinations	9,140	4,360	53,170	55,350	119,000	119,460	97,260	34,430	24,650	28,340	250	545,410	968,990
	Number with tuberculosis requiring treatment or close supervision (0)	4	3	68	86	161	120	88	29	21	12	—	592	1,450
	Rate per 1,000 examinations	0·4	0·7	1·3	1·6	1·4	1·0	0·9	0·8	0·9	0·4	0·0	1·1	1·5
	Number with tuberculosis requiring occasional supervision only (1)	10	2	19	38	167	185	220	97	44	84	—	866	1,847
	Rate per 1,000 examinations	1·1	0·5	0·4	0·7	1·4	1·5	2·3	2·8	1·8	3·0	0·0	1·6	1·9
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	1·5	1·1	1·6	2·2	2·8	2·6	3·2	3·7	2·6	3·4	0·0	2·7	3·4
Ante-natal cases (8)	Total number of examinations	10	30	5,090	18,400	25,380	5,380	100	—	—	—	10	54,400	54,400
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	5	30	36	7	—	—	—	—	—	78	78
	Rate per 1,000 examinations	0·0	0·0	1·0	1·6	1·4	1·3	0·0	—	—	—	0·0	1·4	1·4
	Number with tuberculosis requiring occasional supervision only (1)	—	—	4	21	35	26	1	—	—	—	—	87	87
	Rate per 1,000 examinations	0·0	0·0	0·8	1·1	1·4	4·8	10·0	—	—	—	0·0	1·6	1·6
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	0·0	0·0	1·8	2·8	2·8	6·1	10·0	—	—	—	0·0	3·0	3·0
Mental Hospitals and Mental Institutions (9)	Total number of examinations	340	110	1,170	1,660	3,420	5,350	6,910	3,750	3,800	9,280	40	35,830	71,660
	Number with tuberculosis requiring treatment or close supervision (0)	—	—	1	1	11	12	9	3	3	9	—	49	165
	Rate per 1,000 examinations	0·0	0·0	0·9	0·6	3·2	2·2	1·3	0·8	0·8	1·0	0·0	1·4	2·3
	Number with tuberculosis requiring occasional supervision only (1)	1	—	—	—	5	9	15	14	7	30	—	81	284
	Rate per 1,000 examinations	2·9	0·0	0·0	0·0	1·5	1·7	2·2	3·7	1·8	3·2	0·0	2·3	4·0
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	2·9	0·0	0·9	0·6	4·7	3·9	3·5	4·5	2·6	4·2	0·0	3·6	6·3
All Groups	Total number of examinations	61,150	46,700	242,140	209,650	285,330	254,100	206,660	68,790	41,200	49,230	620	1,465,570	3,323,910
	Number with tuberculosis requiring treatment or close supervision (0)	66	34	335	385	538	369	237	74	66	52	—	2,156	6,199
	Rate per 1,000 examinations	1·1	0·7	1·4	1·8	1·9	1·5	1·1	1·1	1·6	1·1	0·0	1·5	1·9
	Number with tuberculosis requiring occasional supervision only (1)	81	34	120	184	472	543	533	239	111	175	—	2,492	6,648
	Rate per 1,000 examinations	1·3	0·7	0·5	0·9	1·7	2·1	2·6	3·5	2·7	3·6	0·0	1·7	2·0
	Combined rate per 1,000 examinations for diagnoses (0) and (1)	2·4	1·5	1·9	2·7	3·5	3·6	3·7	4·6	4·3	4·6	0·0	3·2	3·9

APPENDIX C

Tables relating to Venereal Diseases: England and Wales

TABLE A

*Number of Cases (in all stages) dealt with for the first time at any centre**

	Year	Syphilis	Soft Chancre	Gonorrhoea	Non Gonococcal Urethritis (Males only)	Other Conditions†		Total sum of Columns 2–6
MALES	1939	7,273	827	24,811	—	24,324		57,235
	1940	7,093	887	21,057	—	20,005		49,042
	1941	7,790	1,017	20,572	—	20,476		49,855
	1942	8,529	969	17,956	—	22,302		49,756
	1943	8,790	773	18,215	—	36,868		64,646
	1944	7,667	628	16,629	—	34,123		59,047
	1945	8,134	589	21,280	—	42,110		72,113
	1946	13,803	994	36,912	—	70,239		121,948
	1947	11,699	776	29,647	—	53,766		95,888
	1948	9,780	706	25,006	—	56,435		91,927
	1949	7,826	543	20,366	—	52,526		81,261
	1950	5,979	433	17,007	—	55,068		78,487
						Requiring Treatment	*Not Requiring Treatment*	
	1951	4,506	437	14,975	10,794	11,607	26,956	69,275
	1952	3,760	389	15,510	11,552	12,578	25,928	69,717
	1953	3,272	347	15,242	13,157	13,566	25,619	71,203
	1954	2,929	301	13,962	13,279	13,071	24,651	68,193
	1955	2,711	285	14,079	14,269	13,613	24,436	69,393
	1956	2,778	307	16,377	14,825	14,254	23,514	72,055
	1957	2,747	254	19,620	16,066	14,332	23,032	76,051
	1958	2,497	247	22,398	17,606	14,562	21,711	79,021
	1959	2,252	265	24,964	20,227	15,241	23,160	86,109
FEMALES	1939	4,605	11	6,489	—	14,684		25,789
	1940	4,226	21	5,882	—	12,881		23,010
	1941	4,972	20	7,314	—	15,068		27,374
	1942	6,524	27	8,413	—	20,190		35,154
	1943	7,960	32	10,043	—	34,681		52,716
	1944	8,251	28	10,646	—	38,566		57,491
	1945	8,508	29	11,603	—	41,524		61,664
	1946	10,075	34	10,431	—	35,475		56,015
	1947	8,438	27	7,019	—	29,314		44,798
	1948	7,349	21	5,306	—	27,462		40,138
	1949	5,873	19	4,121	—	24,801		34,814
	1950	4,988	17	3,497	—	23,840		32,342
						Requiring Treatment	*Not Requiring Treatment*	
	1951	3,926	16	3,089	—	8,517	12,408	27,956
	1952	3,362	14	3,585	—	8,916	11,560	27,437
	1953	2,914	9	4,021	—	9,834	10,612	27,390
	1954	2,352	8	3,574	—	10,117	9,503	25,554
	1955	2,272	10	3,766	—	10,182	9,075	25,305
	1956	2,363	9	4,011	—	10,939	8,835	26,157
	1957	2,230	6	4,761	—	11,317	9,098	27,412
	1958	1,829	12	5,489	—	12,149	9,001	28,480
	1959	1,675	2	6,380	—	12,752	9,544	30,353

* Excludes cases transferred from centre to centre.
† Including non-gonococcal urethritis up to 1950.

TABLE B

Cases of Acquired Syphilis in Table A, with infections of less than one year

Year	Number		Per cent. of Table A cases	
	M.	F.	M.	F.
1931	6,241	2,683	56·9	39·3
1932	6,196	2,532	56·2	39·2
1933	5,949	2,141	55·4	35·5
1934	4,888	2,030	50·8	34·8
1935	4,226	1,745	49·2	31·4
1936	4,033	1,642	49·0	32·0
1937	3,986	1,647	49·4	31·9
1938	3,744	1,494	47·8	30·0
1939	3,547	1,412	49·1	30·7
1940	4,029	1,582	56·8	37·4
1941	5,023	2,309	64·5	46·4
1942	5,470	3,576	64·1	54·7
1943	5,159	4,483	58·7	56·3
1944	4,384	4,934	57·2	59·8
1945	5,214	5,527	64·1	64·9
1946	10,705	6,970	77·6	69·2
1947	8,750	5,416	74·8	64·2
1948	6,603	4,034	67·5	54·9
1949	4,392	2,420	56·1	41·2
1950	2,678	1,465	44·8	29·4
1951	1,498	774	33·2	19·7
1952	891	462	23·7	13·7
1953	755	319	23·0	10·9
1954	600	208	20·5	8·9
1955	609	228	22·5	10·0
1956	587	257	21·1	10·8
1957	555	192	20·2	8·6
1958	522	182	20·9	9·9
1959	564	209	25·0	12·5

TABLE C

Cases of Congenital Syphilis dealt with for the first time at the Treatment Centres

Year	Under 1 year	1 and under 5 years	5 and under 15 years	15 years and over	Totals
1931	339	204	974	922	2,439
1932	302	180	857	805	2,144
1933	305	157	774	780	2,016
1934	296	165	708	839	2,008
1935	251	165	671	944	2,031
1936	241	132	600	935	1,908
1937	211	144	534	940	1,829
1938	216	123	448	951	1,738
1939	217	125	406	866	1,614
1940	191	101	357	709	1,358
1941	223	90	321	746	1,380
1942	245	122	309	788	1,464
1943	310	129	348	940	1,727
1944	346	113	271	822	1,552
1945	326	83	210	736	1,355
1946	363	103	215	701	1,382
1947	343	120	214	676	1,353
1948	372	142	215	678	1,407
1949	355	118	197	747	1,417
1950	227	141	203	652	1,223
1951	156	89	198	684	1,127
1952	110	101	191	547	949
1953	95	77	152	520	844
1954	48	41	119	478	686
1955	41	30	114	459	644
1956	36	31	82	441	590
1957	27	26	77	427	557
1958	17	15	65	340	437
1959	20	19	29	304	372

TABLE D

Death rates per 1,000 live births, of infants under 1 year certified as due to congenital syphilis

Year	Rate	Year	Rate	Year	Rate
1912	1·34	1928	0·71	1944	0·16
1913	1·46	1929	0·64	1945	0·15
1914	1·55	1930	0·55	1946	0·15
1915	1·44	1931	0·45	1947	0·09
1916	1·57	1932	0·42	1948	0·09
1917	2·03	1933	0·35	1949	0·08
1918	1·90	1934	0·30	1950* ..	0·04
1919	1·76	1935	0·26	1951* ..	0·03
1920	1·51	1936	0·24	1952* ..	0·03
1921	1·43	1937	0·19	1953* ..	0·01
1922	1·12	1938	0·18	1954* ..	0·003
1923	1·05	1939	0·17	1955* ..	Nil
1924	0·91	1940	0·16	1956* ..	Nil
1925	0·82	1941	0·21	1957* ..	Nil
1926	0·84	1942	0·19	1958* ..	0·004
1927	0·77	1943	0·23	1959* ..	0·003

Rates for years 1931–49 are according to the 1940 classification (5th Revision). For 1912–30 the rates need to be multiplied by the conversion ratio 0·857 for approximate comparability.

* For 1950–59 No. 020.2 in International List (7th Revision).

TABLE E

Deaths from General Paralysis of the Insane, Tabes Dorsalis and Aneurysm of the Aorta

Year	G.P.I.		Tabes Dorsalis		Aneurysm of Aorta*	
	Males	Females	Males	Females	Males	Females
1911–20	1,697	383	592	106	838	208
1921–30	1,204	277	631	127	860	249
1931–35	819	240	566	125	969	393
1936–39	625	227	471	106	1,017	531
1940–44	482	167	270	71	367	124
1945–49	258	101	157	41	381	130
1950–54	98	42	93	27	336	166
1955	84	36	53	24	332	173
1956	56	28	66	15	329	171
1957	48	20	53	22	358	183
1958	57	28	41	16	307	219
1959	62	27	50	22	295	190

The averages for the years 1911 to 1939 are based on the 4th Revision of the International List. Figures for the years 1940 to 1959 are according to the 7th Revision.

Non-civilian deaths are excluded from 3rd September, 1939, for males, and from 1st June, 1941, for females, to 31st December, 1949.

* For years 1911–1939 :—

" Aneurysm " (code 96) of the 4th Revision List, based on arbitrary rules of assignment.

For years 1940 and after:—

" Aneurysm of Aorta " (code 022) of the 7th Revision List, based on assignment by the certifying medical practitioner.

APPENDIX D

Tables relating to Wales

I

Population of Wales, 1801, 1851, 1951, and 1955–59

Year	Population: Males	Population: Females	Population: Persons
1801	279,407	307,838	587,245
1851	581,789	581,266	1,163,055
1951	1,262,000	1,327,000	2,589,000
1955	1,275,000	1,328,000	2,603,000
1956	1,279,000	1,329,000	2,608,000
1957	1,281,000	1,330,000	2,611,000
1958	1,282,000	1,333,000	2,615,000
1959	1,286,000	1,337,000	2,623,000

1801 and 1851 : Census population.
1951–59 : Estimated mid-year home population (i.e., including armed forces stationed in Wales).

II

Wales: Births, Birth Rates, Stillbirth Rates, Deaths, Death Rates, Infant Mortality Rates and Neonatal Mortality Rates, 1936 to 1959

Year	Number of Live Births(1) (Annual Averages 1936–1950)	Live Birth Rate per 1,000 Living(2) (Mean Annual Rates 1936–1950)	Stillbirth Rate per 1,000 Total Live and Stillbirths (Mean Annual Rates 1936–1950)	Number of Deaths(3) (Annual Averages 1936–50)	Death Rate per 1,000 Living(3) (Mean Annual Rates 1936–1950)	Infant Mortality Rate per 1,000 Live Births(4)	Neonatal Mortality Rate per 1,000 Live Births(4)
1936–1940	37,886	15·2	50·4	33,363	13·4	61·6	33·8
1941–1945	42,906	17·2	37·1	32,309	13·0	56·2	29·4
1946–1950	46,603	18·4	28·8	32,067	12·6	42·3	23·7
1951 ..	41,270	16·0	26·4	36,005	13·9	36·1	21·8
1952 ..	41,388	16·0	28·0	31,005	12·0	33·3	20·8
1953 ..	41,528	16·0	25·3	31,392	12·1	31·3	19·7
1954 ..	40,256	15·5	27·3	32,822	12·6	31·5	21·5
1955 ..	38,876	14·9	28·3	33,938	13·0	31·4	20·8
1956 ..	40,915	15·7	26·8	32,438	12·4	28·8	20·6
1957 ..	41,645	15·9	25·8	32,696	12·5	28·4	20·0
1958 ..	42,460	16·2	26·3	32,642	12·5	26·5	18·9
1959 ..	42,262	16·1	26·3	32,134	12·3	26·3	19·6

(1) Births registered in each calendar year up to 1938; births occurring in each year 1939 onwards.
(2) Birth rates from 1940 to 1949 are based on civilian population.
(3) Civilians only from 3rd September, 1939, to the end of 1949 for males and from 1st June, 1941 to the end of 1949 for females.
(4) Related live births from 1940 to 1956.

III

Wales: Deaths from Principal Causes, 1956–1959

Causes of Death (Classified by 1955 Revision of International List)	Number of deaths*			
	1956	1957	1958	1959
Tuberculosis, respiratory	396	335	304	287
Tuberculosis, other	33	33	29	36
Syphilitic disease	58	57	35	52
Diphtheria	—	—	—	—
Whooping cough	7	7	3	—
Meningococcal infections	19	17	14	15
Acute poliomyelitis	4	10	1	3
Measles	4	6	9	4
Other infective, etc., diseases	56	78	48	49
Malignant neoplasm:—				
Stomach	1,145	1,151	1,168	1,069
Lung, bronchus	857	868	866	1,002
Breast	480	442	464	447
Uterus	239	263	253	234
Other malignant and lymphatic neoplasms	2,671	2,584	2,683	2,628
Leukaemia, aleukaemia	111	132	124	142
Diabetes	225	190	191	184
Vascular lesions of nervous system	4,730	5,032	4,924	4,833
Coronary disease, angina	4,622	4,972	5,281	5,343
Hypertension with heart disease	834	842	771	784
Other heart disease	5,061	4,802	4,701	4,337
Other circulatory disease	1,549	1,496	1,603	1,515
Influenza	124	412	158	394
Pneumonia	934	996	984	1,046
Bronchitis	1,787	1,765	1,839	1,765
Other diseases of respiratory system	613	677	541	515
Ulcer of stomach and duodenum	266	264	229	209
Gastritis, enteritis, and diarrhoea	101	141	146	108
Nephritis and nephrosis	398	334	318	280
Hyperplasia of prostate	362	308	311	304
Pregnancy, childbirth, abortion	34	29	25	18
Congenital malformations	341	329	306	349
Other defined and ill-defined diseases	3,143	2,899	2,937	2,915
Motor vehicle accidents	286	264	318	298
All other accidents	692	711	797	717
Suicide	240	238	246	239
Homicide, operations of war	16	13	15	13
All Causes	32,438	32,696	32,642	32,134

* Deaths include those of non-civilians.

IV

Wales: Deaths from Tuberculosis per annum, including those of non-civilians and standardized death rates per million (1901) population basis*

Year	Respiratory				Other Forms			
	Males	Females	Persons	Standardized death rates per million (1901 population basis)	Males	Females	Persons	Standardized death rates per million (1901 population basis)
1851–1860..	1,861	2,002	3,863		364	269	633	
1861–1870..	1,934	2,056	3,990		413	305	718	
1871–1880..	1,773	1,885	3,658		519	409	928	
1881–1890..	1,561	1,685	3,246		515	447	962	
1891–1900..	1,371	1,402	2,773		552	494	1,046	
1901–1910..	1,311	1,285	2,596	1,183	558	508	1,066	458
1911–1920..	1,344	1,324	2,668	1,042	397	374	771	311
1921–1930..	1,215	1,179	2,394	890	303	275	578	237
1931–1939..	1,000	907	1,907	710	211	185	396	177
1940–1949..	837	666	1,503	561	149	139	288	130
1950 ..	653	410	1,063	337	87	76	163	70
1951 ..	593	329	922	279	82	82	164	70
1952 ..	492	215	707	210	43	46	89	37
1953 ..	447	185	632	174	36	52	88	36
1954 ..	431	181	612	167	35	31	66	22
1955 ..	369	154	523	139	26	12	38	13
1956 ..	280	116	396	100	16	17	33	10
1957 ..	242	93	335	82	15	18	33	11
1958 ..	227	77	304	71	14	15	29	9
1959 ..	238	49	287	66	17	19	36	11

Note—

Deaths for 1851–1939 according to classification in use before 1940 (4th Revision), deaths for 1940–1959 according to classification in use for 1959 (7th Revision).

* Figures for 1939–1949 exclude non-civilians.

V

Wales: Deaths and death rates from Cancer (including leukaemia and aleukaemia), 1959

Site	Number of Deaths			Rates per Million		
	Males	Females	Persons	Males	Females	Persons
Stomach	610	459	1,069	474	343	408
Lung, Bronchus	903	99	1,002	702	74	382
Breast	6	441	447	5	330	170
Uterus	—	234	234	—	175	89
Other malignant and lymphatic neoplasms ..	1,410	1,218	2,628	1,096	911	1,002
Leukaemia and Aleukaemia	73	69	142	57	52	54
Total	3,002	2,520	5,522	2,334	1,885	2,105

APPENDIX E

I

Miners' Rehabilitation Service—Statistics for 1959

Centre	Capacity of Centre			Number of Admissions			Percentage Utilization of Capacity			Percentage of Cases with Fractures and Dislocations			*Duration of Treatment of Patients Discharged During the Year*: Average Period in the Centre (*in weeks*)			*Duration of Treatment of Patients Discharged During the Year*: Average Period of Total Incapacity (*in months*)		
	I.Ps.	O.Ps.	Total	Miners	Others	Total	Miners	Others	Total	Miners	Others	Total	Miners	Others	Total	Miners	Others	Total
Berry Hill Hall	56	14	70	348	27	375	90·0	6·4	96·4	48·4	65·2	49·4	9·5	8·6	9·5	4·9	5·8	5·0
Firbeck Hall	95	—	95	401	9	410	89·2	2·0	91·2	43·0	50·0	43·2	11·6	17·6	11·7	10·7	13·0	10·4
Hartford Hall	50	15	65	323	42	365	82·6	8·0	90·6	33·6	54·0	35·7	8·6	6·2	8·4	6·1	6·2	6·1
Higham Grange	54	—	54	206	59	265	63·5	19·9	83·4	36·1	53·7	39·7	8·3	10·1	8·7	5·0	6·3	5·3
Oakmere Hall	55	—	55	159	21	180	86·1	3·4	89·5	40·3	64·3	43·8	15·1	14·7	15·0	8·2	25·4	9·7
Talygarn	106	—	106	874	—	874	100	—	100	38·8	—	38·8	6·4	—	6·4	6·5	—	6·5
The Hermitage	60	—	60	413	—	413	94·3	—	94·3	31·0	—	31·0	7·0	—	7·0	5·6	—	5·6
Totals	476	29	505	2,724	158	2,882	88·3	4·7	93·0	38·7	57·2	39·7	9·5	11·4	9·5	6·7	11·3	6·9

II

Resettlement Classification on follow-up of patients 6 months after discharge

Centre	Type of Case	Normal or Equivalent Work		Permanent Light Work		Work in Other Industry		Total Resettled		Retired or Receiving Other Treatment		Not yet Resettled		Total Discharged	
		1*	2	1	2	1	2	1	2	1	2	1	2	1	2
Berry Hill Hall	Miners	218	2,772	87	1,601	4	189	309	4,562	—	59	3	—	312	4,621
	Others	17	223	2	36	—	3	19	262	—	—	—	—	19	262
	Totals	235	2,995	89	1,637	4	192	328	4,824	—	59	3	—	331	4,883
Firbeck Hall	Miners	227	3,156	109	1,481	5	163	341	4,800	4	71	—	—	345	4,871
	Others	4	28	1	18	—	—	5	46	—	—	—	—	5	46
	Totals	231	3,184	110	1,499	5	163	346	4,846	4	71	—	—	350	4,917
Hartford Hall	Miners	249	2,795	75	1,174	7	97	331	4,066	6	57	—	—	337	4,123
	Others	20	59	1	10	1	2	22	71	3	3	—	—	25	74
	Totals	269	2,854	76	1,184	8	99	353	4,137	9	60	—	—	362	4,197
Higham Grange	Miners	140	1,925	37	951	2	173	179	3,049	3	74	1	1	183	3,124
	Others	61	404	10	48	1	17	72	469	1	15	—	—	73	484
	Totals	201	2,329	47	999	3	190	251	3,518	4	89	1	1	256	3,608
Oakmere Hall	Miners	88	1,599	48	1,045	—	141	136	2,785	3	92	1	24	140	2,901
	Others	8	19	9	14	—	—	17	33	—	1	2	2	19	36
	Totals	96	1,618	57	1,059	—	141	153	2,818	3	93	3	26	159	2,937
Talygarn	Miners	648	6,194	64	1,576	58	284	770	8,054	32	227	—	48	802	8,329
	Others	—	15	—	4	—	1	—	20	—	—	—	—	—	20
	Totals	648	6,209	64	1,580	58	285	770	8,074	32	227	—	48	802	8,349
The Hermitage	Miners	212	2,305	124	1,431	14	149	350	3,885	4	101	3	3	357	3,989
	Others	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Totals	212	2,305	124	1,431	14	149	350	3,885	4	101	3	3	357	3,989
Totals	Miners .. No.	1,782	20,746	544	9,259	90	1,196	2,416	31,201	52	681	8	76	2,476	31,958
	Miners .. %	72·0	64·9	22·0	29·0	3·6	3·8	97·6	97·7	2·1	2·1	0·3	0·2		
	Others .. No.	110	748	23	130	2	23	135	901	4	19	2	2	141	922
	Others .. %	78·1	81·1	16·3	14·1	1·4	2·5	95·8	97·7	2·8	2·1	1·4	0·2		
	Totals .. No.	1,892	21,494	567	9,389	92	1,219	2,551	32,102	56	700	10	78	2,617	32,880
	Totals .. %	72·3	65·4	21·7	28·6	3·5	3·7	97·5	97·7	2·1	2·1	0·4	0·2		

* In this line, col. 1 refers to patients discharged during the 12 months ended 4th July, 1959; and col. 2 to patients discharged from opening of Centres up to 4th July, 1959.

APPENDIX F

Medical Department of Ministry of Health

(July, 1960)

Chief Medical Officer
Sir John Charles, K.C.B., M.D., F.R.C.P.

Deputy Chief Medical Officers
G. E. Godber, C.B., D.M., F.R.C.P.
D. Thomson, M.D.

1. GENERAL PUBLIC HEALTH, ENVIRONMENTAL HYGIENE, HEALTH EDUCATION, FOOD

Principal Medical Officer—N. R. Beattie, M.D.

Senior Medical Officers—A. E. Martin, M.D., J. M. Ross, M.B.

Medical Officers—J. F. E. Bloss, M.R.C.S., H. M. Elliott, M.B., J. F. Lucey, M.B.

Milk Inspector—W. Rushton, M.B.E.

Adviser—Professor F. G. Young, D.Sc., F.R.S.(Biochemistry).

Food Hygiene Advisory Officer—Mr. T. Morley Parry.

2. MATERNAL AND CHILD WELFARE

Senior Medical Officer—Dorothy M. Taylor, C.B.E., M.D.

Medical Officers—Roma N. Chamberlain, M.B.,† Rachael A. Elliott, M.D., Mary G. Gorrie, M.D., W. Lees, M.R.C.O.G., Margaret Manson, M.B., Eileen M. Ring, M.D., Mary D. H. Sheridan, M.D.

3. INTERNATIONAL HEALTH, GENERAL EPIDEMIOLOGY, LEPROSY, TROPICAL DISEASES, FOOD POISONING, VACCINATION AND IMMUNIZATION

Principal Medical Officer—W. H. Bradley, D.M., M.R.C.P., J.P.

Senior Medical Officer—A. T. Roden, M.D.

Medical Officers—T. J. B. Geffen, M.D., M.R.C.P., C. G. M. Nicol, M.B., J. N. Twohig, M.B., B.Ch.

Advisers on :—

Leprosy—R. G. Cochrane, M.D., F.R.C.P.*

Malaria—Major-General Sir Gordon Covell, C.I.E., M.D.*

4. THERAPEUTIC SUBSTANCES, RESEARCH, NUTRITION, MEDICAL INTELLIGENCE

Principal Medical Officer—E. T. Conybeare, O.B.E., M.D., F.R.C.P.

Senior Medical Officer—R. Goulding, B.Sc., M.D.

Medical Officers—W. T. C. Berry, M.D., Catherine N. Dennis, F.R.C.S., J. Balfour Kirk, C.M.G., M.B., F.R.C.P.†, Rear-Admiral R. W. Mussen, C.B., C.B.E., M.D., F.R.C.P.

Advisers on :—

Biochemistry—Professor F. G. Young, D.Sc., F.R.S.

Statistics and Classification of Diseases—W. P. D. Logan, Ph.D., M.D. (Chief Statistician (Medical) at the General Register Office).

Population and Medico-Social Questions—C. P. Blacker, G.M., M.C., D.M., F.R.C.P.*

Chief Pharmacist—H. Davis, C.B.E., Ph.D., F.P.S., F.R.I.C.

* Part-time appointment.

† Temporary appointment.

Consultant Advisers (part-time)—Professor Sir Samuel Bedson, M.D., F.R.C.P., F.R.S., Professor R. W. Scarff, C.B.E., F.R.C.S., F.R.S.E. (Pathology), R. R. Bomford, D.M., F.R.C.P., and Professor Max Rosenheim, C.B.E., M.D., F.R.C.P. (General Medicine), Sir Ernest Rock Carling, F.R.C.S., F.R.C.P. and Sir James Paterson Ross, Bart., K.C.V.O., M.S., F.R.C.S. (Surgery), T. E. Cawthorne, F.R.C.S. (Otolaryngology), F. S. Cooksey, O.B.E., M.D., F.R.C.P. (Physical Medicine), Sir Stewart Duke-Elder, G.C.V.O., M.D., F.R.C.S. (Ophthalmology), Sir Archibald Gray, K.C.V.O., C.B.E., T.D., M.D., F.R.C.P., F.R.C.S. (Dermatology), Professor Sir Geoffrey Jefferson, C.B.E., M.S., F.R.C.S., F.R.C.P., F.R.S. (Neuro-Surgery), P. Kerley, C.V.O., C.B.E., M.D., F.R.C.P., F.F.R. (Radiography), G. S. W. Organe, M.D., F.F.A.R.C.S. (Anaesthetics), Professor Sir Harry Platt, Bart., M.D., M.S., F.R.C.S. (Orthopaedic Surgery), S. Cochrane Shanks, C.B.E., M.D., F.R.C.P., F.F.R. (Radiology), Sir Wilfrid P. H. Sheldon, K.C.V.O., M.D., F.R.C.P. (Paediatrics), Sir Clement Price Thomas, K.C.V.O., F.R.C.S. (Chest Surgery), Professor B. Windeyer, F.R.C.S., F.F.R., M.R.C.P. (Radiotherapy), Arnold L. Walker, C.B.E., F.R.C.S., F.R.C.O.G. and A. J. Wrigley, M.D., F.R.C.S., F.R.C.O.G. (Obstetrics, Gynaecology and Maternity Services), Sir William Kelsey Fry, C.B.E., M.C., F.R.C.S., F.D.S. (Dental Surgery), Sir Russell Brain, Bart., M.D., F.R.C.P. (Neurology), H. C. Edwards, C.B.E., F.R.C.S. (Surgery).

Hospital Planning and Administration

Principal Medical Officer—R. M. Shaw, M.B.
Senior Medical Officer—A. B. Harrington, M.D.
Medical Officer—C. Muir, M.R.C.P.

General Practice

Principal Medical Officers—R. E. Ford, M.D., M.R.C.P., W. S. Macdonald, M.C., M.B., J.P.

Artificial Limbs and Appliances

Principal Medical Officer—T. Ritchie, M.B., Ch.B.

Senior Medical Officers—D. W. Jolly, O.B.E., M.B., Ch.B., D. S. McKenzie, M.B., Ch.B., i/c Research.

Medical Officers—I. Fletcher, M.R.C.S., L.R.C.P. (Research), R. G. Buxton, L.R.C.S., L.R.C.P. (Norcross).

Newcastle ..	.. P. A. Maughan, M.B., B.S., C. E. Halliday, M.B., Ch.B.
Leeds ..	.. G. S. Thompson, M.B., F.R.C.S.(Ed.) (S.M.O.), D. S. Toole, B.A., M.B., B.Ch., T. Gray Williams, M.R.C.S., L.R.C.P.†
Nottingham	.. G. R. Parry, M.B., F.R.C.S.
Cambridge	.. E. A. Smyth, O.B.E., M.Ch.Orth., F.R.C.S.I.
London ..	.. G. L. Alcock, M.A., M.B., B.Ch., M.R.C.S.†, J. A. K. Fitzgerald, M.B., B.Ch., D.T.M.
Roehampton	.. Col. E. E. S. Wheatley, C.B.E., D.F.C., T.D., M.R.C.S., L.R.C.P. (S.M.O.), M. H. Cosbie, M.B., B.Ch.†, R. D. L. Davies, M.B., B.S., M.T.C.S., M. Vitali, Med. Dip. (Warsaw).
Tunbridge Wells	.. E. E. Harris, M.A., M.R.C.S., L.R.C.P.
Reading ..	.. D. L. Harbinson, M.B., B.Ch., D.P.H.
Bristol ..	.. J. H. T. Harrington, B.A., M.R.C.S., L.R.C.P. (S.M.O.).
Cardiff ..	.. See Welsh Board of Health.
Birmingham	.. R. G. Bryce, M.B., Ch.B., D.P.H., A. D. Gill, M.D., Ch.B., D.P.H., M.R.C.S., R. Hudson Evans, M.R.C.S., L..R.C.P.
Manchester	.. R. B. Bell, M.R.C.S., L.R.C.P., P. Seelig, M.D., P. F. Early, M.B., F.R.C.S.
Liverpool ..	.. G. S. Swan, M.B., Ch.B., M.R.C.S. (S.M.O.)†, W. C. Lawrence, M.B., F.R.C.S.(Ed.), M.Ch.Orth.
Sheffield ..	.. E. D. T. Lewis, M. B., Ch.B.
Exeter ..	.. J. H. Ramage, M.B., Ch.B.
Portsmouth	.. R. Williamson, M.R.C.S.
Dublin ..	.. L. P. McCullagh, M.B., B.Ch.

Tuberculosis

Senior Medical Officer—A. J. Eley, M.B., D.M.R.D.

Advisers—Professor F. R. G. Heaf, C.M.G., M.D., F.R.C.P.,* P. Kerley, C.V.O., C.B.E., M.D., F.R.C.P., F.F.R.*, and J. Maxwell, M.D., F.R.C.P.* (Radiography).

---

* Part-time appointment.

† Temporary appointment.

Venereal Diseases

Principal Medical Officer—D. S. Todd-White, M.R.C.S.

Adviser—A. J. King, M.B., B.S., F.R.C.S.

War Pensioners Hospitals

Principal Medical Officer—Lieut.-Colonel T. A. S. Samuel, M.C., T.D., M.R.C.S.

Medical Officer—R. G. Buxton, L.R.C.P. (Norcross).

Medical Superintendents—Lieut.-Colonel T. A. S. Samuel, M.C., T.D., M.R.C.S. (Roehampton), G. S. Moran, M.B. (Dublin).

Regional Hospital Board Areas

1. Newcastle .. 2. Leeds .. 3. Sheffield ..	I. G. Davies, M.D., F.R.C.P., D.P.H. (S.M.O.) (1), E. C. Murphy, T.D., M.R.C.S. (S.M.O.) (2 and 3), J. L. McLetchie, C.M.G., O.B.E., M.B.(1), Eileen M. Ring, M.D. (1, 2 and 3), J. G. Thomson, M.B., Ch.B., D.P.H. (2 and 3).
4. East Anglian (Cambridge)	I. G. Davies, M.D., F.R.C.P., D.P.H. (S.M.O.).
5. North West Metropolitan 6. North East Metropolitan 7. South East Metropolitan 8. South West Metropolitan	N. M. Goodman, M.D., Ph.D., F.R.C.P. (P.M.O.), R. H. Barrett, M.R.C.S. (S.M.O.) (8), Major-General J. C. A. Dowse, C.B., C.B.E., M.C., M.B.† (5), A. J. Eley, M.B., D.M.R.D. (S.M.O.) (7), J. M. G. Wilson, M.B., M.R.C.P. (6), Margaret Manson, M.D. (7 and 8).
9. Oxford .. 10. South Western (Bristol)	Albertine L. Winner, O.B.E., M.D., F.R.C.P. (P.M.O.), C. Seeley, M.D. (S.M.O.) (9), F. Riley, M.D., M.R.C.P. (10), Rachel A. Elliott, M.D. (10), Margaret Manson, M.B. (9).
11. Wales ..	A. R. Culley, C.B.E., M.D. (P.M.O.).
12. Birmingham .. 13. Manchester .. 14. Liverpool ..	D. S. Todd-White, M.R.C.S. (P.M.O.), C. A. Boucher, O.B.E., D.M. (S.M.O.), W. H. P. Minto, M.D., D.P.H. (S.M.O.) (12), D. Dooley, M.R.C.S., Roma N. Chamberlain, M.B.† (13 and 14), Mary G. Gorrie, M.D. (12).
15. Wessex ..	Albertine L. Winner, O.B.E., M.D., F.R.C.P. (P.M.O.), C. Seeley, M.D. (S.M.O.).

Rehabilitation of Injured Miners

Principal Medical Officer—Albertine L. Winner, O.B.E., M.D., F.R.C.P.

Adviser—E. A. Nicoll, C.B.E., M.D., F.R.C.S.(Ed.).*

Cancer, Radiotherapy and Radioactive Substances

Principal Medical Officer—N. M. Goodman, M.D., Ph.D., F.R.C.P.

Medical Officer—A. Cruickshank, O.B.E., M.D.

Hospital Statistics and Medical Records

Principal Medical Officer—N. M. Goodman, M.D., Ph.D., F.R.C.P.

Senior Medical Officer—C. J. Donelan, M.B.

6. REGIONAL GENERAL MEDICAL SERVICES

Principal Medical Officers—R. E. Ford, M.D., M.R.C.P. (in charge), K. A. Boughton-Thomas, M.B.

North Eastern Division

(Divisional Office: 44–68, The Headrow, Leeds, 1.)

Senior Medical Officer—A. W. Davidson, M.C., E.R.D., M.B., F.R.C.S.(Ed.).

Medical Officers—J. Adam, O.B.E., M.B., J. Barr, M.B., C. M. Boucher, M.B., D. W. E. Burridge, T.D., M.B., P. W. Jack, M.B., Ch.B., H. J. Gibson, M.D., B.L., D.P.H., C. E. B. Lynch, M.D., A. Markson, M.D.

* Part-time appointment.

† Temporary appointment.

North Western Division

(Divisional Office : 30, Dickinson Street, Manchester, 1.)

Senior Medical Officer—W. Meikle, M.B.

Medical Officers—A. T. Ashcroft, M.B., J. D. Black, M.B., G. Cornah, M.B., Ch.B., T. S. Hanlin, M.B., A. Maclaine, M.B., P. N. Holmes, M.B., Ch.B., M.R.C.S., L.R.C.P., J. MacKellar, M.A., M.B., B.Chir., M.R.C.S., L.R.C.P.

East Midlands Division

(Divisional Office : Government Buildings, Block 2, Chalfont Drive, Western Boulevard, Nottingham.)

Senior Medical Officer—E. Mence, M.B.

Medical Officers—W. D. Anderson, M.B., C. R. Morison, M.D., D. B. Robb, M.B., E. D. Robb, M.B., J. E. Struthers, M.B., G. I. G. Findlay, M.B., Ch.B.

Western Division

(Divisional Office : Five Ways House (West Entrance), Islington Row, Birmingham, 15.)

Senior Medical Officer—A. W. Lilley, M.R.C.S.

Medical Officers—J. C. B. Bone, M.B., G. Bridge, M.D., A. T. L. Kingdon, M.D., M.R.C.P., A. F. MacBean, M.B., M. A. Nicholson, M.B., J. D. Robertson, M.D., M. Hutchinson, M.B., Ch.B., H. A. Tuck, M.B., B.S.

Eastern Division

(Divisional Office : Queen Anne's Chambers, 28, Broadway, Westminster, S.W.1.)

Senior Medical Officer—I. E. Phelps, M.R.C.S.

Medical Officers—A. Brebner, M.B., B. E. Jerwood, M.D., G. Phipps, M.B., S. Segal, M.R.C.S., G. W. Whittall, M.B., J. A. Whyte, M.B., W. J. L. Pain, M.B., B.Chir.

Southern Division

(Divisional Office : Queen Anne's Chambers, 28, Broadway, Westminster, S.W.1.)

Senior Medical Officer—C. E. Gallagher, O.B.E., M.R.C.S.

Medical Officers—P. F. Bishop, M.B., R. W. Bone, M.B., T. E. A. Carr, M.B., F. W. H. Caughey, M.B., P. B. Hanbury, M.R.C.S., L.R.C.P., A. W. M. Rooke, M.B., B.S., M.R.C.S., L.R.C.P., W. Wilson, M.B., B.Ch., M.R.C.S., L.R.C.P.

7. CIVIL DEFENCE, PATHOLOGICAL SERVICES, MEDICAL EDUCATION, FOREIGN VISITORS, INTERNATIONAL HEALTH, PORT AND AIRPORT CONTROL, ETC.

Principal Medical Officer—L. H. Murray, O.B.E., M.D.

Senior Medical Officers—R. H. Barrett, M.R.C.S., Katherine M. Hirst, O.B.E., M.B.

Advisers—Professor Sir Samuel Bedson, M.D., F.R.C.P., F.R.S.,* Sir Ernest Rock Carling, F.R.C.S., F.R.C.P.,* W. d'A. Maycock, M.B.E., M.D.* (Blood Transfusion), Professor B. Windeyer, F.R.C.S., F.F.R., M.R.C.P. (Radio-activity).

Medical Officers—E. J. Bury, M.R.C.S., A. Cruickshank, O.B.E., M.D., Catherine N. Dennis, M.B., F.R.C.S., E. Ellice Henderson, M.D. (Inspector of Anatomy).

8. MENTAL HEALTH

Principal Medical Officers—W. S. Maclay, C.B., O.B.E., M.D., F.R.C.P., Q.H.P., W. Rees Thomas, C.B., M.D., F.R.C.P.,* Isabel G. Wilson, M.D., F.R.C.P.

DENTAL HEALTH SERVICE

(attached to Headquarters)

Chief Dental Officer—W. G. Senior, C.B.E., Ph.D., F.D.S.

Deputy Chief Dental Officer—Lieut.-Colonel F. S. Whiter, O.B.E., F.D.S.

Senior Dental Officers—R. D. Bell, L.D.S., R. A. Campbell, E.D., B.D.Sc., H. A. Dixey, L.D.S., Jean R. Forrest, L.D.S., Major L. G. Hitching, T.D., L.D.S., Eleanor M. Knowles, O.B.E., F.D.S., A. G. Smith, L.D.S.

Dental Officers—Lieut-Colonel J. A. O'Connor, M.B.E., L.D.S., Jean Oswald, L.D.S.

---

* Part-time appointment.

REGIONAL DENTAL OFFICERS

Regions—1. P. D. M. Rowland, L.D.S., 2. I. H. Jones, L.D.S., G. V. L. Williams, T.D., L.D.S., 3. G. A. Rowse, L.D.S., 4. R. D. Buchan, L.D.S., 5, 6, 7 and 8. A. Ferrari, B.D.S., L.R.C.P., M.R.C.S., M. A. Freeman, M.C., L.D.S., A. R. Gillies, L.D.S., Lieut.-Colonel N. I. MacMillan, L.D.S., A. Macpherson, L.D.S., Lieut-Colonel R. W. Mather, B.Dent.Sc., G. B. Roberts, LL.B., L.D.S., F. A. Scott,* C. Stacey, L.D.S.,* H. Walker, L.D.S.,† 9. P. A. W. Crow, V.R.D., L.D.S., 10. A. W. Holman, L.D.S., V. Howarth, L.D.S., 11 (see under Welsh Board of Health), 12. Colonel B. Abbott, L.D.S., E. E. Jackson, L.D.S., 13. J. H. Whittle, L.D.S., 14. D. S. Pritchard, L.R.C.P. & S., L.D.S.

NURSING AND MIDWIFERY SERVICES

Chief Nursing Officer—Miss K. A. Raven.

Deputy Chief Nursing Officers—Miss E. Jackson, O.B.E., Miss D. M. White.

Mental Nursing Officers—F. J. Ely, Miss O. F. Griffith.

WELFARE SERVICES

Chief Welfare Officer—Miss G. M. Aves, O.B.E.

Deputy Chief Welfare Officer—Miss E. L. Hope-Murray.

Welfare Officer—Miss V. D. Mason†.

BOARD OF CONTROL

Senior Commissioners—W. S. Maclay, C.B., O.B.E., M.D., F.R.C.P., Q.H.P., W. Rees Thomas, C.B., M.D., F.R.C.P.,* Isabel G. H. Wilson, M.D., F.R.C.P.

Commissioners—S. M. Allan, M.D., Ch.B., D.P.M., E. N. Butler, M.R.C.S., C. M. T. Hastings, M.B., G. A. Lilly, M.C., M.D.,† R. J. Rosie, C.B.E., M.B., G. C. Tooth, M.D.

WELSH BOARD OF HEALTH

Principal Medical Officer—A. R. Culley, C.B.E., M.D.

Senior Medical Officer—T. T. Baird, M.B.

Medical Officers—G. J. Roberts, M.D., Mary W. Jenkins, M.B.

Medical Officers (Regional General Medical Services)—G. M. Evans, M.R.C.S., E. Lloyd Jones, M.D., E. A. Wilson, M.B., T. J. M. Gregg, O.B.E., M.B., J.P.,† J. O. Williams, M.R.C.S.

Medical Officers (Artificial Limbs and Appliances).—G. A. Lloyd Jones, M.B., A. A. Gregory Dean, M.D.

Dental Officers—G. E. Morgan, F.D.S., R. C. Price, L.D.S., G. Morris, L.D.S.

Retired or Resigned—H. Broughton, L.D.S., Dr. J. Cauchi, Dr. G. V. Davies, Major-General A. G. Harsant, C.B.E., O.B.E., M.D., Dr. C. T. Maitland, C.B.E., Dr. R. D. Sloan, W. E. Starkey, L.D.S.

Deceased—Dr. L. M. Ladell, Surgeon Captain J. F. M. Campbell.

---

* Part-time appointment.

† Temporary appointment.

(80926) Wt. 550/9330 K.27 11/60 Hw.