

A handbook of health education.

Contributors

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A Handbook of
Health Education

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Introduction

In a modern community everybody needs to know and follow the rules of healthy living in order to keep well. This does not mean that we should become a race of hypochondriacs; there is no need to stop and think each time before opening a window, or eating a fresh apple, or washing before a meal; nor would anyone ever do so. Yet we all need a good stock of basic general knowledge in a form which can be easily applied at the right moment, and there are occasions when nearly everyone has reason to be concerned about health in both its private and its public aspect; in any case the general practice of the community reflects the level of public opinion, which needs to be well-informed and responsible.

Certainly it is the business of the whole community, and in particular of parents, to see that the rising generation gets the best possible general training in matters of health. But the parent cannot be expected to do everything single-handed; and a strong professional team, which includes doctors, teachers, health visitors and social welfare workers of every kind, is at work all the time to make sure that parents and children alike are living in as healthy an environment as possible and that help is available when needed. Within this team, the teacher's special relationship with young people at school provides him with a unique opportunity of giving them the training in matters of health which they need. The work of the biology teachers speaks for itself. But the work of every other teacher in a school is just as important, whatever subjects he may be teaching; his general point of view in matters of health, the standards he sets and the things he considers important, all these form the main source of the indirect education which every good school provides continuously for all its pupils. To this end the teacher must have at least a sound general knowledge of the main aspects of health education, including some understanding of its scientific basis. He need not be an expert but he should know more than he has to pass on. He must also be the kind of person whom his pupils will wish to follow. All this is much to expect, even though the community cannot ask for less. The main purpose of this handbook, as of its predecessors, is to help young men and women studying to become teachers to equip themselves for this arduous role. Another shorter pamphlet, No. 49, 'Health in Education', is also available. It is written with the needs of busy practising teachers in mind and as a

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reminder of the broad scope of the work in health education and of the careful planning and team-work required if it is to be effective. It is hoped that both pamphlet and handbook will be of interest to a wider circle, including parents and professional workers.

One major question is implicit on every page of this handbook. What is health? How far is it bodily, how far is it more than bodily? Is it just an unconscious state of well-being, or does it signify something more consciously recognisable? How far is health a mental or even a spiritual quality? Such questions are not less real or insistent for most of us because no agreed answer to them exists. Very often there is no acceptable language in which an answer could be given; such words as body, mind and spirit are the best we have, but they can be misleading if their use in particular contexts is allowed to break up what should be regarded as a whole. The dictionary derives the root meaning of the [word] 'health' from 'whole', 'wholeness'; a harmony of body and mind is implied from the onset. Given this, the term can be properly used, as often in these pages, to denote bodily or physical health; but the wider and more profound meaning can never be very far out of mind. For it is not enough to cultivate physical health, as some dictators have done, as a means of developing physically fit young barbarians. Our task is rather to make sure that bodily health plays its proper part in the whole education of responsible citizens. To discharge it successfully we need a clear understanding of the nature of our civilisation and its principles. We must also have regard for realities which go beyond the merely physical. Our roots lie deep in the Christian background of our civilisation and the things of the spirit cannot be passed over.


It is for this reason that in theory and practice alike health education is often so curiously difficult to define. Too narrow a definition is likely to end up with a syllabus of hygiene which, though valuable in its way, is not enough; yet on a wider interpretation such as has just been suggested it is almost impossible to avoid working from the part towards the whole, so that what began as a consideration of health ends as a study of the good life. Let it therefore be clearly understood that health, however precious, is sought not just for its own sake but in order that we may have life more abundantly; health is a means not an end. So, too, health education exists in order to serve the whole education of which it forms part.

Throughout the study of health education the student's attitude to the whole question of progress is likely to be of great importance both for him and also, later on, for his pupils. This pamphlet has a tale of rapid advance and development to unfold. It may not be easy for us to realise how far we have advanced even in a few decades;

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but let anyone who is uncertain about the point compare modern photographs of children at work or at play with the corresponding photographs of fifty years ago; there is in today's children a liveliness and sense of radiance which in the old days were too often missing. The child of today is taller and heavier than his predecessors; he is probably better adjusted and his school and his family relations are likely to be happier and more natural than they used to be. None of this need make the modern reader complacent; we too shall be left behind. We can point to progress, but it is progress on a long slope which leads far beyond the present day.

Health education is concerned with a vast and varied field, touching many branches of science besides such subjects as history, geography and language; it involves every type of school, children of all kinds, parents, teachers, all of us. And its claim must be pursued not in the abstract realm of academic theory, but in the demanding context of a good general education that will meet the needs of the time. It is within this context that so great a variety comes together; the result should be a pattern of health education in which we never lose sight of our main objective—a serene people moving from strength to strength in body, mind and spirit.



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Historical Development

The historical background is important for any reader who wishes to go at all deeply into the relationship between education and health at the present day; apart from that, the story is exceptionally interesting and too little known. Ideas, institutions and human beings are all involved, though in a short chapter only a brief impression can be given.

A proper regard for the blessings of health is as old as human life itself, and education in health matters can be traced back to the dawn of history. The Mosaic law, as it is set out in the Old Testament, enshrines a traditional code much of which is directly concerned with maintaining practices conducive to personal and communal health. Ancient Greece saw the first beginnings both of what we understand today by scientific method and of systematic medicine; in the famous Hippocratic Oath, health appears as an almost personified blessing.

It was in Greece, too, that the State first showed a concern for schools and education: 'at their best the educators of Greece and Rome aimed at wholeness, and held that the educated man combined moral, intellectual and physical excellence. At Athens an uneducated body was as much a disgrace as an untrained mind'.¹ In the Roman Empire urban civilisation made rapid progress; one historian² writing only thirty years ago commented 'I have no doubt that some or most modern Italian cities differ very little from their Roman ancestors. Almost all the cities of the Empire, especially in the Hellenistic East, had a good scientific system of drainage, an abundant water supply even in the upper storeys of the house . . . good public conveniences, well paved streets and squares. . . .

¹ Oxford Classical Dictionary, The Clarendon Press, Oxford, 1949: Article on *Education*, III.

² *Social and Economic History of the Roman Empire*, M. Rostovtzeff, pp. 133, 135 and 139 (The Clarendon Press, Oxford, 1926). The picture given in this now classic work is not overdrawn and it should be remembered that many of the features mentioned here were anything but new in the Roman Empire. Thus, to take one example, the Minoan palace at Cnossos, which in the main is not likely to have been built later than 1600 B.C., was superbly equipped in respect of water supply, drainage, bathing and even internal closets designed to be flushed with water. (For a vivid and easily obtainable account see *The Bull of Minos* by Leonard Cottrell, Pan Books, 1955 edition.)

As regards comfort, beauty and hygiene the cities of the Roman Empire, worthy successors of their Hellenistic parents, were not inferior to many a modern European town. . . . Another large item in the budget of a city was the expense of public education and the physical training of young and old, especially in the completely Hellenised cities of the East.'

After Rome came the Dark Ages when much was lost and life was 'nasty, brutish and short'. For example, the ruins of Bath, where besides the hot springs there were hot air baths heated by means of coal during Roman times, came to be regarded by the Anglo-Saxons as the mysterious 'work of giants'. Yet, at least by the time of the later Middle Ages, life was by no means so crude or unhygienic as is often supposed.³ The reader of Chaucer will find much that is still recognisable in England today, along with much that is alien to the modern mind; his Doctor of Physic appears to have considered his medical skill to be based on a thorough knowledge of the stars and their movements, but he was also most interested in diet. In the fifteenth and sixteenth centuries many schools were founded which still survive, and the age of chivalry passed on to the Renaissance the practice of knightly games which, later on, were to develop into the great outdoor games of today. Yet much still remained primitive, as a study of the Plague of 1665 will make only too clear. There was no central health authority and the local authorities of the time had few powers or responsibilities in respect of communal health.

The nation was still for the most part a farming community, towns were relatively small, and the population was sparse and scattered. Thus the effects of epidemic disease were generally limited; where, for example, only a few families shared a well, there were only a few persons to be affected if the water should become contaminated. Even among educated people enlightened ideas about medicine were to be found side by side with superstitions having only age to commend them. The mental climate in which a seventeenth century doctor in Norwich had to work can be vividly seen from Sir Thomas Browne's penetrating study of 'Vulgar Errors', first published in 1646, while it has been suggested only recently that the eighteenth century doctor knew but little more than the doctors of the ancient world: 'The ancient physician was, perhaps, a little less confident than his eighteenth century successor, or a little more cautious, a little more conscious of his helplessness'.⁴ Even in the mid-nineteenth century the medical arrangements provided in the Crimean War

³ For an interesting general account (which not all scholars would accept without reservation) see *The Culture of Cities*, Lewis Mumford, 1938, Chapter 1, 'Protection and the Mediaeval Town'.

⁴ *Oxford Classical Dictionary* (The Clarendon Press, Oxford), 1949: Article on medicine, Section 23.

appear to have compared unfavourably with the provision made for a sick or wounded Roman legionary.

But reform was already in the air. In 1710, St. Bartholomew's and St. Thomas's had been the only hospitals in London; others now began to be established by public benefactors, in the metropolis and elsewhere, for the benefit of the sick poor. At the same time there were advances in medicine itself; a number of physicians with enquiring minds were throwing off the dogma which had hampered progress hitherto and were studying the prevalent diseases with a fresh and critical eye. During the eighteenth century the nation's health certainly seems to have improved and this was probably a factor in the striking increase in population which had set in by the end of the century; in the 40 years between 1791 and 1831 the population of England and Wales rose from 8 to 13 millions.

Meanwhile vast social and economic changes were taking place that altered the character of life in Britain and had sinister repercussions on the public health. From being an agricultural community the nation became an industrial one. With the development of machines, mines, foundries and factories were appearing all over the land, especially in the midlands and north, and bringing with them a great demand for labour. There was work, even in the mines, for quite young children (who today would still be in the primary school), so that whole families could be employed. At the same time the Enclosure Acts deprived many yeoman farmers of their land and livelihood and obliged them to look to the towns for employment. A mass migration from the countryside into the industrial areas was the natural result. But what was gained from the prosperity brought by better wages was offset by the bad living and working conditions. The very limited accommodation which the new industrial towns possessed had to support a grossly inflated population. New housing was insufficient, generally crowded together, and of poor quality; indeed, in the words of a distinguished social historian, 'the worst period for sanitary conditions in the industrial regions was in the middle of the nineteenth century rather than the beginning, because so many of the new houses had then had time to become slums, since no one repaired or drained them as the years went by'.⁵ Nor were the greatest houses in the land any better; in 1884, 53 overflowing cesspits were found under Windsor Castle, while in 1849 the drainage system, such as it was, of Buckingham Palace was considered

⁵ *English Social History*, G. M. Trevelyan, p. 476 (Longmans, Green & Co., 1942). An interesting parallel is mentioned by Lewis Mumford, *The Culture of Cities*, p. 171, in connection with New York, where because of bad housing and sanitation the infant mortality rate rose from between 120 and 145 per thousand live births in 1810 to 180 per thousand in 1850 and 240 in 1870. See also pp. 163-168 of the same book.

dangerous to health (and was still far from satisfactory even 30 years later). It is not surprising, then, that when cholera struck this country it spread with devastating effect.

Cholera is a disease caused by a micro-organism which invades the intestines and is transmitted, as a rule, by infected drinking water; it originated in India and at this time was rapidly spreading across Europe. The first case in Britain was diagnosed in Sunderland on 20th October, 1831, and during the next few months the disease extended widely across England and Scotland, resulting in a total of 31,000 deaths. Subsequent epidemics of the same disease in 1848 and 1849 and from 1863 to 1867 took a heavy toll of victims.

Yet, even before cholera became so menacing, many intelligent observers had been concerned about the insanitary conditions in which a large section of the population was living. One of the most active reformers was Edwin Chadwick, a Poor Law Commissioner, who, in 1842, published a disturbing report on 'The Sanitary Condition of the Labouring Population of Great Britain'. In this work he commented on the poor water supply, the lack of drainage, and the filthy condition of the towns, and he pressed the need for improvement. Such efforts and the continuing threat of further epidemics led, in 1843, to the setting up of a Royal Commission to enquire into the causes of disease amongst the inhabitants of towns. Out of forty towns investigated conditions were considered tolerable in only eight; Chadwick's findings were endorsed and the ultimate result was the Public Health Act, 1848, under which improvements in water supply and sanitation were made. Cholera outbreaks were abated and, before the end of the century, died away.⁶

But there were other infectious diseases which kept ravaging the population, notably typhus, typhoid, smallpox and scarlet fever: the last mentioned in a much more virulent form than it is known today. The incidence of typhoid fever as well as that of cholera was reduced by the provision of a better water supply; for both these diseases were commonly spread through well-water contaminated by seepage from cesspits or defective sewers, and when the sewerage system and water supply were put in order the main channel of infection was eliminated. But it is not enough for the supply of water to be pure; there must also be enough of it. In a modern urban community, accustomed to a piped water supply and hot and cold running water in dwellings, the availability of water is taken for granted. But a century ago a proper water supply was enjoyed only in prosperous homes, while very many people, particularly in the towns, still had the greatest difficulty in keeping their clothes and their

⁶ The last major cholera epidemic in Great Britain was in 1866, though there were small localised outbreaks in 1872 and 1894.

bodies clean. In such conditions lice will flourish, and lousiness was responsible for the prevalence of typhus fever at the time. The virus causing this disease is transmitted from one human being to another by way of the louse; with improving standards of cleanliness came a corresponding reduction in louse infestation, and this in turn had its effect on the incidence of typhus fever, which vanished towards the end of the century.

Smallpox, which is nowadays occasionally introduced into this country from the East and may still cause alarming outbreaks, caused much trouble in the nineteenth century and epidemics due to it were widespread and severe. As long ago as 1796, Edward Jenner, a Gloucestershire physician, had demonstrated the truth of a popular local belief that persons who contracted cowpox were subsequently immune to smallpox. By deliberate inoculation of subjects with the virus of vaccinia, which is another name for the harmless cowpox, he had been able to protect them against the much graver disease of smallpox. This method of protection came to be widely adopted and the Vaccination Act of 1853 made it compulsory. At the end of the century, when the frequency of outbreaks had declined, an Amending Act with a conscience clause was passed; more recent legislation (the National Health Service Act, 1946) has made vaccination a completely voluntary procedure.

By the middle of the nineteenth century, much was known of the principal infectious diseases of the time, but what caused them was still a matter of conjecture. Their origin was attributed to filth, or to noxious exhalations. But physicians studying the epidemics of cholera, above all John Snow,⁷ did begin to make significant deductions as to the nature of the causal agent of that disease. Snow put forward the theory in 1849 that cholera was caused by polluted water and his views were put to the test and proved in the epidemic of 1854–55; but it was not until later in the century that the existence of germs, or bacteria, was demonstrated and the foundations

⁷ See *Proceedings of the Royal Society of Medicine*, Vol. 48, No. 12 (Dec. 1955), p. 1008, 'Snow—An Appreciation' by Dr. A. Bradford Hill, CBE, FRS, for a discussion of the celebrated story of Dr. Snow and the Broad Street Pump. Snow was able to show that many who drew water from this source died from cholera, whereas adjacent users of a newly installed supply of pure water from Thames Ditton remained almost immune; admittedly the case 'rested almost entirely upon statistical observations and relationships', but in spite of the relative failure of the 1855 edition of his book *On the Mode of Communication of Cholera* his views gradually came to be accepted. In the story of the actual pump, fact must be distinguished from fiction; Dr. Snow did persuade the Vestrymen of St. James' to remove the handle (on September 7th, 1854; it was removed next day) but it is not strictly true that the epidemic then died down—in fact it was already nearly over. This remarkable man also achieved the distinction of administering chloroform to Queen Victoria at the birth of Prince Leopold in 1853, another landmark.

of bacteriology were laid by Louis Pasteur and Robert Koch, working respectively in France and Germany.

But progress was also retarded by the lack, during most of the century, of an efficient system of local and central government, capable of carrying out systematic reforms. Improvement was curiously uneven; thus with the passing of the first Factory Act in 1833 (after long agitation) hours of work were restricted for the first time and factories were subjected to State inspection, yet it was not until 1875 that the employment of children to sweep chimneys was forbidden by law. The inspection of mines on a centralised basis commenced in 1850. The appointment by local authorities of medical officers of health had commenced before 1850 and was made compulsory in 1872. As early as 1835 the Municipal Reform Act had provided some of the larger towns with the beginnings of an adequate local government system; but the rest of the country (including Greater London) had to wait until the Local Government Act of 1888 authorised the setting up of County Councils; elective urban and rural district councils followed a few years later and the new system was beginning to work effectively by the end of the century. The development of the central authority was likewise gradual. In 1848 a General Board of Health was established to carry out the provisions of the Public Health Act of that year and this body was replaced in 1871 by the Local Government Board, which was to put into effect the important Public Health Act of 1875 consolidating previous enactments in the matter of housing, sanitation and water supply; the local Government Board itself eventually gave way in 1919 to the Ministry of Health. From about 1900 the personal aspect of the health services began to be markedly elaborated. Greater powers and duties were laid on local authorities in respect of the treatment of pulmonary tuberculosis and venereal disease, the maintenance of hospitals, and the care of women in child-birth. The legislation on environmental health was brought up to date by the Public Health Act, 1936, and two years later amplified by the Food and Drugs Act, 1938. The second world war pointed the need for reorganisation of the health services and a year after its close an Act was passed which substantially changed the pattern of their administration, at the same time conferring on the nation a universal and comprehensive health service. This was the National Health Service Act, 1946, which came into force on 5th July, 1948.

Meanwhile, the course of education had been curiously similar; here too, after a period of stagnation, improvement began in the course of the eighteenth century and in the nineteenth century progress was rapid though uneven. Even before 1800 the industrial Sunday and voluntary school movements had begun to provide

schools in which thought was necessarily directed to such matters as cleanliness, physical environment and hours of work. From the beginning of the century such domestic subjects as needlework, cookery, laundrywork and housewifery were in one form or another coming to be represented in the school curriculum and played an important part in the steady improvement of health and living conditions; at the same time various forms of natural and social science were making their way into schools, as the importance of science came to be more widely recognised. By 1846 we find physiology being taught in a London school. This was only seven years after the publication of *Nicholas Nickleby* in which Dickens' description of Dotheboys Hall exaggerated by only a little the appalling conditions still prevailing in some schools, but in the better schools there was a genuine interest in health; the cult of fresh air and exercise began to spread fast. Most important of all, it was beginning to be realised that education could be the most powerful of all instruments of reform, in health as elsewhere. Thus Ruskin, in the preface to *Unto this Last* (1862), pleads for schools to be established 'at Government cost', where a child should 'imperatively be taught, with the best skill of teaching that the country could produce, the following three things:

- (a) the laws of health, and the exercises enjoined by them;
- (b) habits of gentleness and justice; and
- (c) the calling by which he is to live.'

By this time there was a very wide interest in the achievement and maintenance of good health which already went far beyond formal education. Even so, it was not until the Education Act of 1870 that systematic primary education was made possible and systematic secondary education had to wait until 1902.

In the decade between 1900 and 1910 the two main streams of public health and public education seem to have flowed together.⁸ As the grosser defects in living conditions were corrected, and the big epidemics waned, a change came about in the orientation of preventive medicine. From a consideration of the purely environmental aspects of health, attention was turned to its more personal aspects. Probably because the general situation was becoming less black, specific deficiencies in the nation's health began to appear in sharper relief. For example, the infant mortality rate, which represents the number of infants dying within the first year out of every thousand born alive, stood at 154 in the year 1900 (as compared with

⁸ A fuller (though still brief) account of the main developments in the School Health Service between 1900 and 1950 will be found in Chapter VI of *Education 1900-1950. The Report of the Ministry of Education for 1950*. Her Majesty's Stationery Office.

24·9 in 1955): that is to say, in 1900, 154 infants out of every 1,000 were living less than twelve months after birth. Such a wastage of infant life, which seemed all the more serious at a time of falling birth rate, aroused public concern. One consequence was the Notification of Births Act, 1908, which enabled medical officers of health to receive prompt information about all births in their area. The first infant welfare clinic was opened in 1905, to be followed by others, at first run on a voluntary basis and later taken over by the local authorities. In the same decade the first health visitors were appointed for instructing mothers in the rearing of their children. There was a like concern with the well-being of older children. The Royal Commission on Physical Deterioration, set up when the Boer War revealed the appallingly low average physique of the nation, emphasised in its Report of 1904 the importance of better food for the children of the very poor. In 1906 an Act of Parliament authorised public money to be spent on the provision of school meals for necessitous children; in 1907 the duty of medical inspection of school children was imposed on local education authorities and the School Medical Service was set up. In this way there began a system of supervision of school children which developed into the School Health Service as it is known today.

Great progress was also being made in the conception of hygiene as an important subject in education; before 1900 it was beginning to be taught in schools and it had been a prescribed subject in the syllabuses for men and women in the examination for Teachers' Certificates issued by the Education Department, Whitehall, in 1894. In 1904 the annual report of the Board of Education states (p. 16) 'The Board have now made the study of Hygiene an essential part of the Syllabuses in the Theory of Education both for Students in Training Colleges and for Candidates for the Certificate Examination.' As the newly trained teachers went out into the schools, they naturally took with them a new awareness of the need to encourage children to live healthily. They could see these children, too, as the parents of the future who could be given instruction and advice in school which would be valuable later on.

Out of the tale unfolded in this chapter certain generalisations emerge as particularly significant. First, if one wishes to assess progress or the lack of it in a particular age, it is necessary to take into account the whole climate of ideas prevailing at the time, and not merely some part of it. If, for example, one asks why Chaucer's doctor entertained such primitive notions or why his contemporary in real life, John Arderne, did not succeed in spreading very far his advanced views on cleanliness⁹, it can only be answered that the

⁹ See Chapter 3.

fourteenth century attitude to medicine was very different from ours and was much affected by prevailing views about the universe, causation and the purpose of life. This is still the case today; the key to many of our present health problems may well be found in current modes of living and thinking which we normally take for granted. Specialist knowledge is essential for any programme of systematic health education, but to be effective it must be combined with wide general understanding.

Secondly, over the whole field, ideas and institutions interact. It is often difficult, looking back, to say which came first; in general, ideas are most likely to flourish when they have a chance of being put into practice, but that presupposes an administrative framework and institutions capable of making the practice effective. Throughout the latter part of this chapter the story of developing institutions has gone side by side with new discoveries and points of view. It is worth noting that in the nineteenth century there was a tendency for the initial reforms to come from enlightened individuals whose personal leadership eventually caused the government to take action. Very often in this country the original individual and voluntary effort has continued to exist side by side with official institutions; such a pattern is particularly evident in the school system and in social service, where the variety seems to correspond with something in the national temperament which is suspicious of any completely co-ordinated uniformity.

Finally it should be noted that ultimate responsibility for the preservation of health has come to be spread over a steadily wider area. In 1665 it was enough for the heroic villagers of Eyam in Derbyshire to save the neighbourhood by voluntarily isolating themselves when plague broke out in their village; 260 out of 350 died. Today the increased speed of transport and communications has brought us all so much closer together that the prevention of disease demands worldwide cooperation. But that is no longer enough. New problems arising out of reduced infant mortality rates, the longer expectation of life and the demands for improved nutrition, housing and recreation, which first became apparent in a few very highly developed countries, are now extending over the whole world. Here is a challenge on an international scale which will need thought, courage and practical application. It was to meet such problems that the World Health Organisation was set up by the United Nations; but an enlightened lead from member states, including our own, is more needed than ever. For as John Donne once put it in the seventeenth century, 'No man is an island entire of itself . . . any man's death diminishes me, because I am involved in Mankind'. We can claim to have been pioneers for over a century and there is still much to do.

Preventive Medicine and the Health Services

In the course of these suggestions many of the aims and activities of the National Health Service and the School Health Service will come to be considered in their own proper contexts. But the reader will also need, at the outset, a clear general picture of how these services are constituted and what they are trying to do; such is the theme of this chapter. It should be read in the light of the last chapter, for the health services as we have them today are the products of historical development, and they are still developing. It is particularly worth considering, from such a point of view, the legislation which controls the spending of public money, and which thereby determines the framework within which operate the various State services on which our society depends. Rigid as the framework may often seem, the more effective enactments have survived and become adapted to changing circumstances in very much the same way as the more efficient species or organs found in Nature. Legislation, such as that which culminated in the National Health Service Act of 1946 and the Education Act of 1944, provides neither a sudden transformation nor a fixed and final pattern of administrative effort, but rather a suitable framework for further development, such as is still going on. Within such a framework will be found incorporated much of what was best in earlier enactments, such as those providing for child welfare clinics, a health visiting service and a domiciliary midwife service. But with the steady and continuing rise in standards of health their orientation has been changing in the direction of prevention rather than cure. For adult and school child alike the main emphasis has come to be placed upon positive health and it is significant that we speak today not of the medical services but of the National Health Service and the School Health Service.

Some of the implications of the term 'health' were touched on in the Introduction; in the pages which follow it will normally mean the smooth functioning of body and mind and a proper balance between the individual human being and his environment. The interaction between man and his surroundings is particularly important; one might indeed regard as the first and basic stage in preventive medicine the prevention of disease through such improvements in environment

as better housing, a pure water supply and the thorough removal of refuse and sewage; the aim of all such measures (to be considered from the point of view of environmental cleanliness in Chapter 3) is to eliminate obviously harmful influences. The next step is to protect the individual himself, beginning with help and advice on his upbringing as a child, especially in respect of nutrition, protecting him by inoculation against the infectious diseases to which he may be exposed, and watching over his growth and development so that any abnormality or defect which appears can be promptly dealt with. Yet preventive medicine has developed into something even more positive; it may yet be 'preventive' in so far as its main aim remains the prevention of disease, as opposed to its cure (a conception which, as could be seen from the last chapter, is still relatively new); but there is a further stage, the pursuit of positive health, which goes far beyond the mere elimination of illness.

Such a conception will involve not only the health services but also the subtler and often slower influences associated with social welfare and education. For if people are to be fit and capable of making the most of their lives, it is hardly enough for them to be able to fulfil their elementary needs such as adequate accommodation, rest and a proper diet; they should also be able to work under reasonable conditions at jobs for which they are suited, and they will need leisure and opportunity for intellectual and emotional satisfactions. Where all or any of these conditions are withheld for a sufficiently long time, there will be frustration which may lead to real ill health. The close correlation between brain and body is well known and, as has already been observed, discontents of mind are recognised as having physical repercussions; it is a commonplace that anger makes the heart beat faster and raises the blood pressure, and there is a close connection between worry and duodenal ulcers. Preventive medicine has to recognise this affinity; in its broadest sense it is as much concerned that an individual should not become a square peg in a round hole, or that he should enjoy satisfying recreation, as that he should be adequately housed, nourished and immunised against all the customary diseases.

Clearly only a part of preventive medicine can come within the direct purview of doctors; they advise, but much of their advice, at least in the sphere of prevention, is left to others to carry out. Parents may receive guidance from doctors or nurses, but the upbringing of their children is of course in their own hands. Matters of first concern in environmental health, such as sewage and refuse disposal, are usually dealt with by the civil engineers of local authorities; likewise the heating, lighting and ventilation of buildings, features which are all of prime importance for health, are handled by architects. But

many others are involved, including such unexpected allies as the statistician, whose figures illuminate progress and often help to indicate where further advance is most urgently needed; for those capable of reading figures with imagination the history of health may be found in dramatic form in his impersonal tally of births, deaths and notification of infectious diseases. The infant mortality rate which is calculated as the number of deaths of infants under one year of age per thousand live births can be instanced. In England and Wales the infant mortality rate fell from 154 per thousand in 1900 to 70 per thousand in 1927. The latest figure available is 19 per thousand in 1966. To the general advance in the nation's health of which this is a token, health education, along with the other influences already mentioned, has made a profound contribution.

It is through the provision of services directed towards the personal health of the individual that recent legislation has made its main contribution to positive health, thereby aiming at a basic state of fitness. The National Health Service Act, 1946, came into force on 5th July, 1948. Local health authorities had been required to submit schemes of their proposals for various sections of the Act before the appointed day. Thus, by the time it became law, the procedure for carrying out the various requirements of the Act as to maternity and child welfare, home nursing, vaccination and immunisation, and mental health arrangements, to name some of the more important sections, had been worked out for each authority in detail. The different sections of the Act are wide and flexible in their provisions, and, as in the case of the Education Act, 1944, serve to some extent as an outline plan for action which has not yet been fully implemented. In this way it is possible for a local authority to amend its original proposals under the Act in order to bring them into harmony with changing circumstances.

The health services of the nation are gathered by the National Health Service Act, 1946, into three sections: a general practitioner service; a hospital service; and a local authority health service. The first of these provides a domiciliary medical service and is administered by 134 local executive councils, which are also responsible for the local dental, pharmaceutical, and eye services. The area covered by each executive council corresponds generally with that of a local health authority, but a few cover two authorities' areas. Doctors and the citizen alike are free to take part in, or make use of, the national health service arrangements or not, as they wish; having opted to join, the doctors are free to choose their patients and these in turn are free to choose their professional advisers. In fact about 98 per cent of the general practitioners who are in active practice and some 97 per cent of the lay population take part. The general practitioner

plays a vital role in the National Health Service. The level of fitness in a community as judged by the absence of illness, particularly of a chronic sort, and the rate at which patients are restored to full health after illness, must to some extent depend on the ratio of doctors to patients in the area. The general practitioner is the chief guardian of personal health; he also acts as an essential link between the patient and the hospital and other services. The old ideal of the family doctor has not been lost sight of with the advent of the National Health Service: whole families normally have their names on the same doctor's list, and for many the doctor is indeed a counsellor and friend. Since, with a free service, more people now consult their doctor than previously, the demands on the individual practitioner's time are greater and he has perhaps less opportunity for the preventive aspects of medicine than he would wish; but where time allows he is in a unique position to give health education, being *persona grata* and close to the very heart of the family. As the ratio of doctors to patients increases, it is to be expected that more such opportunities will occur.

Before the Act came into force, the hospitals in the United Kingdom could be divided into three main groups: a small number of teaching hospitals; the independent voluntary hospitals, supported largely by donations and contributory schemes; and the municipal or county hospitals, including general, mental, and fever hospitals and sanatoria, maintained out of local authorities' revenue and exchequer grants and containing about three-quarters of the total number of hospital beds. Apart from a small number of 'disclaimed' hospitals, e.g. those run by religious organisations, all the hospitals in Britain have been in effect nationalised by the Act. For the purposes of administration England and Wales¹⁰ have been divided into 15 hospital regions, in most cases based on a city having a medical school. The hospitals in each of these regions are controlled by individual boards; and the regions are further subdivided into hospital groups, usually comprising the hospitals of a town or a group of small towns, whose day-to-day running is supervised by hospital management committees. The teaching hospitals are administered by separate boards of governors.

Whereas the activities of the general practitioner service and the hospital service are essentially curative, in that they deal for the most part with the treatment of persons who are sick, the intention of the local authorities' arrangements is, in the main, preventive. The two local authority administrative units for the purposes of the National Health Service Act are the county council and the county borough

¹⁰ There are separate Acts for Scotland and Northern Ireland on similar lines.

council, both of which are also responsible for the supervision of the health of school children under the provisions of the Education Act, 1944.¹¹ There are 163 such authorities in England and Wales. Considerations of environmental health, covered by the Public Health Act, 1936 (amended by the Public Health Act 1961), and the appropriate provisions in the Food and Drugs Act, 1955, including the enforcement of requirements relating to housing, sanitation, control of infectious disease, and cleanliness of food, are dealt with by the county borough councils and the councils of county districts. The services provided under the National Health Service Act, 1946, are not altogether new, since in many instances the relevant sections of the Act merely replace similar sections in earlier Acts which have been repealed, as was mentioned at the beginning of this chapter. These services include antenatal and child welfare clinics; a domiciliary midwifery service; a health visiting service; a home nursing service; arrangements for vaccination against smallpox and immunisation against diphtheria and other infectious diseases; an ambulance service; arrangements for the care and after-care of tuberculosis and for the prevention of this disease; provision for convalescent treatment; a home help service to assist where there is illness, infirmity, or a confinement in the home; and a mental health service including the provision of Mental Welfare Officers to deal with admission to hospital of patients and to carry out the supervision of the mentally sub-normal, under the Mental Health Act, 1959. All these services are provided free of charge, except for domestic help and convalescent treatment in respect of which local authorities are entitled to recover a proportion of the cost. A number of health departments have on their staff a special health education officer to plan and coordinate the many different aspects of health teaching, and in many others an officer engaged on other duties is delegated to attend to this increasingly important side of the work; the Central Council for Health Education also provides a central advisory service of which great use is made by local health authorities.

The local authorities responsible for administration of the National Health Service Act, 1946, are the same, as has been pointed out, as those concerned under the Education Act, 1944, with the working of the school health service.¹¹ Although periodic medical inspection of

¹¹ These statements require some qualification for the London area. Under the Local Government Act, 1963, the London Boroughs throughout the area are the local health authorities and the outer London Boroughs are also the local education authorities. For the Inner London Area (i.e. the old L.C.C.) the Inner London Education Authority is responsible for education and therefore for the School Health Service.

school children continues as a feature of the school health service it has been replaced to some extent by selective examination based upon continuing records and questionnaires. Vision screening, preferably annually, and the testing of hearing by an audiometer, to detect impairment of the special senses of vision and hearing, on which a child depends so much to enable him to benefit fully from the education provided, are essential routine procedures. Provision is also made for the treatment of minor ailments; for ophthalmic examination and the provision of glasses; speech therapy; orthopaedic care (including remedial exercises); ear, nose and throat examinations; child guidance, for which the local education authority usually appoints an educational psychologist and arranges with the regional hospital board for the services of a psychiatrist at the child guidance clinic. Each local education authority provides a dental service for school children under the control of its principal school dental officer, with full facilities for treatment, including fillings, extractions, X-ray examinations, and orthodontic work, which corrects irregularities of the teeth and jaws. The school health service is especially concerned with the assessment and subsequent care of handicapped pupils, including blind, partially sighted, deaf, partially hearing, educationally sub-normal, epileptic, physically handicapped, maladjusted, speech defective, and delicate children.

Substantial changes in the school health service have taken place in the sixty years since it came into being. At first its chief aim was to detect and alleviate the grosser defects which seriously hamper a child's education, such as severe eye defects, infections of the middle ear, rickets, malnutrition, infestation and vermin, and skin infections, especially ringworm. These troubles still exist, but some of them are now rare. The school health service has never aimed at providing a complete medical service; its purpose has been to see that a child should receive the treatment needed to get the best out of its schooling. In its earlier years the service did much to fill up some of the gaps in the medical services generally, at a time when these were less comprehensive than they are now; thus when ringworm was particularly rife (in 1920, for example, there were more than 24,000 children affected whereas in 1966 the number was only 832), school clinics run by the more enterprising authorities of the time were equipped with X-ray plant for the treatment of this condition. Now that a comprehensive and practically free medical service is within the reach of all, the curative work of the school health service has been very much reduced; today it is easier for school medical officers to promote or assess fitness and also to investigate the more obscure causes of ill health, so that, to take one example, the health visitor or school nurse who forty years ago would have been busy following up

cases of rickets will now have more time to bring to light the incipient neuroses. The school health service is today, more than ever before, an active force in the field of preventive medicine.

The officer administering the school health service is, with two exceptions only, the same person as the medical officer of health of the county or county borough. This is an important fact, since there are many points where the National Health Service and school health arrangements overlap or supplement each other; for example, the Education Act, 1944, imposes a duty upon local education authorities to provide for children from the age of two upwards who may need special educational treatment, and 'for the purpose of fulfilling that duty' they may require the parent of any child over two to submit him for an examination by a medical officer of the authority. This is particularly important for blind or deaf children, whose early training and education in compensation for their deficient special sense must begin as soon as possible. Such cases may come to the authority's notice at a child welfare centre, or in the course of the health visitor's rounds of her district. If the medical officer of health and principal school medical officer are one and the same person, continuity of care is simplified; however, where the two offices are held by different persons, there is always close liaison. In most areas the post of health visitor is combined with that of school nurse, so that the health visitor will have followed a child from infancy, through home visits or his attendance at the welfare clinic, and should still be able to supervise his welfare in her capacity of school nurse when he reaches school age. Moreover, her acquaintance with the family background, particularly where she has been able to study more than one generation, should often provide the health visitor or school nurse with a wealth of knowledge about the children in her district which can be of great help to teachers in dealing with pupils when there are particular social problems to solve.¹² But here also, when the two branches of nursing service happen to be separate, there is normally a close interchange of information. Immunisation against diphtheria and other infectious diseases and vaccination against tuberculosis are the concern of the principal school medical officer as well as the medical officer of health; so also are the arrangements for the mass X-raying of teachers and school children as a measure in the early detection of tuberculosis.

¹² The importance of the health visitor's work in the homes and the need for 'a better coordinated approach to families and fuller use of the opportunities the Health Visitor has to do supportive work and gain relevant information in the course of her duties' are considered more fully in the report of a working party set up by the Ministers of Health and Education which reported in 1956: *An Enquiry into Health Visiting*. Her Majesty's Stationery Office, 1956.

The work of the school doctor is in the same way often complementary to that of the teacher. Both are interested in the development of the child, the teacher perhaps with a bias towards the intellect and personality, the doctor with a predisposition towards traits connected with physique and emotion. Yet teachers are daily confronted with emotional or behaviour problems, while it falls within the sphere of the medical officer to advise on educational sub-normality. Teachers, as part of their duties, may conduct physical education, while doctors on their side are concerned with the child's ability to see sufficiently to read, or to hear well enough to be able to take part in lessons in an ordinary school: their respective interests in the child are dovetailed so that it is often difficult to discern the precise dividing line between health and education. This close relationship between teacher and school medical officer is an important feature of our educational system.

There are many large organisations which in their own interests provide a health service, manned by their own doctors and nurses, as part of the arrangements for the welfare of their staff; if then, health supervision is necessary for adults engaged in their everyday work, how much more is it necessary where children are concerned. For apart from the problems inherent in growth and development, the school child tends to suffer from a variety of ailments and infections which he catches for the most part after mixing with other children of about the same age in the usual groups in schools, so that infections tend to spread more rapidly. There are also the special problems connected with the different categories of handicapped pupil already mentioned. The question of communicable disease will be dealt with in a later chapter; meanwhile it should be stressed that the relationship between the school health service and the individual school is comprehensive and practical. The school medical officer sees each child at the periodic medical examinations, and often on a number of occasions besides, so that he should be a frequent visitor to the school. The aim of the school dental officer is to inspect the teeth of each child annually, when there is adequate staff. The school nurse calls constantly at the school, as a rule weekly, either for a regular health inspection or in response to a particular request by the school doctor or by the head teacher. The school doctor, dentist, and nurse should be the teacher's allies in maintaining fitness in the school, and they should be almost as familiar to the children as the teachers themselves. In this way, moreover, children can be introduced to the doctor and dentist in a friendly, matter-of-fact way which will help both sides in later life. The closer the liaison between the school health service and the school, the better it will obviously be for the health of the school children. The principal school medical officer and

his staff are as anxious to be informed of illness or infection in a school as the head teacher is to have advice about it; prompt information about infectious disease may enable an outbreak to be quickly traced to its source and dealt with. If a teacher brings to the notice of the school medical officer a child thought to be below par, the child can be followed up and referred to its own doctor; thus a condition whose neglect might have serious consequences may be given timely treatment. There may arise an urgent question of arranging for the care of a child injured or taken ill at school; or some less impelling but nevertheless important problem of school health may crop up: on such occasions a telephone call will generally put the resources of the school health service at the head teacher's disposal. Nor need the relation be one-sided; the school medical officer may have much to give to the teacher, but he also depends greatly on the teacher's good will and help in carrying out health projects in the school. Both doctor and teacher have closely related parts to play in the educational system, and both are concerned with the wider aspects of preventive medicine; both also share a common dependence on the understanding and support of the parent, whose important part is considered in Chapter 17.

One might well have expected that with the establishment of the National Health Service the voluntary welfare organisations would find themselves with nothing to do. On the contrary, many of these voluntary bodies became more active than before and, in particular, there hardly exists a disabling disease which does not have a thriving association devoted to the interests of its sufferers. Deafness, blindness, mental health and subnormality, cerebral palsy, poliomyelitis, multiple sclerosis, diabetes, epilepsy, and haemophilia, to name the more prominent conditions, all have their protagonists and the organisations representing them¹³ play a most important part in making needs known and filling the gaps in the local authorities' services. In a highly organised community such as ours it is inevitable and right that so much should be done for the individual; if he is to stand on his own feet, he may need all the help that can be given him from any source. Public and voluntary agencies are available to advise and perhaps succour him in moments of stress, whether he needs to satisfy essential needs such as food, clothing, and rent, or to find the solutions of such problems as getting legal aid, obtaining the burial of a relative for which he has not the means to pay, or securing care and accommodation for an aged person or a child: it is possible to help him in any of these matters, quite apart from everyday

¹³ More than 300 organisations concerned with social welfare are listed by the National Council of Social Service (Inc.) in their handbook *Voluntary Social Services*, 1965.

requirements such as those relating to his own health or that of his family, and the education of his children, which are already fully covered by the State. Inevitably there will be a risk, which must be guarded against, that the receiver will sit back and passively accept what is offered without playing his part in return; adult citizens and parents, no less than children at school, may need to be stimulated to think and act for themselves, and guidance should lead in the direction in which the individual's own efforts are likely to be most effective. Happily it is only a minority of persons who are content to play a purely passive role; most have sufficient pride and independence of spirit to want to do things for themselves. Thus in the organisations for the handicapped, mentioned above, the handicapped persons themselves or their relatives have been the prime movers, taking on the responsibility for conducting their own affairs.

Considered as a whole, the health services display a rich and diverse pattern. Health is seen to be by no means exclusively a medical matter; it is a communal responsibility. Efforts to attain it are focused on two principal objectives: first, to make the environment as good as the community can make it; and second, to see that the individual's own physical and mental well-being is watched over, with especial care during growth, and that at all times, both as child and adult, he receives the necessary health services provided by the National Health Service and the school health service. In such a context it is for health education to make sure that the principles of good health and preventive medicine are generally known and observed. Individual and community alike should in their own common interest understand the nature and scope of the health services, appreciating their aims, learning to use them reasonably, and remembering that every citizen, through his elected representatives, can help to influence further development. With this in mind, the reader will be ready to consider health education in greater detail, but he should still bear in mind the whole context of national aim and effort in which it occurs and the significance of both the Education Act, 1944, and the National Health Service Act, 1946, in establishing or consolidating an adequate framework for future development. How far preventive medicine and the health services may yet be developed will depend on many factors, including economic progress, but one thing is certain: health education has a major part to play in much that is still to come.

Cleanliness

Modern civilised life requires high standards of cleanliness; the whole subject is of great interest and relevance and its many aspects are too seldom considered together. Two questions stand out; how in a modern community can high standards of personal cleanliness be achieved and maintained, and how can the whole environment in which each individual finds himself be kept clean and healthy? Both issues are of course interconnected; personal cleanliness is more easily maintained in clean surroundings, but the environment itself is controlled and modified by public agencies which themselves depend on the level of public opinion, and this is the responsibility of each individual citizen. In this chapter the approach to environmental cleanliness is inevitably selective: some consideration of the historical background is essential for the understanding of our own times, while contemporary aspects considered include water supply, refuse and sewage disposal, air and air pollution and sunlight. Town and country planning receives only brief mention; it is certainly relevant as a subject, but nearly all the issues involved would go far beyond the immediate theme. Air pollution, on the other hand, is considered in relative detail; apart from its intrinsic interest, the subject has comparatively recently come to arouse a degree of public concern which is now leading to action.

PERSONAL CLEANLINESS

Children are not particularly clean by nature and few of them see any particular virtue in cleanliness. In most families the initial training in cleanliness is largely a matter of habit formation, but there is a limit to what small children can be expected to learn; at no age is the mere inculcation (meaning literally 'grinding in with the heel') of cleanly habits likely to be effective. But neither will undiluted sweet reasonableness be successful at any age, particularly before a child is ready for reasoning. Of course training in cleanliness can never be rapid; it involves home and, later, school at every stage, and the prime movers are habit, good example, praise—and the occasional critical comment. Explanations and instruction also have a part to play which may begin quite early but is sometimes overdone.

Encouragement begins at home and most children should make considerable progress in acquiring good habits, so long as too much is not expected of them; first mother and then teacher can encourage a child to take pride in washing, tidying up and other similar activities. Older children too should take a pride in keeping themselves clean and fresh; they should learn to appreciate their school and its surroundings and to have eyes for the pleasure and beauty of the countryside. It will then be easier for them to realise the havoc that is caused by litter and rubbish and to play their part in preventing both from disfiguring the landscape; as it is, the current standards of public taste in such matters reflect little credit on either our general feeling for hygiene or the quality of our visual education. At the same time it should never be forgotten that any normal child is likely to want to go out and play and get dirty at frequent intervals, in backyard or garden, in the nearest countryside, or in whatever open space he can find. This is as it should be; children gain particular satisfaction from sand, earth and mud, and all this has nothing to do with habitual uncleanness. So, too, with camping, particularly among older boys and girls—but in few places are the advantages of cleanliness and order so conspicuous as in a good camp. Indeed the child who has always been able to play freely and go on expeditions or perhaps go camping with his friends is not so likely to react against civilisation in the manner once described by Mark Twain, 'Soap and education are not as sudden as a massacre but they are more deadly in the long run'.

The main rules of personal cleanliness are not complicated. The skin requires frequent cleansing in order to remove not only visible dirt but also dried sweat, salt and grease which are produced by the activity of the skin glands and would, if left alone, provide a breeding ground for innumerable germs. Where there is a continuing state of dirt, unclean skin cannot function properly and skin disease may be produced or aggravated; a slight scratch, cut or blister is more liable to become inflamed and suppurate and the healing of wounds and abrasions will be delayed. Dirty hands and nails may convey germs to the mouth and to food. When the skin is cleansed, the germs are attacked at their source; similarly the itch mite which causes scabies will not find it easy to gain a hold on a well-washed skin and lice will have no chance to lay their eggs, the so-called nits, in a well cared for head of hair. There should be regular and frequent washing and bathing, especially after games, and everyone needs his own washcloth and towel. To be clean in one's own person is also desirable from the point of view of the community; it is a social as well as a personal obligation to keep hands and fingers clean, particularly after visiting the lavatory, when about to handle food, and before meals.

Hair should be well brushed and combed daily and regularly washed, with brushes and combs kept clean. Some of these recommendations might appear superfluous, and yet the most recent figures hardly suggest any relaxation of effort. Though the number of scabies cases in England and Wales fell rapidly from the figure of 11,428 in 1949, it still stood at 4,665 in 1965 and rose to 7,186 in 1966, while the number of impetigo cases dropped to 7,921 in 1964 and 7,127 in 1965 as compared with 38,281 in 1949; infestation of the body has become very rare, yet in 1965 there were still 191,698 cases of school children suffering from some form of infestation, usually of the head, as compared with 316,854 cases in 1953 and 443,016 in 1949.

The individual man or woman, boy or girl, cannot hope to stay clean for long unless his immediate personal surroundings are also clean; this involves, in the first instance, his clothes and his home, for we live on such close terms with both that they seem almost an extension of our own selves, and their cleanliness is essential to our own. It is particularly important that underclothing should be washed frequently, in order to remove the sweat and grease which accumulate from the skin. Clothing or bedding which has been used by a child suffering from infectious disease should be disinfected. In normal circumstances, blankets are seldom washed more than once a year, but bedding and blankets should be frequently aired and exposed to the sun. The water closet must be kept clean and fresh; children should be taught how to use it without soiling the seat or the floor and they will learn better if the adults set a good example. Here again children take time to acquire the necessary skill; to force training at too early an age may only do harm, and any action or word that might make a child ashamed should be inconceivable.

ENVIRONMENTAL CLEANLINESS

Progress in History

The social as opposed to the purely personal aspects of cleanliness stand out in particularly sharp relief against an historical background; history provides many illuminating examples of man learning to come to terms with his environment, in this as in other matters. For civilised life began with the coming together of hitherto scattered groups of people to form the first cities; before long, problems which had given little trouble before became much more serious. A nomadic people can leave its dirt behind and go somewhere else, but with rapidly increasing urban populations dirt and refuse began to accumulate in alarming fashion. The mounds which still show in many parts of the Middle East where ancient cities once

existed contain not only broken down walls and collapsed buildings but also a great deal of household refuse which must have been most insanitary. In the ancient world as in mediaeval Europe rats, lice and typhus all came together; water supplies were continually being polluted.¹⁴ Yet there was real progress; in spite of plagues and other setbacks, living in cities proved successful, their number increased and the quality of the cities in the ancient world at their best has already been mentioned.

There exists a good deal of particularly interesting evidence about the state of affairs in mediaeval London. Great importance was attached to both personal and civil cleanliness, though the standards of the times were not ours. Among many indications of the value attached to personal cleanliness, one of the most interesting is to be found in a Latin treatise written in 1376 by an English doctor, John Arderne, and translated into English early in the fifteenth century: 'Haue the leche (i.e. surgeon) also clene handes and wele shapen nailez and clenzed fro all blaknes and filthe'.¹⁵ Nor was there any lack of concern for civic cleanliness; E. L. Sabine has shown in *Speculum* that, in the late fourteenth and early fifteenth centuries, 'city cleaning was being carried on persistently and, on the whole, effectively',¹⁶ in spite of an understandable decline a little earlier, just after the Black Death. 'It is abundantly clear that the people of mediaeval London and England were much more conscious of the danger of contamination and filth than has been commonly supposed'.¹⁷ Similarly in sanitation, though nothing resembling modern practice¹⁸ was possible before the development of the trapped drain in the middle of the nineteenth century, there was a strenuous and persisting effort: 'If citizens are to be judged by the time and money expended in their efforts to make their latrines comfortable, clean and sanitary, then many citizens of mediaeval London must have deserved whole-hearted praise and respect'.¹⁹

But over a long period, progress, as usual, has probably been

¹⁴ See *Rats, Lice, and History . . . the Life-History of Typhus Fever*, Hans Zinsser (Routledge, London) 1935.

¹⁵ *Treatises of Fistula in Ano, Haemorrhoids and Clysters*, edited D'Arcy Power, FRCS, p. 6, line 32. (Early English Text Society) Original Series No. 139, London, 1910.

¹⁶ 'City Cleaning in Mediaeval London', *Speculum*, Vol. XII (1937), p. 19 ff.

¹⁷ 'Butchering in Mediaeval London', *Speculum*, Vol. VIII (1933), p. 335 ff.

¹⁸ See *Oxford Junior Encyclopaedia*, 1955, Vol. III, p. 393, article on history of sanitation. In this article the original water-closet invented in the reign of Queen Elizabeth I by Sir John Harrington and the valve water-closet patented in 1778 are both illustrated and described. For many reasons development lagged behind invention.

¹⁹ 'Latrines and Cesspools in Mediaeval London', *Speculum*, Vol. IX (1934), p. 303. See also 'Sanitation, Baths and Street Cleaning', L. Thorndike, *Speculum*, Vol. III.

spasmodic rather than continuous, and there is evidence of a decline in standards of personal cleanliness and sanitation between, say, 1400 and 1600, due partly to the continuing increase of population; thus the mediaeval custom of communal bathing fell out of fashion in the late Middle Ages.²⁰ Queen Elizabeth I took a bath once every three months.²¹ Late in the seventeenth century that tireless and independent traveller, Celia Fiennes, vividly described her adventures in the hot baths at Bath in which she wore garments of a fine yellow canvas ('the water fills it up so that its borne off that your shape is not seen') and in the icy waters of St. Mungo's Well, Harrogate, which cleared up a persistent pain in her head;²² but apart from spas, or 'Spaws' as they were called, there was little bathing of any kind. Celia Fiennes also described a bath installed at Chatsworth House by the Duke of Devonshire in 1694 which must have been one of the first baths to be equipped with running hot and cold water; but it was to be two hundred years before such baths came to be common. That the great Duke of Wellington took a daily bath was considered remarkable. Progress was equally slow and uneven in other aspects of cleanliness; the new towns of the Industrial Revolution were probably worse at first than their predecessors, as for example in London where, in 1844, 300 sewers emptied into the River Thames *above* the lowest intake used by the water companies—but the story of London's drains and cholera has already been touched on.²³ All this may seem past history today; but, as a study of air pollution (page 28) will make clear, we still have a long way to go. Nothing can be taken for granted if the physical conditions of modern community life are to be kept from contamination; subsequent paragraphs will give some idea of the variety of effort involved.

Town and Country Planning

The contribution of good planning to cleanliness can be only mentioned, not described. Much dirt can be prevented at the outset through good planning, just as many of our present difficulties reflect the lack of planning in the past. Such planning includes the

²⁰ See *The Culture of Cities*, Lewis Mumford, 1938, pp. 42-51 and 119-122, also p. 192 ff.

²¹ See *Oxford Junior Encyclopaedia*, 1955, Vol. III, p. 354, article on history of personal hygiene. This volume contains a number of articles on various aspects of cleanliness, hygiene, the home and human biology which should be of interest not only to older boys and girls but also to adult readers.

²² *The Journeys of Celia Fiennes*, edited C. Morris, pp. 17-20 and 79-83. London (Cresset Press) 1949.

²³ Chapter I. For a picture of the changing attitude towards the use of baths, see *The History of Pendennis*, W. M. Thackeray (1848-1850), Chapter XXIX, where the new point of view which identifies 'The Great Unwashed' with the views of Mr. Grump who 'had done without water very well'.

location of industrial and housing areas, green belts, decentralisation, new towns and so on; to be effective, it needs the support of enlightened public opinion as well as expert advice. But we are still feeling our way; the encroachment upon agricultural land is a serious matter and such issues as housing density or the balance between blocks of flats and small self-contained houses are still far from any generally agreed solutions. Such subjects are well worth discussing in school, though discussion, to be effective, must rest on a background of serious knowledge; the schools have their part to play in developing a public opinion which is informed and enlightened. In such matters economic, aesthetic and sanitary considerations often meet and mingle; it is essential, though not always easy in practice, to take all three considerations fairly into account.

Water Supply

An adequate supply of pure water for drinking, cleansing, and industrial processes of every kind is the single most important need of a modern community. In most of the larger towns in Great Britain the average supply of water per head is 30 to 40 gallons a day, though this figure (which includes water used for personal, municipal and industrial purposes) may rise to as much as 80 to 100 gallons because of the number or nature of local industries. In many areas it is not easy to ensure adequate water supplies, particularly where industrial use or the population is rising; the avoidance of waste has already become a matter of great importance, and careful use begins with the individual. The sources are usually wells, springs, rivers or lakes. Water taken from shallow wells or rivers must undergo a systematic process of purification in view of possible pollution by sewage, animals, factory effluents and sometimes house refuse; the pollution of wells through cesspools, manure-heaps, or decomposing animal matter reflects personal inadvertence, and each individual citizen shares the responsibility for preventing such nuisances from developing at the outset. Where there is pollution, disease germs such as those of typhoid fever may gain access to water derived from a well or river near to some source of pollution. If (perhaps in emergency) the purity of a particular water supply is suspect, any water intended for drinking should be boiled first. But water supplied through the public mains has normally been purified at the outset; filtration and chlorination are the basis of water purification all over the world. In this country the water supply of towns is rarely a danger to health, as elaborate precautions are taken to prevent its contamination at the source, during transit or in any other way. Another major source of pollution may be the presence of chemicals, such as lead in solution; lead is sometimes found in very soft water, as a result of acids in the

water attacking unlined lead pipes, and boiling is no protection against such a danger.

Refuse and Sewage Disposal

Arrangements for the disposal of refuse and other waste matter vary widely in different areas. While in scattered rural districts the householder is still often responsible, in urban areas, and increasingly in rural areas too, the work of collection is financed out of the local rates and carried out by the sanitary authority. House, trade and street refuse, excreta (the waste products of the body) and waste water, all have to be disposed of. Refuse is usually burned, dumped or sorted for salvage; sewage is either removed by the water carriage system, usually for treatment in a sewage works, or else, particularly in rural districts, it is disposed of locally in various ways. Where cesspools or septic tanks are used, they have to be emptied at intervals; the untreated sludge cannot be used as a fertiliser without serious risk of infection. Where sewage or factory effluent is discharged into rivers or the sea, the pollution is often a serious matter, particularly along thickly populated coastlines. The householder is responsible for his own sanitary fittings and house drains and for proper storage of his household refuse until it can be collected; dustbins, which are sometimes a serious nuisance, must have proper lids and be kept clean and free of flies.

The Air

Health is more likely to be affected by the physical properties of air, its cooling effect, humidity and rate of movement, than by any slight variations in its chemical composition. Even in ill-ventilated rooms the chimneys and casual chinks and crevices which are to be found around doors, closed windows and between floorboards are normally sufficient to provide enough oxygen and prevent a lethal concentration of carbon dioxide from forming; in the stuffiest room the oxygen content of the air is seldom reduced from the normal 21 per cent to even 20 per cent, while life can be sustained quite comfortably on 16 per cent or even less. When 123 out of 146 men and women originally confined in the Black Hole of Calcutta died, this was due not to lack of oxygen but to heat stroke, due partly to a rise in the air temperature caused by the heat of the victims' bodies and partly to an increase in the humidity of the stagnant air as a result of the moisture given off in the breath and from their skin. If the skin is to function properly, it must be kept cool, but this is not possible in an unventilated atmosphere. Good ventilation presupposes sufficient cubic space for each individual and an ample

supply of fresh air, of a suitable temperature and humidity, so that any possible ill-effects from dust or germs may be minimised. Most rooms can be adequately ventilated without draughts; with a circulation of fresh air in any kind of room the risk of infection will be much reduced. Natural ventilation is most effectively caused through inequality of temperature, and so indoor heating and ventilation are always related. Heated air expands, becomes less dense and rises, cool air flowing in to replace it. But, in rooms which are kept very hot, effective ventilation becomes harder to maintain, since ventilation will naturally lower the room temperature and the air tends to come in as a cold draught. Over-heated classrooms slow up pupils' work and lower their resistance to colds and other respiratory infections; but under-heating is probably more common, particularly in old-fashioned schools where in cold weather open fires or inefficient low-temperature combustion stoves may fail to raise the temperature of the rooms by more than a few degrees above freezing point. The temperature now prescribed²⁴ in this country is 62° for common rooms, staff rooms, teaching rooms and nursery playrooms, as compared with figures in some countries of 68°–72°; other appropriate temperatures are laid down for rooms with more specialised functions. These temperatures are to be maintained with a rate of ventilation which is defined in terms of a supply of fresh air varying with the cubic space available per person, or amounting to six air changes per hour, whichever is the less. In practice, however, it appears that even in new schools the actual ventilation rate generally falls far short of six air changes an hour; apparently full use is not being made of the available facilities.

Children should be encouraged to work or play out of doors as much as possible; outdoor activities are essential in themselves and will help to reduce the harmful effects of poor ventilation indoors. Fresh moving air has a stimulating effect on the body, the appetite is improved and a general sense of well-being results; the nasal air passages will be kept clearer and any risk of infection is likely to be reduced. But of course the virtues of the open air include not only its freshness but also the fact that we tend to breathe so much more effectively out of doors. Indeed breathing and air supply should always be considered together; to be effective good breathing requires good air, while the fresh moving air will not do its work properly if the breathing is wrong. Breathing should be deep; the involuntary deep breathing induced by vigorous out-of-doors

²⁴ *The Standards for School Premises Regulations*, 1959, Section 53. The evidence about the shortcomings of ventilation in actual practice is taken from Ministry of Education *Building Bulletin No. 13* (July, 1955), Sections 22, 65 and 69. Her Majesty's Stationery Office.

exercise is excellent. It is worth noting that, whilst older children can be encouraged to take two or three deep breaths at intervals, many children of nursery and infant age are too young to be taught how to breathe deeply and the only way in which they are likely to do this is in vigorous exercise. Through deep breathing the whole of the lungs can be properly expanded and the air sacs in the most remote part of the lungs distended; tuberculosis and other infections are less likely to secure a hold in any part of the lung which is adequately ventilated. Finally, proper breathing depends on a good habitual posture; children who bend over their work, or loll about and carry themselves badly, will not exercise their lungs so well as children who hold themselves erect and are generally alert and vigorous.

Air Pollution

The air can be polluted in a number of ways which include not only smoke but also acid fumes due to certain industrial processes, dust found in the neighbourhood of some cement works, electric power stations and factories, and the exhaust fumes from motor traffic. Little is yet known with any certainty about the effect of these, but under still air conditions, and particularly during fog or in the streets of large towns with tall buildings on each side, the fumes can become highly concentrated. In normal conditions the concentration of carbon dioxide is never enough to be troublesome, but some of the other substances contained in exhaust fumes may prove in the light of further investigations to be more dangerous. The most widespread and offensive of all the forms of air pollution is that caused by smoke and particularly by the smoke of burning coal. It has a long and interesting history which goes back to the Early Middle Ages when, for example, in 1257 'Queen Eleanor was driven from Nottingham Castle by the unpleasant fumes of the sea-coal used in the busy town below'.²⁵ Until the increasing use of domestic chimneys in the sixteenth century made it possible to burn coal in a domestic fire, coal was used mainly for industrial processes of various kinds; thus in 1307 its use in lime-burning (just outside the City boundary, near Ludgate, in an alley known as Sea Coal Lane as early as 1138) had to be banned in London. Sir John Falstaff was said by Mistress Quickly to have proposed to her 'by a sea-coal fire upon Wednesday in Wheeson-week' (*Henry IV, Pt. II, Act II, Sc. I*); it must have been a remarkable occasion. There was a rapid increase in the use of coal

²⁵ *English Industries of the Middle Ages*, L. F. Salzmann, p. 6. (Constable & Co., London) 1913. Also: 'The earliest definite reference to mineral coal is in a Bruges record where among exports from England to Flanders in the year 1200 there is mention of charbon de roche'. *From Domesday Book to Magna Carta*, A. L. Poole, p. 81 (and footnote). (The Clarendon Press, Oxford) 1951.

during the seventeenth and still more the eighteenth century; by 1800 the full horror of the new industrial towns was developing fast and their inhabitants lived under a pall of smoke which seldom really cleared. Coal runs through every aspect of the nineteenth century; prosperity, poverty and poetry were alike haunted by it.

'As some rich woman, on a winter's morn,
Eyes through her silken curtains the poor drudge,
Who with numb blackened fingers makes her fire—'.²⁶

For cheap coal, the increase in the size of cities, and the invention of the modern type of open fire-place (by the remarkable Sir Benjamin Thompson, Count von Rumford, 1753–1814) had together led to a great increase in the use and number of domestic fires, which all added their contribution to

'The yellow fog that rubs its back upon the window panes.'²⁷

Britain's prosperity was based upon coal, but a price had to be paid; the health of children and adults was insidiously but often seriously affected, cities became bad places to grow up in and those who were able escaped into the new suburbs. Apart from physical harm, 'The pall of smoke and smuts in itself was enough to discourage any effort after beauty or joy in the visible aspect of life'.²⁸

Smoke carries poisonous sulphur compounds, tars and carbon monoxide; the sulphur compounds turn into sulphuric acid which attacks buildings, plants and lungs indiscriminately. But chemical corrosion is not the only effect. In large towns the smoke may cut off up to three-quarters of the sun's rays, as compared with a normal loss, as they come through the atmosphere, of one-half at the sea-side and one-quarter on a mountain top. In cold still weather the lowest layers of the atmosphere may never be reached by the sun at all, so that they remain cold and unstirred by any convection currents and we are conscious of the fog becoming gradually thicker and more choking. Even where the smoke can be specially treated, as in some factories and power stations, the grit still tends to sprinkle the surrounding area, while attempts to wash the gases may even increase their moisture content and density, thus causing them to fall more readily towards ground level. But smoke is only the half; soot is also falling in quantities which, over a year, may in some large industrial towns reach as much as 500 or even 700 tons per square mile, choking leaves and lungs, and depositing on all it touches not only black dust

²⁶ *Sohrab and Rustum*, Matthew Arnold, lines 302–4 (1853).

²⁷ *Collected Poems*, T. S. Eliot, 1909–1935 (Love Song of J. Alfred Prufrock (Faber and Faber Ltd.).

²⁸ *English Social History*, G. M. Trevelyan, pp. 578–9.

but a layer of tar as well. The smoke and soot are generally caused by domestic fires and industrial users in about equal proportion.

Sustained efforts have been made in recent years to popularise the use of smokeless fuels and to ensure that industrial furnaces shall consume their fuel as completely as possible; the emission of excessive smoke by factory chimneys led to court action under local by-laws, but the main problems have until now remained unsolved. In recent years there has been a much greater general awareness of the problem, and particular attention has been given to statistics. Thus, to take one instance, there seems a close connection between the air pollution and the deaths due to bronchitis and other respiratory infections. It is significant that, for example, in England and Wales in 1964, 20,773 men and 7,967 women died from bronchitis. The death rate rose rapidly in persons above forty-five years of age, thus among men aged 45-64, there were 5,848 deaths attributed to bronchitis, more than 2 per cent of all male deaths, and in women of the same age there were 1,227 deaths, just under 0.5 per cent of all female deaths, from this cause. Bronchitis was responsible for some 27 million working days being lost to industry; it causes more absence from work than any other form of illness. Of course, such figures as these are probably affected by other factors, such as housing and climatic conditions, by the quantity of cigarettes smoked, as well as by air pollution; it may therefore be worth turning to more immediate evidence. The 'Great Smog' of December, 1952, was directly responsible for about 4,000 deaths in the Greater London area, while it is now known that the foggy period between January 3 and January 6, 1956, was sufficient to cause almost 1,000 deaths in the same area. The comment of the Chief Medical Statistician of the General Register Office is of interest: 'Three recently reported fog incidents have led to an increase in mortality in the London Area . . .' (in 1948, 1952 and 1956). 'In the face of the apparent infrequency of such incidents throughout much of the nineteenth and the first half of the twentieth century, the fact that three incidents have occurred during the past eight winters is disquieting. It suggests the possibility either that the atmospheric pollution associated with London fogs has recently become more toxic, particularly to the very young, the infirm, and the elderly, or that there has been an increase in the number of persons who are specially vulnerable to its effects. The 4,000 deaths in December, 1952, made a deep impression on the public imagination. These further 1,000 deaths last January are a stern reminder that this major public health problem has not yet been solved.'²⁹

²⁹ 'Mortality from Fog in London, January, 1956', W. P. D. Logan, MD, PhD, DPH, *British Medical Journal*, March 31st, 1956, p. 722.

The profound disquiet which incidents similar to the smog of December, 1952, had aroused, helped to establish a Committee to look into the question of air pollution. Set up under Sir Hugh Beaver in 1952 it published its report in 1954, and its energetic recommendations led to the Clean Air Act of 1956 which has enabled local authorities to prohibit the emission of smoke from domestic fires and has given greater powers both to local authorities and to Government officials to control emissions of grit, dust and smoke from industrial plant. The results can be seen in cities like London, Birmingham, Manchester and Sheffield, large parts of which now enjoy comparatively clean air. Before local authorities were given the powers under this Act they could only take proceedings under the Public Health Act for 'nuisance' against someone responsible for the emission of excessive smoke. Local authorities all over the country are gradually enlarging the areas covered by smoke control orders ('smokeless zones') so that smoke pollution is thereby being diminished.

Before we become too complacent, however, about air pollution in our large cities we should remember the continuing increase in the number of petrol and diesel vehicles in our town centres. So far there is no positive medical evidence that their exhaust fumes are a danger to health, but they could become a major nuisance and research is constantly being carried out into fuel composition and engine design to keep the emissions to a minimum. There are existing and projected regulations for dealing with diesel smoke which can at times obscure a driver's view of the road, and affect his control of his vehicle. If research now being carried out shows the need to control this particular nuisance regulations will be brought in. The phenomenon of the 'smog' of Los Angeles is largely produced by emissions from motor vehicles, yet also depends upon peculiar climatic and other conditions which are extremely rare in England. Problems such as this have compelled the American Government to establish a system of national standards for motor vehicles that will become effective with the 1968 models. These standards will require sharp reductions in the quantity of emissions from motor car exhausts which are the root of the trouble. The future in more ways than one looks brighter. The national survey of air pollution carried out by the Ministry of Technology shows a continuous downward trend in deposits of smoke and sulphur dioxide, particularly in areas brought under smoke control. The cleaning, on an increasing scale, of many of the buildings in our large towns must reflect an increasing confidence in the cleanliness of the atmosphere. There are many bodies, both official and voluntary (for instance, the Clean Air Council, and the National Society for Clean Air) actively engaged in campaigning for clean air.

Perhaps even yet the effects of air pollution and the improvements which would follow from its elimination are not sufficiently realised. Nowadays, however, both industry and householders are turning to other forms of fuel than coal which no longer enjoys the economic advantages which it did in Victorian times. Atomic energy may before long help to provide clean heat and power, though there will then be new forms of pollution to guard against; meanwhile education has its part to play. It will be a great day when large towns are once more clean and London looks again as it did to Wordsworth on July 31st, 1802, standing in the morning sun on Westminster Bridge:

‘Ships, towers, domes, theatres and temples lie
Open unto the fields and to the sky;
All bright and glittering in the smokeless air.’

Sunlight

Sunlight gives health and vigour to the body and destroys disease germs; it acts on the skin and causes the formation of Vitamin D in the tissues, and in this way the effect upon bone and tooth formation of any deficiency of this vitamin in the diet can be reduced. The more children play in sunlight the better; even without direct sunlight, the sky-shine can exert a good effect on the skin. Much of the good effect of sunlight upon health is due to invisible rays. When a beam of sunlight is passed through either a prism or the drops of a rain-shower and broken up into its constituent parts, we see the seven visible colours of which sunlight is composed, as in the rainbow; these range from red at one end to violet at the other, and beyond the violet rays are the ultra-violet rays which we cannot see. Their effect upon the body (except for the eyes, which may need protection) is beneficial; but unfortunately they are filtered out when sunlight passes through ordinary window glass, and this is one of the reasons why to be indoors is not so healthy as being out of doors. Ultra-violet rays, like other rays from the sun, are weakened by air pollution. It is wise to start all children, but especially fair-skinned ones, with short exposures to the sun's rays; otherwise unacclimatised skin is in danger of receiving superficial burns, which are often made worse by salt water or sweat. The shoulders and upper portion of the back, which so often receive the full force of the sun's energy while a child is busily engaged in play, should be protected from too long an exposure until a fair degree of pigmentation has been produced. People differ in their reaction to exposure to sunlight and for some, and especially for children, protection of the head and neck is important.

CONCLUSION

However great our progress in recent years, few of us would care to claim that our lives and surroundings are as clean as we should wish, and the importance for health of still higher standards of cleanliness is even yet not always sufficiently recognised in daily life. The ground covered in this chapter should concern every thoughtful adult; much of it is likely to be of interest to older children. But school, again, is only a beginning; the value of the training in cleanliness that is given to children at school will not be fully apparent until they too are adult citizens.

Movement and Rest

Movement

Movement indicates life. The joy of movement begins early and the young baby is rarely still from the first moment of birth. Continuous small vigorous movements contribute to the natural stages of growth and as the baby passes through these stages he learns to gain control of the head, the ability to sit up, to stand and finally to walk, a feat needing considerable dexterity. For the mother's eye the punctual appearance of each new achievement is an indication that all is well with her child. The children themselves take an evident pleasure in their own gradually increasing powers as they begin to explore their surroundings and—with developing skill—to manipulate materials and handle toys; but from an early age they also appreciate movement in its own right and as a means of expression, not merely for the skill which comes with it. The pattern of a child's activity may change as he grows up; but, if he is to live abundantly, he still needs ample opportunities for movement so that his natural powers may develop and have full play. Unfortunately modern life often makes it impossible to make the fullest use of these powers. Congested housing, small rooms and the facility of highly organised transport offer little inducement or opportunity for active exercise in the fresh air; the natural zest for movement is stifled so that neither the muscles (including those of the heart) nor the lungs function fully; appetite, digestion and excretion all suffer and stamina may never be built up. It is particularly interesting that in adolescence the earlier delight in movement seems too often to be lost, because the child becomes self-conscious and awkward due to mental as well as physical factors of growth at a time when accomplishment in movement might help the boy and girl to gain much-needed poise and control. It should still be possible for many to gain satisfaction, self confidence and poise through physical activities.

Physical Education

Many developments can be traced in physical education since its early days; they include work designed to strengthen particular muscles, to establish good breathing habits and posture, the improving of bodily control and the cultivation of individual initiative and

powers through games. Although methods have changed, such aims are still important, but in recent years physical education has come to be more widely defined. In the contemporary school it seeks to counteract the more restricting influences which an urban civilisation has imposed on children's natural freedom of movement and growth. A child's education cannot be complete if this side is neglected for the ability to move and think go hand in hand, skilful body management develops at the same time as the mind gains ability to reason. The aim is to give each child opportunities for experience in a variety of physical activities which will be of great value for his general education, nourishing his vitality and confidence and helping him to develop as a unified individual, with body, mind and spirit in tune with each other. The development of bodily skill offers opportunities to be creative and provides a means of expression. The scope is ever-widening and a generous and well-considered programme of physical education is likely to include not only training in the old sense, but the widest possible variety of experience which may include gymnastics, dance, games, swimming, drama, fencing, camping, canoeing, fell walking, judo, sailing, mountain activities and many other pursuits. It is sometimes hard to tell where the physical ends and the intellectual or aesthetic begins, often they seem to be combined as in dance and drama. Nor are these various forms of activity concerned merely with the development of individual powers, they satisfy a number of human longings, social as well as individual and should add to the sense of belonging to a community. Physical education claims a central place in the general education of to-day; it can have a profound appeal through a blend of physical effort and intellectual and aesthetic satisfaction. It also aims to interest every boy and girl to follow an activity of his own choice on leaving school, thus taking a step towards positive health and fostering a good attitude to the use of leisure time.

Remedial Work

For some children the ordinary programme of physical education is not enough; they may need additional corrective movement and such individual help can be given through remedial classes. Some children may need the special treatment which can only be given at an orthopaedic clinic. It is important that teachers should be aware of those who may require additional attention on account of postural defects of the spine and feet for this may be indicative of both physical and mental difficulties of development.

Rest

But movement is only half the story. The main rhythm of life is not between one kind of movement and another so much as between

movement and stillness, exercise and rest. At all stages rest is necessary, in order that muscles may recover from the tiredness produced by muscular activity; it is also needed for the replacement of wear and tear in other parts of the body, such as the brain and digestive organs. On other grounds, too, a life of incessant activity would be inconceivable; the mind and the spirit also need their periods of calm. Children need rest even more than adults do. Their periods of rest should be frequent, but rest does not necessarily mean complete inactivity; a change of occupation or some reduction in the intensity of what is going on may provide all that is needed. The balance between rest and activity will vary with different children; some need more rest than others. When a child is recovering from an illness which has kept him for some time in bed, his muscle tone may be poor, and the muscles are more easily fatigued; until he has fully recovered he will need more frequent and longer periods of rest, and so do malnourished, debilitated, and anaemic children. Some children may need more activity than others, but also more mental and emotional rest.

Sleep

The most satisfying and universal of all forms of rest is sleep, which is essential to human life; waking and sleeping are as day and night. For complete and speedy recovery from muscular activity, physical, mental and emotional repose are all necessary, and it is in sleep that they are best found. The voluntary muscles and eyes are rested, circulation and respiration are slowed and the activity of all other tissues and organs is lowered, so that tissue breakdown is reduced to a minimum. In this way more energy becomes available for growth, and it is for this reason that children need much more sleep than adults. For children and adults alike the quality of sleep is as important as its quantity; the value of sleep that is restless and disturbed is very much reduced. There are many conditions that help to bring about sound sleep. A child should have a bed of his own and, whenever possible, a room of his own, although during a period of emotional stress he may occasionally need the companionship of another member of the family in the same room. A mind disturbed, whether by fear, worry, guilt, disappointment or excitement, may prevent sound sleep.

Bedtime, especially for younger children, is often a time for unburdening fears or worries; it is as though children sense that they will sleep more restfully afterwards. Disturbed sleep has often been reported after seeing too exciting a film at the cinema, or after too exciting a programme on sound radio or television, particularly if normal bedtime has been postponed. Sleep will be all the sounder if

windows are kept open and sometimes the door as well, for the sake of cross-ventilation. The bed should be comfortable, with light but warm bedclothes. Some children are afraid of the dark after the light is turned out; these will often be helped by the judicious use of a nightlight. If a child complains of cold feet, bedsocks may be necessary, or a hot water bottle. Many young children like to cuddle a hot water bottle or a pet toy, or else they may associate sleep with the use of a certain blanket, or a particular pillow. Hungry children do not sleep well; but children vary in what they can eat towards bedtime without interfering with sleep; parents should be guided by past experience when a child says what he wants. Of course, reasonable quiet and absence of unnecessary disturbance in the house are essential; how can we expect the children to go to sleep if the wireless is blaring?

Children vary considerably in the amount of sleep they need; factors which influence this include the rate at which a child is growing and the intensity of his activities during the day. More sleep is needed after a busy, active day; but over-activity may produce the kind of fatigue that interferes with sleep. A child who goes to sleep quickly, wakes up of his own accord, enjoys his breakfast, and is active and ready for work and play throughout the day, will almost certainly be getting sufficient sleep. But if he takes a long time to fall asleep at night, has to be shaken and roused in the morning, trifles with his breakfast and is irritable and lacking in energy throughout the day, these are all signs that he is not getting enough sleep of the right kind. During periods of rapid growth, such as adolescence, extra sleep is needed; but it is often at such times that a boy or girl resents parental advice and likes to assert independence by staying up late. Bearing in mind that individual variations will be many, the following table may be taken as a very rough guide for the average child, assuming that he rises at 7 o'clock each day:

<i>Age</i>	<i>To Bed</i>	<i>Hours of Sleep</i>
4 years	7. 0 p.m.	12
6 years	7.30 p.m.	11½
8 years	8. 0 p.m.	11
10 years	8.30 p.m.	10½
12 years	9. 0 p.m.	10
14 years	9.30 p.m.	9½
16 years	10. 0 p.m.	9
18 years	10.30 p.m.	8½

Insistence on routine daytime sleep has undoubtedly been overdone in recent years. After the age of 2½, the afternoon sleep can normally be dispensed with for those children who sleep sufficiently

well at night. In nurseries it is found that at about the age of eighteen months some children take 15 to 30 minutes to fall asleep in the afternoon, while children who are between 3 and 5 may take up to an hour and some will not sleep at all. To attempt to force afternoon sleep on these young children without regard for individual needs can easily result in emotional strain. Far more important is the cultivation of the right attitude towards sleep; it should be one of pleasant, casual acceptance, which should follow readily enough when a child has been allowed to enjoy a full and satisfying day.

And it goes without saying that children should be given fair warning of approaching bedtime so that they are not suddenly torn away from any particularly absorbing item of work or play.

'Till the little ones, weary,
No more can be merry;
The sun does descend,
And our sports have an end.
Round the laps of their mothers
Many sisters and brothers,
Like birds in their nest,
Are ready for rest,
And sport no more seen
On the darkening Green.'³⁰

Fatigue

Fatigue may result from too much activity, too little rest or inadequate sleep; it is often aggravated by lack of food, and something to eat (particularly sugar, which is easily assimilated) or a nourishing drink will often avert fatigue altogether or at least reduce its severity. Any period of over-activity may soon produce a condition of acute fatigue which can become chronic if there is a continuous or too frequently repeated excess of activity over rest. Chronic fatigue frequently follows illness, or results from the intoxication of some chronic infection; it may, for example, be the only indication of a tuberculous infection in childhood persisting until adequate resistance against the tubercle bacillus has been built up; or a child may be similarly affected following rheumatic infection. Sometimes the cause of fatigue is emotional strain, arising perhaps from anxiety or fear connected with school life, or from the uncertainty of conditions at home. Many people find the increasing general noise of traffic and other mechanical devices most exhausting, and here is a field for further study.

³⁰ From the 'Echoing Green' in *Songs of Innocence*, by William Blake. See also the 'Nurse's Song', also in *Songs of Innocence*, for an eighteenth century picture of daytime and bedtime on a summer evening.

Because of the energy required for growth, fatigue is likely to be felt more quickly by children than by adults. It is usually most pronounced during rapid growth, or at a time which, for one reason or another, is more strenuous than usual. Teachers and parents, for example, frequently notice signs of fatigue in children when they start school; this may reflect their uncertainty in a new environment, or the increased demands on mental and physical energy, or, for many children, the confusion of mind which arises from first mingling with a crowd. The signs of fatigue vary in different children. Loss of appetite is common, occasionally with nausea and vomiting; resistance to infection is lowered. Children who are over-tired often persist in fighting against sleep and stay awake too long. An over-tired child will readily cry or whine, being touchy and irritable; he may look pale, with dark circles or puffings under the eyes, and sometimes he suffers from headaches. Some become restless, excitable and over-active, others listless and apathetic; concentration is poor, initiative suffers and there is little pleasure at such a time to be gained from all the many class or school activities. Tired and jaded children are all too common and their teachers should be on the lookout for them. Often it is the parents' fault and a talk with them will help; but it is also conceivable that the school itself is providing too stimulating a programme for some at least of its pupils, with insufficient opportunity for rest or relaxation. This fault, where it exists, is not peculiar to schools; it is a feature of modern civilisation:

‘What is this life if, full of care
We have no time to stand and stare?’

We seem to have forgotten in practice that the word ‘school’ once (in Greek) meant ‘leisure’. For there is so much worth doing; the day is too short for all that has to be done and relaxation seems out of the question. Not that occasional overload is necessarily harmful, particularly for older children; but heavy persistent overloading is a serious matter at any age. There is the infant school child who comes home hollow and fractious at 4 o'clock after an over-organised day without a break; there is the child of, say, 8, who comes home from a well-meant sports festival of anything up to four hours' duration; there are older brothers and sisters who settle down listlessly to an unnecessarily large assignment of homework after another bolted tea. Every school, whatever the ages of its pupils, should keep in mind the general risk of over-stimulation; a happy mean does not imply idleness.

It is worth watching out for the individual child who for one reason or another finds it hard to stand up to the normal school day. This may be only a temporary phase, such as may come after measles or

a bad sore throat; too often at such times a child is pressed to make up lost ground just when his stock of energy is lowest. Or there may be some more deep-seated cause; any serious or doubtful case should be referred to the school doctor. The first essential for such children is usually a prolonged period of rest, after which they can gradually be introduced to short periods of activity, alternating with long periods of rest. Exercise is necessary to maintain and improve the muscle tone, but should not be started until recovery is definitely under way; good food and fresh air are, of course, important too. But for every serious case of this kind there are probably many more in which fatigue is not necessarily obvious; in a school where children can sometimes relax, fatigue is less likely to be a serious problem. Parents and teachers both have their responsibilities and in this should work together.

Nutrition and Food

Nutrition is one of the most important single environmental factors affecting our personal well-being. Good food selection, the cornerstone of good nutrition, must be learned, as unfortunately we have no automatic mechanisms to direct the choice of foods which build healthy bodies and which keep them running satisfactorily from day to day. It is true that our bodies have many reserves and safety devices, and can stand an infinite amount of abuse, and because of this very fact, many doubt the ultimate penalties of a poor diet. Even with plenty of food, or plenty of money with which to buy food, the uninformed are likely to develop food habits incompatible with good health.

Poor nutrition has vast social and economic implications. The poorly nourished child stands in sharp contrast to the well-nourished one. He is apathetic, dull, easily fatigued, and often a problem in his community. It may be that the food given to him is insufficient to provide energy for his needs, or it may supply his energy requirements without containing enough essential nutrients. He may have access to a good balanced diet to which he cannot do justice because of poor appetite, or for various reasons he may be eating enough without being able to utilise all that he eats.

What, then, are the factors that must be included in the daily diet in order that children may be well nourished? All the foods we eat contain components which are known as 'nutrients' and it is the presence of these which gives a substance its right to be called a food. These nutrients are: protein, mineral elements, vitamins, fat and carbohydrate, and all have particular functions in the body, which needs them for:

- (a) Growth and repair
- (b) Vitality and fitness
- (c) Production of calories for energy and warmth.

Foods which supply the nutrient protein, which is required for growth and repair, are eggs, milk, cheese, meat and poultry, fish, nuts and pulses. Foods which are the main sources of the mineral elements and vitamins, responsible for vitality and fitness are:

Green vegetables, citrus and berry fruits, milk, cheese, eggs, butter, margarine, cream, bread, cereals, liver, kidney, oily fish.

Those which supply calories for heat and energy, are fats and carbohydrates, which are found in foods such as sugar and preserves, chocolates and sweets, bread, cakes and biscuits.

Protein

Protein, an essential constituent of all animal and vegetable cells, is used in the body for growth and repair. It is, therefore, of particular importance to the growing child. It can be a source of energy; when the carbohydrate and fat in the diet are insufficient for energy needs, protein is then used, and although it is vital for building and maintenance of the body, this energy use takes precedence. This is most wasteful, because protein foods are expensive, and, on a world wide basis, scarcer than other foods which are better sources of energy.

When taken into the body, protein is broken down by digestion into amino-acids. These represent the many different components out of which the protein molecule is built; one protein molecule may contain as many as twenty of them. Probably at least ten different amino-acids are essential for the growth of the child; they must be supplied in the food, as they cannot be made by the body. All these essential amino-acids are present in any one molecule of animal protein; in some vegetable proteins, however, one or more will be absent, though a suitable mixture of vegetable proteins can supply them all if eaten in sufficiently large quantity. If the amino-acids are to be fully used in building up the proteins needed by the body, a complete assortment of them should be available in the diet. When the more expensive protein foods are scanty, they should be spread over several meals, and eaten with bread, potatoes and cereal in order that the fullest possible use may be made of the amino-acids available.

Mineral Elements

The nineteen major inorganic substances which are present in the body are found in the hard structures such as bones, teeth and nails, in all the cells of the body, and the various body fluids. Some are present in relatively large amounts and their functions have been widely studied. Others, which occur in very small amounts, are known as the trace minerals, and the functions of some of these are not fully understood.

Most of the mineral elements are needed in only very small amounts, and are widely distributed in nature, but there are some that merit special consideration in the diet.

Calcium helps to build bones and teeth, and plays a part in certain regulatory processes in the body. Milk and cheese are the only good

sources of calcium, though green vegetables and whole grain cereals make a small contribution. In this country calcium is added to all flour other than true wholemeal, so that bread also supplies an appreciable amount in the quantities in which it is normally eaten.

Phosphorus with calcium, is a major constituent of bones and teeth. It also plays a large part in the release of energy from foods. A deficiency of phosphorus is seldom if ever seen. If the levels of calcium and protein in the diet are adequate, phosphorus will be present in sufficient amounts because foods which are good sources of calcium and protein are also the best sources of phosphorus.

Iron is of primary importance in red blood cell formation and for preventing one type of anaemia. Meats, especially liver and kidney, are good sources of iron, and green vegetables also contain useful amounts. In this country, the Flour Regulations require a minimal quantity of iron in all flours. This means that iron is added to flours of less than about 80–85 per cent extraction, and hence flour and flour products provide about one quarter of the iron in the average diet.

Iodine is needed in minute quantities for the proper functioning of the thyroid gland, where most of it is located. It is found in fish, some green vegetables, and drinking water usually contains a little. In this country iodised salt is available for those who choose to buy it.

Vitamins

Vitamins are organic substances that are distributed in foodstuffs in relatively minute amounts, are distinct from the main components of food, are needed for the normal nutrition of the human being, and the absence of any one of them causes a corresponding specific deficiency disease.

Some of the vitamins, e.g. A, D, E and K, are found mainly in fatty foods and are called fat-soluble; others, e.g. B complex and C are water-soluble. Scientists who made the first discoveries about vitamins wisely decided not to attempt to give each one a name as nothing was known of their chemical nature. They adopted the custom of referring to the vitamins by the letters of the alphabet, and we still use these letters today, although the chemical nature of the vitamins is now established, and many can be synthesised in the laboratory.

Vitamin A occurs in certain fats and in the fatty parts of some foods. Carotene, a precursor of vitamin A, is found in certain vegetable foodstuffs, and this can be changed into vitamin A in the human body, but less efficiently than in the bodies of some animals; that is why animal sources of vitamin A are more effective than vegetable sources. Vitamin A is necessary for growth, is concerned

in the perception of light, and the maintenance of the skin and mucous surfaces of the body in a condition in which they can more easily resist infection. If it is not well represented in the diet bodily health will suffer.

The following foods are sources of vitamin A:

Animal—halibut liver oil, cod-liver oil, liver, butter, margarine, eggs, cheese, milk, sardine and herring.

Vegetable—carrot, spinach, watercress, apricots and tomatoes.

Vitamin A is stored in the liver.

Vitamin D is concerned with the laying down of calcium and phosphorus in the building of bones and teeth; it is therefore of particular importance during periods of rapid growth. Too little of this vitamin may cause rickets; too much may cause metabolic disturbances in infants. It may be obtained from food or it may be formed in the skin by the action of sunlight. It is contained in cod-liver oil, sardine, herring, tinned salmon, margarine, eggs and butter. Like vitamin A it is fat-soluble and heat resistant.

Vitamin E has been shown to be necessary for normal fertility in rats, but so far there is no conclusive evidence whether this is so in man. It is widely distributed in foods, the richest source being vegetable oils, green leafy vegetables and whole grain cereals. It also occurs in dark green vegetables such as spinach, kale, and also in cauliflower.

Vitamin B Group

All members of the group are water-soluble; they are widely distributed in foodstuffs, and are often found together. At one time only two components of the vitamins in the B complex were recognised, vitamin B₁ and vitamin B₂. Today about fourteen have been described, though it is not certain that all of them are necessary to man.

Thiamine or vitamin B₁ is concerned in the mechanism of releasing energy from carbohydrates. If there is not enough of this vitamin in the diet, growth is checked, a particular form of neuritis may develop, and there may be depression and irritability. If the deficiency is severe and prolonged, beri-beri develops. Thiamine is widely distributed in foods, and in a good mixed diet deficiency is very unlikely. Moderately good sources are yeast, pork, bacon, peas and wholemeal bread. In this country white flour is artificially fortified with the vitamin.

Riboflavin takes part in a number of enzyme systems concerned with the release of energy from food. If it is in short supply, growth is slowed down, cracks and sores may appear at the corners of the

mouth, and the tongue becomes red and sore. Milk and cheese are the most valuable sources in the diet, though meat makes a contribution. Since it is not widely distributed, care is needed to ensure that it is present in the diet in adequate amounts, especially as it tends to come from the more expensive foods. It can be destroyed by light, and if bottles of milk are left in bright sunlight, much of it can be lost. This can be serious because milk is an important source.

Nicotinic acid or vitamin B₂ also takes part in the release of energy from foods. When this vitamin is deficient in the diet, growth is checked, the tongue and mouth become sore, and pigmentation of the exposed parts of the skin leading to dermatitis occurs. If the deficiency is severe and prolonged, diarrhoea and dementia develop, characteristic of pellagra, the disease produced by a deficiency of this vitamin. Nicotinic acid is fairly widely distributed in foods. The best sources include yeast, liver and meats. It is another of the nutrients, which under the Flour Regulations are required to be present in all flours in minimum amounts, so bread is a useful source. Some other members of the B group are:

Pyridoxine or vitamin B₆ is concerned with the metabolism of protein and fatty acids and with the release of energy. It is essential for the breakdown and formation of some amino-acids. It is present in many foods, and over half the total in the diet comes from animal foods.

Pantothenic acid which is widely distributed in foods, takes part in the metabolic processes of the body by which energy is released from foods.

Biotin is concerned with the health of the skin and plays a role in many enzyme systems involved in the metabolism of proteins, fats and carbohydrates. It also is widely distributed in foods.

Folic acid is necessary for growth, taking part in certain enzyme systems, and is important in every kind of anaemia—almost every kind of blood disturbance responds to folic acid. It is widely distributed in foods, green leafy vegetables and liver being particularly rich sources.

Vitamin B₁₂ which has the new international name of Cobalamin, is effective, with folic acid, in relieving pernicious anaemia, and is also concerned in many metabolic functions. It is present in animal foods; vegetable foods contain only traces.

Vitamin C or Ascorbic acid is concerned with the maintenance of the integrity of the connective tissue, or intercellular material, in which the cells of the body are embedded: if it is in short supply growth will be checked, the gums and mouth will be liable to infection, healing will be slowed; prolonged deprivation may lead to scurvy. This vitamin is found mainly in fruits and vegetables, is easily

destroyed by cooking and tends to deteriorate when food is stored. It is well represented in blackcurrants, sprouts, cauliflower, cabbage, watercress, citrus fruits, tomatoes and new potatoes. Old potatoes, although they contain much less vitamin C are a good dietary source in this country because they are eaten so frequently and in relatively large amounts. Since fresh green vegetables tend to be expensive in winter, the diet at this time may easily be low in ascorbic acid, but modern methods of food preservation provide reasonable alternatives. As this vitamin is so sensitive to food preparation and cooking, and is not stored in the body, great care must be taken to ensure that a daily supply of ascorbic acid is included in the diet.

It will be noticed that all the vitamins are essential for growth. Vitamins are needed only in small amounts; if an adequate amount of any particular vitamin is available in the diet, no benefit will be reaped by taking more. Various vitamin preparations are on the market. They have their uses, and are particularly valuable if food supplies should be limited for any reason. In general, however, it is better to take the natural products whenever they are available.

Fats which are derived from both animal and vegetable sources, are an important source of energy and heat, and some are carriers of the fat-soluble vitamins. Animal fats include butter, dripping, suet and lard; vegetable fats include olive oil, cotton-seed oil and corn oil. Margarine and compound cooking fats are usually mixtures of animal and vegetable fats and oils.

Certain foods contain fat, not always visible as such, which contributes considerably to the total fat intake. Bacon, fat meats, oily fish, cheese, egg yolk and nuts contain a good proportion of fats. Potatoes will readily absorb fat during various cooking processes, and the addition of butter or margarine to cooked vegetables increases their calorific value.

Carbohydrate

Carbohydrate is the main nutrient which supplies energy; it can be converted into fat. It occurs in foodstuffs in two forms, sugar and starch.

- (i) Sugar. Glucose is the basic form of sugar. Other forms of sugar are converted to glucose by digestion in the alimentary tract. The molecules of glucose are then absorbed into the blood stream.
- (ii) Starch. Starch is a compound molecule the basic unit of which is glucose. It is also broken down by digestion to glucose, and is then absorbed by the alimentary tract.

Starches and sugars are found chiefly in sugar, flour, fruits and vegetables.

FLUIDS

Water

Two thirds of the body is made up of water which forms the major constituent of blood and digestive juices and is also essential to the building of tissues. It forms the medium in which foods are digested and absorbed by the body, and waste products eliminated. At least $1\frac{1}{2}$ pints of fluid should be drunk daily by an adult. Most children like water and they should be encouraged to drink whenever they are thirsty. Now that so many children stay at school all day, they must all be able to drink as much water as they need, and when they need it; drinking facilities should be made easy, attractive and hygienic. If there are practical difficulties in the way, local education authorities and teachers should combine to deal with them. It is particularly important that water should be available at the midday meal.

Tea, Soft Drinks, etc.

Both children and adults often like to drink water which has been flavoured in various ways; such drinks include tea, coffee, cocoa, fruit juices and fruit drinks and mineral waters. Neither tea nor coffee is a real food; any food value in tea, as it is drunk in this country, is contained in the milk and sugar put into it. The difference between milk and tea lies in the fact that milk gives the body actual energy and strength, whereas tea can only stimulate the body to put forth and use the strength it has already. Tea or coffee in moderation are both most refreshing; but if they are taken too often because of their stimulating properties, the result may be anything but good; when the body is tired, it needs not stimulants, however harmless they may be in themselves, but rest and food. Sweetened mineral waters are usually very popular with children. Though their food value is negligible, they do supply some of the fluid necessary to health. Fruit juices and fruit squashes prepared from freshly squeezed citrus fruits are usually popular and, if properly prepared, are a valuable source of vitamin C and minerals.

Milk

The importance of milk arises chiefly from its high protein, calcium and riboflavin contents. The fat in milk provides a concentrated source of calories. No single food is as valuable as milk, although it does not contain enough iron or vitamin C to be classed as a perfect food; however, both iron and vitamin C are usually supplied by a normal mixed diet. Milk is particularly important where rapid growth is in progress as in pregnancy, for nursing mothers, children

and adolescents, and it has been proved almost essential if children are to realise their full potential.

Milk should be kept in a cool place, especially in the warmer summer months; it should not be left exposed on the doorstep after delivery, since sunlight destroys riboflavin, one of its most beneficial constituents. If a refrigerator is not available milk may best be kept by standing the container in cold water and bottles should have a porous earthenware cover. If fresh milk, which is the best form in which milk can be taken, cannot be obtained, then several other forms of milk exist today. Dried skimmed milk may be used in cooking as a substitute for fresh milk, or better still, to enrich milk puddings, sauces, custards, soups, puddings and pastry; it makes an excellent body-building food, since only the cream has been taken off and what remains is still a rich source of protein, calcium and riboflavin. Condensed milk, whether sweetened or unsweetened, is pure, wholesome and nutritious, but not as good as fresh milk because of slight alterations which have taken place in the composition of the original milk during its preparation. Special baby foods and some forms of whole dried milk in general use are suitable for feeding infants deprived of breast milk.

Safety of Milk

Safety in milk means the absence of pathogenic bacteria. There are two main ways in which milk may often become contaminated with organisms of disease:

- (a) pathogenic organisms (i.e. organisms harmful to man) may be transferred from a cow suffering from some bovine infection or disease, through its milk to man;
- (b) milk may be contaminated at any time between the milking of the cow and delivery to the consumer, by dust or dirt, by dirty utensils, or by persons employed on the farm or in the dairies.

The pathogenic organisms which may be present in milk may infect the consumer with such diseases or illnesses as tuberculosis, undulant fever, diphtheria, scarlet fever, septic sore throat, paratyphoid and typhoid fevers, food poisoning and last, epidemic diarrhoea, an illness to which infants are specially liable.

All these pathogenic organisms can be destroyed by suitable heat-treatment, i.e. pasteurisation or sterilisation. Milk is pasteurised by applying heat for a certain time at a certain temperature, and then immediately cooling it. This method destroys about 99 per cent of the bacteria, including all the pathogens. Pasteurisation does not impair the flavour of milk and the loss of nutritive value is very slight.

Sterilisation is carried out by heating bottled milk to a prescribed temperature and then cooling it, so that at the end of the treatment the bottles are not only sealed hermetically but have been made sterile also. This milk has a characteristic cooked flavour, is slightly brown, and there is a greater loss of nutritive value than occurs with pasteurisation. In England and Wales some 90 per cent of the milk sold by retailers is pasteurised or sterilised. It is desirable that all milk for human consumption, whether for drinking or in other preparations should be pasteurised or sterilised. Although all milk produced today is 'tuberculin tested', that is produced from cows which have not reacted to periodical tuberculin tests, this implies only a presumptive warranty of freedom from tuberculosis and such milk, may, like ordinary milk, contain other pathogenic organisms of bovine or human origin. Milk which has not been pasteurised or sterilised may be rendered safer by boiling and cooling quickly, and this is of particular importance where the milk is for babies and young children. Milk is graded for sale to the public as follows:

1. Untreated milk—farm bottled. This milk comes from cows which have passed the tuberculin test and is bottled raw on the farm. No heat treatment is applied.
2. Pasteurised.
3. Sterilised.
4. Ultra high temperature. Recent technological research has evolved a new method of quick sterilisation called ultra high temperature or U.H.T. in which milk is heated to 270° F for not less than one second. This method kills all bacteria including spores, without any appreciable effect on colour, thus making the milk perfectly sterile, and was legalised in this country on October 1st 1965.

QUANTITY OF FOOD NEEDED

Man's nutritional needs vary both absolutely and relatively throughout life, and the amount of food normally consumed will depend on the age of the individual and on the type of work or exercise performed. Regulating the food intake to meet the energy needs is the secret to the regulation of body size. The multiplicity of factors which influence energy needs, however, may make it difficult to achieve this regulation, and control of appetite sometimes requires almost superhuman efforts.

Greater supplies of energy are needed at certain periods in the human life span—particularly childhood, adolescence, pregnancy and lactation. It must also be remembered that nutritional needs and food habits change with age, and failure to adjust one's food habits

as one grows older can be the basis of some of the health problems of middle age. The energy needs of the middle-aged and old are less than those of younger adults, but the amount eaten is often determined by habit, and a conscious cut in the food intake may be necessary. Care must be taken that this is not effected at the expense of the dietary content of such nutrients as protein, calcium and vitamins.

If the following outline is adhered to, there should be little fear of nutritional deficiencies:—

Milk: a pint daily: more for children, expectant mothers and the aged.

Eggs, cheese: three or four times a week.

Meat, including liver, kidney or fish or poultry: once a day.

Fruit: Citrus fruit or tomato at least once a day.

Vegetables: Two daily in addition to potatoes, including a salad or green vegetable.

Fat: Butter or margarine daily.

Cereals: Wholemeal bread or cereal are advisable daily.

Extra calories necessary can then be obtained from other foods as required.

HOW AND WHEN TO EAT

Apart from the composition of the diet, the conditions under which it is taken have much to do with the benefit the body derives from it. Sometimes appetite, and with it digestion, may fail because of worry and anxiety; a meal should be a serene and sociable affair. There is much to be said on physiological grounds for serving food in a pleasant and orderly way, in surroundings which are civilised and with a reasonable degree of amenity. More vital still is the absence of any sense of strain, rush or emotional distress; the meal should be enjoyed, and that will depend on flavour, cooking, service and, not least, the company.

As a rule it is convenient for family meals to be served at stated times and regular intervals, and there is everything to be said for such a practice. But occasionally babies and small children are allowed to go hungry, in order to conform to an arbitrary time-table of meals. Such harshness fails to take into consideration their emotional and physical needs; when these small children are hungry they should be fed, and there is no other rule that matters. As they grow older they should be more able to conform to adult conventions regarding fixed hours for meals. At all stages of development children of similar age and size may require different quantities of

food, in so far as one child may digest and assimilate better than another; nothing is gained by either forcing a child to eat food he dislikes, or insisting that he should eat when he has no appetite. In the same way most children know when they have eaten enough; within reason their desire for more should be respected, though hardly to the point of allowing them up to five helpings of pudding or more, as is not unknown! Likes and dislikes should not be discussed in a child's hearing, but should be noticed and taken into account when planning the dietary. It sometimes happens that insistence on a standard of behaviour beyond their years is a cause of under-feeding and feeding difficulties in young children. To attempt to 'civilise' at a primitive stage will only cause strain for all concerned. Emotional upsets have an obvious effect and are often associated with lack of appetite and refusal to eat. A child learns quickly that by refusing to eat he can attract his mother's attention and he will refuse food for his own purpose. The less children have to think about feeding the better. If for any reason a child is faddy, it is better to take as little notice as possible, for it is important for the mother to realise that there is a great variation between food requirements of different children, just as there is between sleep requirements. Parents who associate health only with good weight gain may not be aware of the danger of obesity. An excess of cakes, biscuits, sweets, ice-cream and sugary drinks, often given to please the child or pander to a whim, can be dangerous. A great deal of trouble often arises where older members of the family, especially the father, express strong dislikes of certain foods and it is important if improvement in family feeding is to take place that the teaching of nutrition is extended to boys as well as girls and that it is not neglected in ante-natal clinics where the principles and problems of child-feeding will have much more relevance.

RELATIVE COSTS OF FOOD

Some of the essential body-building foods, such as meat and fish, are relatively expensive, but in considering such foods one should remember that the cheaper varieties of meat and fish are quite as nourishing as those which cost more. Herring, for example, supplies nearly as much body-building food as the same weight of salmon, and at a fraction of the cost. The cheaper kinds of cheese contain as a rule rather more body-building material than the more expensive sorts and are easier to digest. Less expensive vegetables such as kale, cabbage and spring greens are good purchases from the nutritional aspect.

SOURCE, DISTRIBUTION AND PROTECTION

Everyone should realise how important it is that all food should be as fresh as possible. Thus most fish is at its best when it has just been caught; the best milk is clean, fresh milk, made safe by pasteurisation; the best eggs are new laid eggs; the best vegetables and fruit come straight from the garden. But the conditions of living today make it necessary for people to obtain much food which has been some time in reaching them, often from other countries. The food scientist has greatly increased our choice of food. Developments in the sciences of chemistry, physics, microbiology, biology and biochemistry, have brought improved processes of food preservation; food may now be deep frozen, air-dried, accelerated freeze dried, canned or bottled. Almost all foods can now be preserved in a form and with a taste and nutritional value as good, or nearly as good, as the fresh variety. Foods are available all the year round, instead of for a short season, and foods which would normally have perished during transportation from other parts of the world reach the shops in good condition. Modern methods of preservation have, to some extent, reduced cost since food can be transferred where it is grown cheaply to areas where it is needed and farmers all over the world have been stimulated to better methods of food production. The rapid increase of 'convenience foods' in the shops is of importance to the housewife. These foods in which a degree of culinary preparation has been carried out by the manufacturer, range from the shelled peas on the one hand to the fully cooked product on the other. These can make the job of the housewife easier so that cooking takes up less time, meal times are more flexible and she has more leisure.

There are many Acts of Parliament and Regulations designed to control the use of preservatives in food and prevent its adulteration, and indeed the history of both makes a fascinating tale. Today local authorities are charged with the duty of maintaining the purity and wholesomeness of the food supply in their areas. Much may be learnt about the distribution and protection of foods by visits paid to local markets, food factories and dairies, and attention should be drawn to the measures taken—or not taken—to prevent contamination of food by exposure to dirt or by unclean and unnecessary handling. In this connection the Home Economics teacher has a valuable part to play. Throughout the cookery and general Home Economics course there will be many opportunities for stressing the importance of always washing one's hands before food is touched, taking proper care of the larder and store-cupboard, and making suitably hygienic arrangements for the disposal of refuse. Full use should be made of modern insecticides to prevent contamination by

flies, but chemicals of this kind should never be sprayed in a room where food is exposed.

SCHOOL MEALS AND MILK

There can be no doubt that school meals and milk have made an important contribution towards the improvement in the health and physique of school children during the last two decades.

School Meals

Local education authorities were given the power to provide meals for school children by the Education (Provision of Meals) Act of 1906. By the beginning of the second world war about half of the authorities were providing free meals and some 150,000 pupils in elementary schools were having meals, including a comparatively small number who paid for them. In addition, something like 150,000 pupils in grammar schools were having dinner at school. In general, the provision was limited to necessitous children and those living at a distance from their school. With the impact of the war the school dinner assumed a new significance and the provision of school meals was rapidly expanded. It became a matter of national policy to provide a good dinner at school for children whose parents wanted them to have it, either on payment of a charge roughly corresponding to the cost of the food or free of charge in cases of hardship. The Education Act, 1944, placed a duty on local education authorities to make meals available for all children attending maintained schools; in practice, of course, this obligation had already been very largely accepted.

The growth of the School Meals Service is illustrated by the fact that nearly five million day pupils in maintained schools were taking school dinner each day in the autumn of 1967 compared with some 300,000 about 25 years earlier. About 400,000 of these children were having the meal free of charge. The standard charge for the school dinner was increased in April 1968 from 1s. to 1s. 6d. The gross cost of the meal at that time was slightly above 2s. 6d. The school dinner is planned to serve as the main meal of the day and to provide a substantial proportion of a growing child's requirements. A Working Party on the Nutritional Standard of the School Dinner and the Type of Meal was set up in February 1965 to review the existing nutritional standards in the light of social changes and feeding habits and to make recommendations. Revised standards came into operation from the commencement of the Summer Term, 1966. The total nutritional value of meals based on the Working Party's recommendations is total protein (animal and vegetable) 29 grammes, 32 grammes fat and 880 calories per average meal.

But the purpose of the school meals service is not merely to provide good meals for necessitous children, for those travelling long distances or those whose mothers are at work or even for those who wish to participate. Under proper conditions the school dinner affords an opportunity for social training, teaching good manners and encouraging sound dietetic habits. It is generally regarded as an essential part of the corporate life of the school; and without the cooperation of head teachers and their staffs it cannot be a success.

The Milk in Schools Scheme

The Milk in Schools Scheme was launched by the Milk Marketing Board in 1934; milk was made available to children at school at the reduced price of $\frac{1}{2}$ d. per one-third of a pint, the local education authority paying this for necessitous children, and the teachers were responsible for the administration and the success of the scheme. The Education Act, 1944, placed on local education authorities a duty to make milk available for drinking by pupils at maintained schools; and in 1946 the Government made the milk free of any charge for such pupils. Under the Public Expenditure and Receipts Act 1968, the supply of free milk to pupils at secondary schools will be withdrawn from September 1968, though children at primary schools and at special schools will continue to be entitled to one-third of a pint a day, and delicate pupils in special schools may receive two-thirds of a pint. In 1967 over 90 per cent of such children were taking free school milk. Local Education Authorities have a power, though not a duty, to provide milk to pupils at independent schools and this will also be limited from September 1968 to exclude secondary school pupils. Local Education Authorities may charge for milk provided in this way, or may provide it free, at their discretion. The milk is normally supplied in third-of-a-pint bottles or cartons and drunk direct from the container by means of drinking straws. This method is convenient in that it eliminates the supply and washing up of beakers. It is also hygienic since it eliminates any handling of milk at the school and the risk of infection from contaminated beakers.

Warmth and Clothing

The primary source of all the body's heat and energy is food; this can be regarded as fuel to be burned up by the tissues so that the body may be kept alive and the muscles may perform their work. The muscles make up nearly half the weight of the body, and it is in the muscles, as a result of their activity, that most bodily heat is generated. Every child knows that he can warm his body on a cold day by running and jumping; an exceptionally high rate of muscular activity can more than double the rate of production of heat in the body. The greater the amount of muscular work performed, the greater is the amount of food required and consequently the greater the amount of heat produced. Body heat is lost chiefly from the skin, by the giving up of heat to the surrounding air and by the evaporation of sweat. Increased muscular activity causes the production of more sweat, which wets the skin; evaporation then brings about a cooling effect. Thanks to the general balance between the production and loss of heat, man's body temperature is so regulated that, in health, it remains the same in the heat of summer or the cold of winter.

In theory this might suggest that much of our clothing is really unnecessary. This may be so; fewer clothes are worn today than fifty years ago without any ill effects. Yet clothing has certainly enabled man to live in more widely varying environments than he would otherwise have found possible. In a temperate climate such as our own, clothes undoubtedly perform a valuable function in reducing the strain which would otherwise be placed upon the temperature-regulating mechanism of the human body; in particular they can do much to guard us from the risk of over-sudden loss of bodily heat, such as could otherwise occur after playing strenuous games or passing from a hot room into the cold air outside.

If the main physical function of our clothing is to help in the conserving of bodily heat, it should as far as possible be varied according to the air temperature and not according to the calendar. We should neither wear too much nor attempt to harden ourselves by wearing too little; in everyday life people are accustomed to add extra clothing or take it off as a matter of course according to need and comfort. But the putting on of extra clothes is not the only way in which additional heat can be conserved; equally important is the

choice of materials. Because air is a bad conductor of heat, the warmth of clothing materials depends upon the amount of air which they trap amongst their fibres. The rate of absorption of sweat and the evaporation caused by drying also influence the relative warmth of clothes. Previously wool was the warmest material because of the air enmeshed in the natural fibres but the modern materials with a brushed finish also contain a large proportion of air and are therefore much warmer than the former smooth finishes of cotton, rayon, nylon and other synthetic fabrics. When there is much sweat to be absorbed, wool will be warmer as it dries slowly; the finish given to fabrics does not materially alter the rate of drying and rapid evaporation can cause chilling. Open mesh or cellular materials imprison air in the meshes and are therefore relatively more efficient in retaining body heat. Wet clothing causes excessive loss of body heat and the danger is much greater in windy conditions. Woven materials cannot always keep out strong winds, but fur, leather, oilskin, rubber and plastic materials offer more resistance. Some of these materials, however, are very uncomfortable to wear for any length of time, since they cannot properly be ventilated and too much heat and moisture may be retained. In recent years there has been a rapid development of synthetic fibres. Nylon and Terylene are probably the best known, but there are now many others, and the ways in which these are processed may give the fabric produced special important characteristics. The time involved in the care of traditional fabrics has led to the development of blended materials in which the special properties of the synthetic fibres, if used in the correct proportion, imparts such properties as crease resisting, permanent pleating and drip drying. The great width of the choice that is now available makes it all the more important to have a good understanding of the basic principles of health in relation to clothing; improved fabrics, modern methods of washing and cleaning have in recent years all contributed to an improvement of our standards in such matters.

Changing trends in fashion, improvement in social conditions and continuous education in health over the last fifty years have all done much to alter children's clothes for the better. The children of today are seldom either ragged or heavily over-clothed, and the practice of sewing them into their clothes for the winter has become obsolete. The importance of choosing comfortable clothes of simple design is generally appreciated; and yet it is still not so generally realised how quickly children lose heat and become cold. In cold weather small children and school girls are often too lightly clad and their brief under-garments expose large surfaces of leg and thigh, with excessive loss of heat. Young children, in particular, spend so much time out

of doors that they are best protected by windproof trousers, closely fitting at the ankles. A loosely fitting jacket, which can be slipped on and off easily, will help to prevent any chills caused by sudden changes of temperature; anyone going out of a warm room into the open air should put on something extra if it is cold outside and he expects to be standing about.

For both boys and girls clothing should be warm, light and comfortable in wear. Under-garments need be neither many nor heavy, but should protect the body from chill. The weight of all clothing for younger children should hang from the shoulder. Boys still tend to be too heavily dressed as compared with girls; in warm weather very light clothing is sufficient and, when it turns cooler, a vest, pullover and loose jacket should be ample in addition. Vigorous exercise results in perspiration which makes the clothing damp; if this is followed by a spell of sitting still, the result may be a chill. Both boys and girls usually find it pleasant and desirable to change into suitable clothes for active exercise and to have a shower-bath or a rub-down with a towel before changing back again. Whenever clothes get wet, they should be changed immediately. A vigilant eye is needed to see that children never sit for any length of time in wet shoes or socks. The practice of always changing into house shoes at school has much to be said for it; if this is not possible, a change of shoes should be brought on wet days. In such matters, as indeed in the general choice of clothes for use at school, parents and teachers can help each other.

But clothes also perform certain secondary functions of real value in ministering to the desire of every individual human being to feel that he belongs to his own group, society, country, and generation; they are a visible expression of personality and, for both men and women, an acceptable form of display. All this can be accepted by the student of health; indeed, in day-to-day life at school or at home it is often better to link the health aspects of clothing with these other aspects than to impart too much abstract information in an atmosphere removed from everyday life. For example, older girls can be encouraged to study current fashions with plenty of practice in designing and making clothes which suit them and are appropriate for different occasions. Such work is likely to have a natural appeal for most girls, and in the process they can be introduced to some of the main points about fabrics, the physical properties of clothing and the need to cope with sudden changes of external temperature; they can also be given some guidance about the importance of avoiding fashions in clothing or footwear which may be harmful to health; history and art provide many examples of better or worse. Of course discrimination in the choice of clothes is linked with discrimination

in the choice of footwear or hairstyles and in the use of cosmetics. Health is involved in all, and is not less important because it runs through the whole pattern as a single thread among others.

Care of the Body

Note: Within a single chapter it is clearly not possible to cover all the parts of the body that may need care and attention. Those discussed are the eyes, ears, teeth, feet and bowels; these are all important in themselves, and all will serve to illustrate how bodily well-being can be improved by reasonable care on the part of the individual.

EYESIGHT

The child's eye is immature and growing. Although it will usually have reached its full size by the fourteenth year, slow growth may continue up to the age of twenty-three, when the general growth of the human body is usually complete. It seems unlikely that the growth of the eye can be influenced by any factor other than nutrition, which will exert an effect on the eye like any other part of the body. Infants are usually long-sighted, but this long-sightedness decreases during childhood. Binocular vision, which makes possible single vision and perception of depth, develops slowly up to the age of six or seven; really effective vision comes with use, though the eye should never be exercised for too long; a proper succession of exercise and rest is essential for proper functioning of the eyes. They can be injured by improper exercise, poor or excessive light, the use of unsuitable reading materials, or prolonged and close work.

The need to look after their eyesight throughout life should be impressed upon children by training in good habits. As much light as possible should be admitted into the house; curtains should be of the kind that can be completely drawn back to expose the whole window during daylight. When children are writing, the light should come from the left unless they are left-handed, when of course it should come from the right; in any event strong cross-shadows should be avoided. School books should be printed in a clear and reasonably sized type and children should be warned against reading badly printed books at home. Glare causes fatigue; it is particularly harmful to look straight at the sun or any very bright light. Reading in bed will do no harm if the light is good, so long as the reader sits up with his book held evenly in front of his eyes; but to lie on one's side with the book on the pillow is inviting eyestrain. Television

viewing is so extensive in the homes and its use has increased so much in schools that children should be told about the best posture and conditions for viewing. In this country, the ultraviolet light rays in natural daylight are never strong enough to do the eyes any harm.

Children should be encouraged to mention any difficulty in seeing what is written on the blackboard or in reading from a book. They should realise that it is to their advantage to wear glasses, if medically advised to do so, and at the times advised; their teachers, too, should keep this in mind and see that any glasses are worn regularly. Defective vision is sometimes a cause of backwardness in school. Worried looks, frowning, blinking, face-twitching, the rubbing of eyes, the book held too close to the eye, and headaches, all may be early signs of defective vision. If untreated, defective vision may cause headaches, bad posture, and general health can be affected too; conversely, good health will help to maintain good eyesight. Normally the tears keep the eye protected by washing away germs and dirt, so that the daily use of expensive eye lotions is quite unnecessary. For occasional bathing of the eyes, a pinch of salt in a few tablespoonfuls of boiled water will serve well. Children should learn never to rub an inflamed eye, and that any rag or towel used to bathe or wipe their eyes should not be used by anyone else.

HEARING

It is dangerous to put any foreign body into the ear and a blow on the ear may lead to serious harm; all children should be aware of this. Sometimes children are troubled by wax. The formation of wax is a normal process though some people get wax in the outer ear more quickly than others; if the wax accumulates, it should be removed only by a doctor or nurse. The Eustachian tube, which connects the ear with the throat, is much shorter, wider, and straighter in the child than in the adult, and this may have something to do with the greater number of infections in young children as compared with adults. Every child should be taught always to blow his nose gently, either without closing the nostrils, or gently closing one at a time, so that there is no risk of forcing nose and throat germs up the Eustachian tube to the middle ear. Since discharge from ears can often lead to impaired hearing, its seriousness should be emphasised and parents should be encouraged to see that children suffering from this condition receive early, regular, and persistent treatment. Swimming must not be allowed while a child has a cold in the head or a discharging ear. The outer ear is often plugged with

cotton wool before swimming, but the plug must not be pushed in too far. The ears should always be washed carefully, preferably with a washcloth wrung out so that too much water is not allowed in.

EXAMINATION OF SIGHT AND HEARING

Both sight and hearing should be examined at regular intervals by the school health service. The eye lengthens as it grows; short sight is not uncommon, particularly in adolescence, as a result of the process going too far. Another defect is squinting; as soon as any squint is noticed, treatment should be started; otherwise the child may fail to use the squinting eye properly and efficient binocular vision may never develop. Because of strain on their muscles of accommodation, children just learning to read may suffer from eyestrain, which can be relieved by the temporary wearing of glasses until their eyes are fully grown. Defects of hearing which should be referred to the school doctor are usually less obvious than defects of vision. Hearing may be deteriorating for some time before it is noticed; a child's apparent inattentiveness may sometimes be a sign of unsuspected bad hearing.

DENTAL HEALTH

Past surveys have shown that there was considerably less dental decay in children's teeth during the war and the period of food rationing which followed. Since then children's teeth have deteriorated and a survey undertaken on behalf of the Department of Education and Science in 1963 showed that only 17·4 per cent of children aged five and 3·8 per cent of children aged twelve had no decayed, missing or filled teeth, although the percentage of caries-free five-year-old children was greater than that shown in the previous survey undertaken for the Department in 1958.

Children have a much more varied diet now than was the case during the war but there has been a change in eating habits and it is the much greater consumption of sweets, biscuits, buns, cakes and sweet drinks which has been most damaging.

Many authorities have discussed the fluoridation of the water supply and have approved this well-tested preventive measure in principle. Whilst fluoridation will greatly reduce the amount of decay in children's teeth, it should be considered as complementary to other preventive measures embracing good dietary habits and oral hygiene. Parents should assist their children to exercise reasonable control as regards eating between meals and the teacher can also help by discouraging mid-morning and afternoon snacks.

Few children are naturally interested in their teeth; there is nothing

in a child's own experience to suggest that neglect may have serious consequences or that good dental habits are worthwhile. The first step, therefore, will be to persuade children to take an interest and pride in their teeth. Young children should learn the practice even before they understand the purpose, being encouraged to clean their teeth regularly and as a matter of course. But they should, before long, have acquired some idea of the reasons for keeping one's teeth clean and not eating too many sweets or biscuits at the wrong time. Older children should be expected to regard clean teeth as a personal and social obligation, like a clean body or clean hair; they should be given some information about the structure and development of the teeth in early years and how they may be preserved. There is much excellent dental educational material available from different sources. Films, film strips, posters and charts are particularly effective.

The rules for keeping teeth clean are simple but the child must exercise self-discipline in order to carry them out. A good quality nylon or bristle brush should be chosen and this should be replaced when regular use has rendered it ineffective. A child's brush should have a small head with tufts of the same length which should not be too hard. Care should be taken that the brush reaches all surfaces of the tooth. The teeth should certainly be cleaned after breakfast and last meal at night but ideally they should be cleaned after every meal. When this is not practical, ending the meal with a hard fruit or crisp vegetable or rinsing the mouth out with water are effective natural methods of achieving cleanliness. A raw apple or carrot is an excellent cleaning agent.

Children can be helped to realise the value of dental inspection and treatment; the purpose of both should be made quite clear to them. The dentist with his skill and experience can detect the first sign of decay and should be able to put matters right. Children who carry out the rules for dental health and who are given regular dental inspection and, if necessary, treatment should achieve optimum dental health.

CARE OF THE FEET

All babies and young children look flat-footed. But with most of them the long arches are really present, as one can see by getting them to rise up on their toes; it is when they are standing that their feet are placed in an abnormal posture, being allowed to roll over on the inner borders. The condition is really one of 'knock ankle' and is often better left alone if there are no signs of any serious trouble; flat-footedness of this kind is rarely a cause of disablement in either

childhood or adult life. Exercises for flat-footedness seldom do any harm but are a waste of time and effort, except in so far as the predisposing cause has also been found and treated. It is much more important that children should be carefully examined if any deformity or stiffness of the toes or front part of the foot is observed.

That the feet should perspire is only natural, although some individuals have trouble with feet which perspire too much. The feet should be washed every day and then dried thoroughly, especially between the toes; socks or stockings should be changed as often as necessary. Children suffering from warts on the soles of the feet, or from a dry scaliness of the skin or a sodden, dead-white felting between the toes (which may point to fungus infection) should be referred to the school clinic.

Foot troubles are the cause of much discomfort and inefficiency among adults, especially women. Although foot defects have for years been the object of observation and study there is still not complete agreement on the primary cause. Many claim that the basic cause is an inherent weakness of the foot itself; others maintain that apart from congenital defects and the results of injury, foot deformities are due entirely to unsuitable footwear, particularly during youth. It has long been recognised, too, that foot deformities can be found in those who have always worn good footwear and also among those who have always gone unshod. Nevertheless it is reasonable to assume, and there is supporting evidence, that the two important factors are foot strength and suitability of footwear, both of which can be influenced. Numerous surveys of the feet and footwear of school children have been carried out. In Staffordshire, in 1964, the school nurses found 11.6 per cent of the boys and 14.7 per cent of the girls with unsatisfactory footwear and 3.8 per cent of the boys and 2.3 per cent of the girls with unsatisfactory socks; 3.6 per cent of the boys and 3.9 per cent of the girls had deformed feet. Investigations show that footwear which is badly designed and ill fitting can harm some children's feet. A child's foot is a mobile, growing structure that adapts itself to the shape of the shoe it is wearing; if shoes are badly designed and fitting, the feet may in time become deformed but it is surprising how seldom children complain of pain, even when their feet are much deformed. It is also regrettable that there is a time lag between the trauma and the defect becoming obvious. Children's feet can stand a great deal of ill-treatment, those with strong feet probably being able to wear bad shoes for varying periods without ill effect, whereas those with weak feet need good shoes which help to support their poor muscles. There can be no excuses for such common practices as buying shoes by post without a proper fitting or handing them down to younger brothers or sisters

as older children outgrow them. Well shaped shoes should be available in half-sizes and a range of width-fittings. Training in shoe fitting has still to be given to many shop assistants, but frequent staff changes often make this difficult.³¹ If children are to grow up having healthy feet, the state of their shoes and socks is most important. Shoes should be waterproof, strong and well-fitting; they should be pliable yet firm enough to give proper support, so that the foot can develop without cramping or distortion. Most of the fashionable women's shoes are not suitable for growing girls. Wellingtons are excellent in wet weather, but these and light rubber-soled shoes (of plimsoll type) should not be worn for long periods. Girls as well as boys should be provided with thick boots or shoes for field games such as hockey. Ankle socks or socklets should always be worn if stockings are discarded, but it should be remembered that these, like shoes that are too small, may cause injury to feet if outgrown or badly shrunk by washing; most woollen socks are worth buying a size too large, to allow for shrinking, stretch nylon socks are long-lasting but are available in a few basic sizes only so there is a real danger of growing children being provided with socks or stockings that are, or will soon become, too small for them. Frequent holes in socks are an indication that they are too small or that shoes fit badly.

For children and adults alike, shoes and socks are usually needed during working hours. Yet no one who has watched a baby kicking, crawling or learning to walk will fail to realise how good it is for the human foot to have opportunity of moving free and unencumbered by any trappings. Most adults find that the conditions of civilised life make this impossible, except perhaps when bathing, or playing on the sand, or performing special exercises; but for children, and especially young children, there should be more scope. Not that they ought to play everywhere in bare feet; the possibilities vary according to climate, place and circumstances, and in many places the risk of cuts from glass or nails or sharp stones would make shoes always necessary. But, particularly in infant and junior schools, there is much to be said for providing the children with opportunities for play or general movement in bare feet during the physical education periods. Once they are used to taking their shoes off, running about in bare feet and putting shoes on again at the end, a new and happy form of experience will have opened up and there could be no better form of exercise for developing their feet.

³¹ The British Footwear Industry is at present working on a scheme which would provide a sufficient range of sizes and fittings in children's shoes to ensure that correctly fitting shoes would be obtainable for most children without too much difficulty.

BOWELS

The oft-repeated statement that the bowels should always be opened every day, whilst no doubt true for most, is quite inapplicable for some people and has caused far too much unnecessary mental and physical harm. What matters is that each individual should be allowed to follow his own natural rhythm, whatever that is found to be. Aperients should seldom be necessary, if sufficient attention can be paid to regular habits, exercise, fluid and diet. This holds good both for adults and children, the only difference being that adults are responsible for their own actions while children are still learning what is necessary. In such a matter adults can be of great assistance to the children with whom they come into contact at home or at school if they know the facts and, without being fussy, encourage each child to develop regular habits according to his own natural rhythm. Little need be said, and that but seldom; it is rather a matter for unobtrusive good sense with an observant eye for the rare occasions when anything seems wrong. Often parents can help by seeing that the children are able to go to the lavatory at their own normal time, and with sufficient time—they are sometimes in too much of a hurry. And both at home and at school the lavatory should be clean and fresh; it is then more likely to be properly and regularly used.

The Biological Basis of Health Education

In the introduction to this pamphlet, health is considered to have aspects outside the merely physical. Two others will be considered here—co-ordination and social—and the biological implications of all three aspects will be discussed. Some analysis of the topics is inevitable for teachers of biology who have to provide the essential background for the education of children. The presentation to classes of material, which bears so closely on the well-being of the future citizen is a matter of some delicacy. There is little reason to fear that pupils will not see its relevance; on the other hand, there are dangers in introspection. These difficulties must be faced and overcome, to reap the educational rewards inherent in the factual, ethical and philosophical matters which are involved. Physical aspects of health are those which are most commonly dealt with in existing biological curricula and will be considered first, followed by the less tangible and more ignored topics which have been grouped under co-ordination aspects. The final topic—the social facet—may need some explanation since it may be thought to belong more properly to another discipline. Man is, however, a social animal and, as a consequence, exhibits behaviour patterns and trends which may properly lie within the realm of biology.

Physical Aspects

The growth process forms a good starting point since it is one of which most children will be keenly aware. They realise early that living things grow, given favourable conditions, and opportunities should be provided to learn that a variety of plants and animals show a similar pattern of growth during their lifetimes and that growth can be expressed in different terms, such as those of weight or length. Children should have access to living things for this work, and a measure of responsibility for their proper maintenance. They will be aided in this by the help given by some of the pamphlets on the care of laboratory animals which are now available. It should perhaps be emphasised that man, himself an animal, has direct control over many other animals. This is assumed to be necessary for his survival, arguments for vegetarianism notwithstanding, but carries with it the responsibility to treat them humanely.

While much can be learnt about growing up from laboratory animals and domestic pets, to the pupil the most important questions are those concerning the growing child. A great deal of information is now generally available about early growth, including the pre-natal phase, and there is much to be said for disseminating this to pupils. Only thus can they later begin to appreciate the gist of the arguments which will concern themselves and their children, such as the effects of toxic influences or oxygen deficiency during gestation. Important facts about the child should also be more widely known such as the different stages of development of children at the same chronological age. Ignorance of this can cause misery and apprehension to a child or its parent who have fears of permanent backwardness or stunting. The evident disparity in bodily proportions between child and adult may not have an obvious bearing on health but some consequences of this are important such as the relatively large space occupied by lymphatic tissues up to the age of seven. The crucial changes of adolescence need careful explanation as being the most important of developmental changes and rhythms which are universal features of living things. While human rhythms are probably unsuitable for school study insects offer possibilities such as the nocturnal activity of stick insects, using the apparatus described by Kalmus. Many plants, too, show rhythmic movements of their leaves. In many cases rhythms have been shown to occur independently of any obvious external cause.

For healthy growth and development to occur there must be available the basic raw materials from which the extra living material is built and which also provide the necessary energy for the synthetic processes which are involved. Some investigation of animal nutrition is an essential part of biological investigation, within the limitations imposed by the regulations which are designed to protect vertebrate animals. Informative work can be done, however, by comparing the growth of tadpoles which have been kept on a vegetarian diet (such as cooked young leaves of brussels sprouts) with those which have been maintained on a diet of meat (frequently changed). If separate measurements of body and tail lengths are made, some conclusions as to rapidity of onset of the adult stage may also be made. The amount of food taken in, in relation to weight gained may also be investigated. This may be done in various ways, from the area of leaves consumed by caterpillars, to the weight of food pellets and water consumed by mice. This work, of course, is concerned with the broader aspects of nutrition. The consideration of the major constituents of diet and their identification has long been a feature of the biology curriculum and this aspect should be continued. It is equally important to study the vital role of enzymes. Whereas the role of

these in the formation of simpler compounds from the more complex is often emphasised, their function in synthesis needs stressing. An attempt has been made to do this in the Nuffield 'O' Level Biology Project* and this has revealed the difficulties involved in attempting to demonstrate fairly sophisticated biochemistry at junior levels in secondary schools. Much of the equipment and techniques of the biochemist, however, such as dialysis and paper chromatography, is simple to use and can do much to inform on the processes and products of digestion. For instance, paper chromatography can be used to separate and identify the amino acids formed from the hydrolysis of proteins (during an *in vitro* experiment).

Intake of food and digestion, of course, is only a preliminary to other important processes, of which the intake and output of oxygen and carbon dioxide respectively and the excretion of liquid and elimination of solid waste are the most obvious. An outline knowledge of the latter processes is an essential part of health education, particularly in view of the importance of diet as one factor in maintaining and regularising elimination. The knowledge now generally disseminated about artificial kidneys makes easier an understanding of kidney function in maintaining the water and salt balance of the body. More susceptible to laboratory investigation, however, are the important gas exchanges associated with breathing. The first essential is to understand the structure and working of the lungs and, while models which use balloons and bell jars serve a useful purpose these cannot supplant the experience of the lightness and inflatability shown by the lung of a large, freshly-killed animal obtained from a slaughter house. Again, one of the most convincing demonstrations of the role of the chest cavity can be seen by puncturing this in a recently-killed laboratory rat. The immediate collapse of the lung evokes the necessity for an explanation of the breathing mechanism. Some basic arithmetic is needed at this point. Although the capacity of the lungs of an adult may be as much as 4 litres, the volume of each breath while resting is about $\frac{1}{2}$ litre. The latter can be ascertained for children as can the greater lung capacity with deeper breathing* (a warning against a forced exhalation or 'over-ventilation' must be issued here). A natural corollary of this is to determine the breathing rate, and, by simple gas analysis*, the relative proportions of carbon dioxide and oxygen in 'normal' and exhaled air. This leads on to calculations of depletion of oxygen and accumulation of carbon dioxide (with a mention of the role of the latter in controlling breathing rate) in classrooms, living rooms, bedrooms and public rooms and the importance of ventilation. This general subject cannot

* Reference to the work of the Project will be indicated by an asterisk.

be concluded without reference to the role of the green plant since this is the ultimate provider of oxygen and remover of carbon dioxide. It is possible to show this dependence of animals by enclosing mealworm larvae and an iris leaf over a suitable pH indicator * in a sealed tube. By adjusting the relative proportions of animal and plant and by exposing to sunlight a position of equilibrium can be found. It is also possible, but rather more complicated, to show an oxygen balance, using a technique such as that of Winkler to estimate the oxygen content in water in which aquatic plants and animals are immersed. Such techniques of oxygen estimation are also of great importance in checking on the purity of sources of supply of drinking water and milk since a reduction in oxygen content implies contamination by micro-organisms.

Some information about blood and circulation is obviously necessary. A striking introduction is to show that blood (obtained from a slaughter house and with most of its air removed with a vacuum pump) reddens on being shaken up vigorously in air. The assumption that oxygen is involved will be more credible if nitrogen is used with another sample! The next stage might be to study the origin, function and fate of the white and red blood cells and platelets. The evidence for human circulation can be deduced readily from the detection of pulses in various parts of the body. Visual evidence of circulation requires the observation of transparent animals or organs, such as the gills of tadpoles or tails of very young guppies. It is worthwhile emphasising the pulsatory nature of the circulation, the size of corpuscles in relation to capillaries and to make some comparison of total cross section of the capillaries with that of the main vessel with which they are connected. Changes in temperature can be seen to alter circulation rates while exercise in humans can be shown to have a marked effect on pulse rates. All this renders more explicable the usual advice about avoiding severe constriction of legs and arms and the beneficial effect of brisk exercise in cold weather.

Up to this point we have dealt with some of the knowledge which is necessary for an understanding of how a single human individual's body works. Human beings, however, also reproduce and the relevant physical facts should be made known to pupils, certainly in the early years of the secondary school and probably also towards the end of the junior school. In the secondary school the factual information may be properly provided by a biology teacher; discussion of the ethical aspects may well also be the concern of other teachers. Again, some knowledge of the mechanism whereby the characters of parents, obvious or hidden, are transmitted and combined is essential. Simple, elegant and effective techniques are

now available to demonstrate much of the structure and behaviour of the chromosomes of some plants and animals. Again, from the study of some organisms (as diverse as barley, mice, fungi or fruit flies) it can be seen that the handing on of certain characters follows well-defined patterns, involving separation and recombination. The occurrence of departures from the normal pattern of inheritance of characters together with variations in the structure of the chromosomes points to the key role of the latter in heredity. Thus some variety in population may arise and some of the changes may alter the chances for survival of their possessors. This continuous selection process is admirably illustrated by the success of the dark (melanic) form of the peppered moth over its lighter-coloured rival in industrial areas and the reverse of this in the cleaner rural conditions. Models of selection may be set up using coloured beads*. The patterns of evolution which may be studied by this means also show well the chance nature of the process.

Co-ordination Aspects

A healthy individual must have his or her physical processes proceeding not only efficiently but also in harmony: in other words, controlling factors must be at work. Harmony with the environment is also essential and this will be considered first. Sense organs, chiefly those of sight and sound are mainly concerned here. Anatomical aspects of these have been emphasised in traditional courses but more recently a welcome functional approach has developed. In one curriculum scheme* this has enabled a quick and easy determination of the frequencies of sound which can be perceived, together with an appreciation of how this changes with age. Co-ordination of eyes and ears (the balancing mechanism) with each other and with other functions (digestive system) is vividly shown outside the laboratory in cases of travel sickness, behaviour here again differing with the age of the sufferer. Since we depend so implicitly on our senses, perhaps a pupil's education may not be complete without some investigation into their reliability, although this is rarely done at school level, where simple experiments into visual perception could easily be carried out. These involve exposing to view for a short period of about a fifth of a second a simple line diagram and then asking the pupils to reproduce it. Important points such as those of a minimum time for 'correct' perception (threshold value) and one's proneness to suggestion, emerge very clearly from such exercises. It is but a short step from this to some investigation of the learning process. A convenient one to study is the assembly of a letter (such as an L) which has been cut out of card and then cut into four pieces. The time of assembly from a standard, dispersed arrangement of the

pieces is noted for any one individual, comparisons are obviously undesirable. The procedure is repeated ten times and the results plotted on a graph. Many important features of the learning process can be seen from this graph, such as the rapid initial phase followed by saturation. The result of boredom will also be evident as a rule and it is easy to arrange some distraction for the effect of this ubiquitous factor to be seen. Retention of what is learned can also be studied by repetition on a subsequent day or week.

Learning of this sort is a deliberate and controlled reaction to a situation. Survival may often depend on quick reaction to something perceived before the brake of conscious control can be applied. The 'reaction time' to a visual stimulus can, very simply, be determined by using a timer. This consists of a strip of wood about 1 inch by 15 inches and about one-eighth of an inch thick. The strip has a mark at one end and a series of marks bearing times in fractions of a second. These are the times of fall of a body through a distance measured between the end and a given mark. Two pupils acting as droppers and catchers respectively work in turn to determine their reaction times. The results provide a starting point for calculations and investigations dealing with relevant matters such as safe car driving and the relationship between fatigue and accidents.

Such work demands supporting knowledge about the means and pathways by which stimuli are transmitted and reactions effected. This involves a certain amount of factual information about the nervous system and this is sometimes supported in schools by experiments such as the contraction of dissected muscle in response to electrical stimulation. Recently* some elegant experiments have been devised to investigate, in the classroom, some of the temperature control features of the human body.

This section would be incomplete without a mention of hormonal control. Some knowledge of this topic is needed not merely to understand something of the disorders which occur through 'natural' upsets but also to appreciate the significance of recent developments such as oral contraception and the hormone dosing of livestock animals. This is an area in which, while crucial individual decisions have to be made, equally crucial decisions are being taken on behalf of the individual. This dilemma of society rightly belongs to the third aspect of the discussion.

Social Aspects

The ultimate unit of our society is the family and the interdependence of its members is something that cannot be stressed too highly in education. Perhaps the most prominent relationship for the child is that with the mother. The physical aspects of child-care form

a feature of the curriculum for the girls in many schools; it is almost as important for boys to receive some instruction in this. Too little attention has been so far given to the emotional but none the less essential aspects of child-care: love and understanding. The results of the lack of these qualities are recognisable in our schools but can hardly be used in example. There are, however, many parallels in other animals, from studies of deprivation in monkeys to imprinting phenomena in ducks and geese. A natural consequence of introducing such topics will be to consider the basis for successful and harmonious marriage, with mutual respect and understanding predominating in the partnership.

Some knowledge of the larger social unit, the community, is also needed. Man, of course, is by no means alone in the animal kingdom in having evolved a complex social organisation—those of, for instance, the ants and bees are worth studying. The more obviously important facets of the human community are the food and water supplies (with the attendant problems of, for instance, hygiene and fluoridation), sanitation and medical services. Information is readily available in written form or on film and should be supplemented by direct observation through organised visits. Communications may seem to have little relevance until the toll of road deaths and injuries is considered, when some instruction in the various aspects will be seen to be necessary—from road safety to the main essentials of good car design. There are other important consequences of our crowded community life—that relating to food will be considered first. Demand for food on a large scale, coupled with labour scarcity has forced producers into mechanisation. Where this concerns animals there are, of course, implications relating both to the suitability of the product and to the ethics of the techniques which are employed. The facts need to be studied carefully, not least in relation to the failure of traditional methods to achieve the necessary output. Information also needs to be disseminated concerning the role in agriculture and their possible effects on man of the various control agents such as fertilisers, herbicides and pesticides.

It is not surprising that high density living has produced anti-social behaviour. Aggressiveness of one sort or another is not the prerogative of humans—the defence of territories by fish and bird testifies to this. The suggestion that a certain minimum of space is necessary for an individual is self evident. In any case, some examination of this topic and particularly its causes and possible alleviation is clearly necessary. This will involve frank discussion of such aspects as drug-taking and drunken driving.

A prominent feature of modern society is the facility for wide and quick communication through press and television. The implications

in terms of insidious pressures to conform should be clearly stated at school level. Defences can be built up through some understanding of the psychological tricks which are involved in some forms of advertising. More useful protection is the fostering of a critical attitude together with some practice in reasoning procedures. A school biology curriculum, soundly based in investigation, experiment and discussion, should do much to attain this.

The disadvantages of a crowded society can scarcely be reviewed without considering the possibilities of alleviating the congestion. We must hope that wars will not provide future solutions. Aid programmes are laudable palliatives so that serious discussion must centre on methods of limiting population. This topic must surely be discussed in schools; ethical considerations and religious scruples must be viewed as fairly and unemotionally as possible against the background of human misery.

The Child at Home and at School

Every child is a single being; body and mind are both involved in all his progress and it is unfortunate that so many studies of the growth of children have tended to concentrate upon either the physical or the mental aspects of progress, instead of taking both into account. Happily most mothers know better, having always regarded their children as whole and complete individuals, and today we are beginning to appreciate more highly the mother's natural and unspecialised approach which does not sacrifice the feelings in the name of too rationalised an upbringing. Thus recent years have seen increased awareness of the importance for growing children of the feelings of stability, good will and enjoyment that accompany the satisfaction of their physical, emotional, spiritual, social and intellectual needs—for all are involved. In particular, the physical aspects of child-care have come to be better understood in their wider context; so much essential pleasure comes from the satisfaction of physical needs, especially hunger. For the small infant at his mother's breast feeding is a supremely happy business and, as he grows, his meals should continue to give him pleasure. It is not enough to ask if he is getting the right amount of the right kind of food; does he also enjoy it? One might think that this would lead to a conflict between what is advisable in theory and what seems to satisfy a particular child, but in practice a reasonable balance is usually possible; in any case different children have very different needs, and recent years have seen some weakening in the previous emphasis on scientific formulas and time schedules. Of course such a point of view does not make exact scientific knowledge any less necessary; but it should be held in its proper context.

Pleasure is equally important for the satisfaction of intellectual and other spiritual needs. Children are by nature curious, venturesome and enterprising; from the earliest months they show a strong urge to learn. The satisfaction of this urge at every stage will produce not only a good foundation of knowledge and experience, but also delight, interest and other factors making for emotional stability. Intellectual development will be influenced by such factors as good personal relationships, sound physical development and plenty of scope for various forms of play. Here again it is necessary to satisfy

the individual needs of a particular child, allowing for his ability and interests at different stages of growth and meeting his need for experience without forgetting that he still depends on adults for help in many aspects of life. In a good setting the child will do his part; almost every child enjoys learning new skills and copying the adults round him,

‘As if his whole vocation
Were endless imitation.’³²

But children can learn only at their own rate. Once interest begins to flag, it seldom does much good to nag or to enforce rules. Teaching and learning must take account of the stage which the individual child has reached; rigidity or vain repetition which ignores his emotional reactions or his intellectual maturity will be worse than useless. The crux of child-care—in which education plays a major part—lies in offering the growing child the things required for further growth and development as and when he needs them, and this applies equally to mental and to physical growth. The first problem for the teacher, as well as for the discerning parent, is to judge what stage the child has reached; the second problem is to know how to supply the child’s needs at various periods in this development. Of course it may be necessary to pull up a child from time to time, yet this should happen but seldom and then in a civilised way with patience. The adults round a child should never forget that the environmental influence which influences him most powerfully is likely to be their own attitude and behaviour.

Growth cannot be hastened by imposed systems of habit training. It is true that there are many food habits and clothing habits³³ which quite young children take for granted; they represent settled practices and conventions which are the result of bodily adaptation to both natural and man-made circumstances. But the terms ‘habit training’ and ‘habit formation’ are often used more narrowly to denote strictly nervous responses. Human beings acquire many habits of this kind, often while young, by practice and repetition till a particular action becomes almost automatic, needing little effort or thought; such habits, when used for special purposes, are often called ‘acquired skills’. Thus there has arisen the notion that the human brain functions in a similar way and can itself be trained, especially in the early stages, by mechanical repetition; at one time it was commonly accepted that the sooner children were trained to develop conditioned reflexes and automatic responses, the more rapid and

³² *Ode on Intimations of Immortality*, W. Wordsworth.

³³ The basic meaning of the word ‘habit’ is ‘bodily apparel or attire; dress’, *Shorter Oxford English Dictionary*.

permanent would be the result. But we have come to realise in considering such matters as feeding, sleep and elimination—all of the deepest significance for a child's all-round growth—that to demand behaviour and skills beyond a child's capacity will merely lead to failure and disappointment, and mental growth will suffer. We must not expect too much too soon; a child's inability to do this or that often reflects neither obstinacy nor bad teaching but merely insufficient development of the nervous system. Nobody expects a child to walk before he has crawled; in the same way, learning to control bladder and bowel is a gradual process and no amount of training to be 'clean' or 'regular' is likely to affect the child's ability to control his excretions before he is ready. So-called 'cleanliness training' in the first year merely takes advantage of certain convenient reflex actions and a normal physical rhythm; properly understood it has great value, but not when carried to excess. Perhaps we should think less in terms of habit training and more of children's development as involving the requirements of two parties, the child and society. There should never be any serious conflict between the two, but rather a gradual process of give and take. Inevitably the baby is almost entirely self-centred and his needs must be satisfied accordingly. As he grows, these must gradually come into line with the needs of the family, the smallest unit in the community, a process which requires an atmosphere of affection, security and satisfaction. Given this, most children should come to accept the larger community outside as an extension of the family; as a child fits into one, so he should fit into the other. Though lapses and anti-social characteristics may occur even among quite normal children, most boys and girls accept society and its conventions and are ready to conform for the sake of social acceptance.

The whole process of maturation, physical, intellectual and emotional, goes on throughout the formative years, though at different rates for different individuals and at a rate for any one child which can be accelerated or retarded to some extent by external factors. For all alike the main need is still for affection and security, in an environment capable of encouraging independent growth. School is another stage on the journey, but there is little difference in kind between the lessons learned at home and what is now to be learned in the larger group. During school hours the teacher is still *in loco parentis*, even though the family is now larger and the family relationship less intimate, more impersonal and more competitive. A child's natural qualities do not desert him at school; his sense of growth, desire for understanding and encouragement, natural curiosity and urge to learn are all still there to be used and he will learn for much the same reasons and in much the same way as before.

The expansive sense of being in a larger community should provide a new stimulus. But he is still the same child; the school and the community should not forget how immature he still is. Throughout school life there is a tendency, for which society as a whole is quite as much to blame as the schools themselves, to instil knowledge before a child is ready for it, although there is no longer the same insistence as in earlier decades that a particular lesson shall be learned at a particular stage regardless of the point which the pupil has reached.

Of all the stages of human life the time spent at school is the single most important period from the point of view of systematic health education. It is at this stage that children are at their most receptive, even though the limitations already considered must never be forgotten. At this stage, too, children are more accessible than at any other time of life, since attendance at school is compulsory. Here and now, as at no other time or place, the pupil can learn at least something of what he should know and—not less important—he can develop the right attitude to what he learns. As reasoning powers begin to develop, most children will show an increasing sense of responsibility and be ready for the beginnings of explanation. At best real education is a slow business; how much ground can be covered by any particular pupil must depend on his ability, his interest and the length of time that he stays at school. Certainly their schooldays should be able to introduce boys and girls to something of what health means in life and how it can be maintained; if the introduction has been enjoyed, the subject should still arouse interest and concern even after they have left school. Will average boys and girls leave school with a rational attitude towards health; do they know enough to realise something of what they can do for themselves, and also when and how to get good advice? These are the main questions.

If the last paragraph conveys a moral, it is not that facts are unimportant, but rather that the learner must make them his own and understand them if they are to be of any use. In the more detailed chapters which follow, an attempt has been made to indicate at any rate a few of the possibilities which arise in school. Some of these possibilities arise in the course of routine instruction, some are more closely associated with the school's corporate life from day to day. Many schools give a great deal without ever assigning a period on the time-table to a subject called health or hygiene; the incidental education which a good school provides may be as carefully thought out as more formal instruction and the right facts about health should leave quite as deep an impression if they occur in the form of general knowledge. Many schools are fortunate in that they can provide, particularly for older pupils, a combination of direct

instruction (not necessarily formal), with good daily practice and example. There can never be any single approved mode of teaching or learning. But in all schools alike it is the continuing example and attitude, whether conscious or not, of each individual master or mistress with whom a pupil comes into contact that will usually be the principal factor in determining his ultimate attitude to questions of health. In a good school the Head and the whole staff, both individually and as a body, can irradiate the whole climate of school life. It is in such a school that any specialist teacher will have the best chance.

The co-operation of parents is obviously essential and the precise way in which this can best be achieved will depend on local circumstances; in some cases a parent-teacher association may offer the best prospects, in other cases there may be much to be said for some more informal arrangements for bringing parents together, or it may seem more profitable to concentrate on purely individual contacts. What matters most is that a school should be the kind of community in which the mainspring of behaviour is affection; parents soon sense this no less than their children, and react accordingly.

The growing child goes to and fro between home and school and brings to each what he learned from the other. When both influences pull the same way, health education is likely to be understood, remembered and applied. With both it depends for its ultimate quality on personal example and human relationships, involving heart as well as head.

Health Education in the School

This chapter should be seen against the background of the last, being more particularly concerned with the successive stages of health education as children pass from one type of school to the next. A child may attend as many as three successive stages of primary school (nursery, infant and junior) and then the secondary school, making four kinds of school in all. A reasonable continuity between them is clearly essential; but, given such continuity, the actual change from one kind of school to the next represents for most children a real and welcome sign of advance. The reader will not find in this chapter any summary of the successive stages of childhood, though a good picture of these will be found in the Appendix on 'Normal Development' at the end of these Suggestions.³⁴ The pages which follow are concerned mainly with the possibilities for health education which arise in different kinds of school, but the examples given are necessarily selective and much must be taken for granted. A number of points will be equally relevant for any kind of school. Thus, in all schools alike, the most careful and continuous use should be made of the records now kept to enable teachers to watch for the first signs of ill health, fatigue, strain or any other difficulty apparent in the individual child; in all schools there remains a continuing need for the close contact between teacher, parent and the school health services which should have begun in the nursery or infant school.

It was suggested in the last chapter that health education should be regarded as a continuing influence running right through a school's daily life and work; indeed it should include not only what is often called hygiene but also all those influences which can help a school to foster the physical, moral and spiritual well-being of its members. So wide a definition need not mean confusing health education with education as a whole; health education is normally taken to be concerned in the main with the more physical aspects of growth and development, though never exclusively so and never to the point at which the ultimate aim of education, the development of the whole human being, can be overlooked. Can health education so under-

³⁴ Reprinted from the *Report of the Committee on Maladjusted Children*, Chapter III. Her Majesty's Stationery Office.

stood be regarded as in any normal sense of the term a school subject? Yes, in so far as it covers a definite and demanding field of subject matter; no, if by 'subject' is meant something necessarily appearing on every school time-table for one or more regular weekly periods. Too many time-tables are too full as it is; in any case health education, if it is going on all the time, may not invariably lend itself to concentration into one or two short weekly periods. Yet to suggest that for much of the time health education at school will be mainly a matter of incidental training does not mean leaving everything to chance. Incidental education needs quite as much thought and planning as any other kind of education: how much knowledge should the pupils acquire and how rapidly? Are the pupils capable of acting on the strength of what they know? How can the subject matter best be presented? For teachers who realise the possibilities and importance of the subject innumerable opportunities will suggest themselves in the course of teaching other subjects; a few of the possibilities are mentioned under subject headings towards the end of this chapter.

PRIMARY SCHOOLS

The Nursery School

The importance of the nursery school is out of all proportion to its numbers; probably no other kind of school has done so much to build up the health of the children coming to it, and much that has been worked out here has been subsequently put to good use in the infant and junior schools. At this age health education is almost entirely a matter of good growth in a good environment; it covers every aspect of the day, including work, play, rest and, of course, washing and eating. All through their waking hours children of nursery school age are discovering experiences of every kind, and much nursery practice follows from their need to combine different varieties of sensory impressions. The whole world of sight and touch is in a single toy. There are things to pull and things to push; objects and innumerable materials of many shapes and sizes, textures and colours, all appeal to eye and ear, to foot and hand and everything else which a lively child can bring to bear. All this is closely related with those aspects of play which lead more directly into imaginative experience; movement, music, story, pictures, all have their part to play and at this stage bodily and mental development are almost inseparable. At the same time such pleasures and occupations involve more than the mere individual; even at this stage a normal child is learning to take account of the other children and grown-ups round him, beginning already to realise that it is wise to take account of

other people's wishes if he wishes to achieve his own. All this makes for a sense of security and achievement, the best possible foundation for further advice later on.

A special feature in the nursery school should be open-air life, since out of doors the stimulating effect of good surroundings seems to take on a still keener edge; when the weather allows, the children should be free for much of the time to run in and out as they wish and to play with sand and water and outdoor properties. There are insects to watch, leaves to sweep up, bonfires to make and admire, and planks, boxes and builders' bricks offer infinite possibilities; all this should be considered as so much basic provision, supplementing what is provided indoors. Thus many nursery school teachers should be spending a considerable amount of time in the open air. The right clothing is very important, and should be light, loose and airy, but none the less warm, for teachers and children alike if they are to make the most of the opportunities for going outside, particularly in winter; summer should bring many possibilities of playing in the sun, though proper protection should always be provided. For outdoor play in all weathers leather shoes have the advantage of being flexible yet protective; rubber boots are unventilated and unhealthy when worn for too long at a time, even though they can be most useful on occasion. Some fortunate schools have paddling pools or little swimming pools in which the children can play or bathe when the weather is good.

At this early age the children should enjoy their meals and eat heartily and well, just as they would at home. If attractive food is served, there should usually be no trouble about most children eating it; but, particularly at this age, some allowance must be made for individual likes and dislikes. The children in nursery schools should be trained to wash or go to the lavatory regularly and sensibly; the fittings are generally designed with great care to meet their needs. Rigid habit-formation is of course neither possible nor desirable, but within reasonable limits an element of habit and routine is necessary in the interests of child and school alike. Many children will need and enjoy an opportunity of resting, usually in the afternoon, though individual needs vary as much in this as in appetite and a rigid rest period is best avoided. If the children can be kept warm enough and protected from rain or too much sun, they should be able to sleep out of doors. Yet it must be confessed that nobody has yet discovered the ideal verandah which would give protection without either interfering with the light and ventilation of the playroom or using up too much of the garden space. In some schools the children can lie down on camp beds in the open air; it is important that the beds should be as well spaced as if they were indoors.

The Infant School

For most children the first real experience of school life will be what they are given when they join the infant school. They are by now very distinct personalities, with a considerable amount of experience behind them, yet still in most respects like nursery school children; the principles and practice of a good nursery school should be continued without a break into the infant school. Initiative in both body and mind is developing fast and should be encouraged; children should be finding things out for themselves. At this stage of education, as earlier, the open-air periods are particularly important and should not be confined to the morning and afternoon breaks; the time-table should be sufficiently elastic to allow teachers to take advantage of good weather for out-of-door activities. To this end the infant school should wherever possible be provided with suitable garden playgrounds, with opportunities for enjoying sun and shade, for playing on grass or on dry paths, and for shelter from wind and rain; the possibilities include digging, sowing, and, of course, gathering flowers and whatever else has been grown; proper garden equipment should be provided. To encourage a variety of free movements, there should be scope for exploring and climbing, for such operations as pitching a tent or sawing wood, and for games with bats and balls, hoops and ropes. Active pursuits of this kind take up time and are in no sense frills, to be regarded as in some sense less essential than the beginning of reading, writing or number; both kinds of occupation are equally important, closely related and to be pursued with equal gusto; where there is insufficient space or time for play, general progress is soon affected.

All through the school day there should be a proper balance between rest and activity. A pleasant environment and a leisurely atmosphere are particularly necessary when children stay to midday dinner, which should be one of the most educationally valuable events in the school day. Wherever possible, infant school children should take their dinner at their own school, where they can eat without hurry and without having to sit with a large number of older children. Every member of the staff should set and expect high but reasonable standards of hygiene; this presupposes a reasonable allocation of time and a common understanding of how much to expect. Each child should have his own comb, towel, handkerchief, and, whenever conditions in the school permit, a tooth-brush and house shoes; children who have been in nursery schools will have had all these things before, and should by now be more aware of the need. Many parents will be prepared to provide them when the children first come to school; here is one of the points at which school and home meet, and there is much to be said for regarding such things as

personal property, in which a child can take an owner's pride; where this is not possible, it will mean much if the school can unobtrusively provide them. The right clothing and footwear remain as important as in the nursery school, and should be similar in kind. Some supervision of personal habits will still be necessary; in modern buildings with good washing facilities housed in the main block this should not be too difficult, but in badly planned premises with inadequate facilities the teacher may very well need someone else to help her in this work. Portable basins in the classrooms may sometimes help out; but where the washbasins or water closets are out of date, nothing short of complete modernisation will ever be really satisfactory. It is not always easy in an old-fashioned and perhaps dingy school to encourage children to take a pride in being clean and healthy; a child's day at school should be passed in clean, cheerful and attractive rooms, equipped with light, movable furniture which will permit plenty of movement with frequent changes of posture.

Naturally, any training in health matters at this age will be almost entirely incidental and based on good example and the good daily practice which has just been described. Formal lessons could only do harm, but there is no occupation which cannot contribute opportunities for the kind of questions, conversation or discussion in which the children can begin to find out for themselves some of the essential facts which in any case are interesting in themselves. To begin with, most of the children will take a pride in keeping their room clean and tidy, perhaps on a weekly rota. There are flowers to renew, vases to wash, plants to water, the floor to sweep, the windows to open, and much more besides; numbers have to be recorded for milk and meals, account has often to be taken of the weather, and there may be animals to look after. Children of this age can for the first time really begin to accept some responsibility for the care of their pets, learning a great deal in the process. Of course any pets must be well housed under the careful supervision of a teacher who understands their needs. In such an atmosphere the children will certainly ask many questions involving the reason for this or that rule of health; the answers must be positive and truthful.

The Junior School

The transition from infant school to junior school ought not to be abrupt. The day-to-day training and the practice in good habits that began at an earlier stage should continue, and so should the informal personal atmosphere and the scope for learning through experience. But the junior school, in carrying on good practice, will naturally take account of the children's increased knowledge, self-reliance and sense of being in a community. There should be a syllabus of health

teaching; all the teachers ought to know its contents and importance, and records should be kept to show how much ground has been covered. But specific health lessons are still not very often found; as a rule, it remains more important at this stage to encourage good habits, discussing any appropriate point that seems to arise, than to inculcate a set quota of information in formal lessons. The time-table as a whole should still maintain a proper balance between relaxation and activity, so that children can satisfy to the full their natural desire for frequent movement without ever being subjected to prolonged mental or physical strain.

There will still be no lack of valuable training in the general school life of the community, with school premises to care for, an ever increasing variety and quantity of materials and equipment to keep in order, and safety precautions to remember both at school and on the roads. Children's training at this stage should be essentially practical and worked out in terms of things to do. It should make definite demands on them, through the group as well as through the individual; thus the class as a whole can be encouraged to take a pride in the fact that its members all wash their hands effectively at certain stated times. By now the children should be encouraged to ask questions which include why as well as how; answers should be frank and as full as the children can follow. As in the infant school, many good starting points are likely to occur spontaneously in such regular features as shoe inspection or the drying of damp clothes on wet days. Or some more general topic may suggest itself such as the value of warm clothing and exercise in cold weather; when colds are about, there may be an opportunity of discussing such points as the sources of infection, the use of handkerchiefs, and the importance of ventilation and room temperature. Physical education, too, will emphasise such points as the reasons for changing shoes and clothes, the use of handkerchiefs for keeping the nose clear and so promoting good breathing, the advantages of healthy habits and a sound body. Everyone all through the school day should take a pride in good posture, whether walking, running or sitting in class—always provided that the seating arrangements are such as to make good posture possible, a matter too often neglected. A word on the use of the cloakrooms may help to focus interest on the proper care of personal belongings and the need for cleanliness; the visit of the school dentist often leads to a discussion of teeth and how to look after them. Some elementary ideas about bacteria and antiseptics will occur naturally when there are small accidents or cuts to deal with and science lessons may include an elementary study of the structure of the body and such natural processes as sweating and cooling.³⁵

³⁵ See also Chapter 11, for questions involving sex.

Many points will arise in the course of class teaching; in arithmetic there are obvious possibilities in height and weight records, while some of the possible topics for discussion which have already been suggested should fit naturally into the work in language. As in the infant school, the care of animals (as an element in science) should be particularly rewarding and by this time can include some consideration of their structure and vital functions; it is relevant that children of this age are usually prepared to consider animals not only as pets but also as sources of food and clothing.

Lastly, it should not be forgotten that whether or not (as is often claimed) the normal junior school child is passing through a period of relative stability, the junior school itself appears to be in a period of transition; new ideas have been coming in from every quarter. If the teachers care for and understand children and if the atmosphere is calm and friendly, the children's health education should be in good hands.

SECONDARY SCHOOLS

The transition from a primary to a secondary school usually comes a little before the profound changes associated with puberty; but the age of puberty and with it the age of sexual maturity has been proved to be falling, so it cannot be assumed that the problems of adolescence will always be delayed until the secondary school is reached. This is particularly important for girls, and it is necessary to take their maturity into account when planning their school work.

The physical changes at the time of adolescence would alone be sufficient to upset the relative stability of the primary school period; but there are also mental changes, closely related with the physical, which cannot easily be explained in terms of bodily or sexual development alone. Most children become more aware of themselves, more reflective, and often more self-conscious; the old equilibrium is upset, leaving a rather unstable creature who will have to work out a new balance. At this time boys and girls become much more conscious of the differences between them; they mature at different rates and their interests diverge along markedly different lines.

The concern of health education with the physical and emotional changes of adolescence will be self-evident; it can make a profound contribution to boys' and girls' success and happiness later on. A phased programme of work in health education is undertaken in many schools to supplement what will be acquired in the work in many subjects, particularly religious instruction, the study of English literature, history, science, physical education and home economics. In such programmes the biological features of growth and increasing maturity are considered, some simple ideas in psychology are

discussed, and aspects of human relationships are approached as one important topic in the whole complex business of decision-making and the art of living together, at work, in leisure hours, and in the home. Carefully planned lessons in such programmes, phased to suit the various stages in secondary education, can be most valuable where properly linked with other aspects of the work. They must be in the capable hands of someone with appropriate experience and expertise. Head teachers often take an important share of the work, and visitors—schools' medical officers, health visitors, knowledgeable parents, marriage guidance counsellors and others—are often invited to contribute. More informal methods are found to be appropriate in such programmes and schools strive to keep the groups of pupils small enough to make this possible.

In the secondary school there will still be as much need as ever for continued attention to the strengthening of good habits and, as before, children should be encouraged to find out as much as possible for themselves and to seek the reason why. Some boys and girls can reason for themselves more ably than others, but at least a slight degree of understanding is really essential for good adult practice and within the power of nearly everyone. And with increasing powers of reason the individual is becoming more aware of his position in the community. The experience in earlier years of belonging to a group can now be developed with greater understanding; children on good terms with their neighbours are better equipped to face the problems of adolescence. By the end of their time at school they should be on the threshold of adult life, with a good start behind them and a modest confidence in themselves, the result of sound habits fortified by some acquaintance with underlying principle. Meanwhile, discerning adult influence can help the individual to make proper use of the new forces which are at work in him. Many boys and girls begin to join voluntary associations, both in and out of school, which often give scope to the individual's interests within the framework of a congenial group; often too they help him to discover what it means to serve the community. Many children are inspired by the desire to prove their quality in sport or swimming or mountaineering; to this end they submit to disciplines of training and practice which will serve them well later on. The developing consciousness of personal appearance is a powerful and generally beneficial factor in making individual boys or girls more aware of themselves and their neighbours; with a little encouragement it can give new point to many considerations of diet, clothing, cleanliness and personal hygiene. very attractive; from here the pupil's interest can often be drawn to a

Environmental studies are important. They may begin with the school grounds and buildings, which in many secondary schools are

very attractive; from here the pupil's interest can often be drawn to a study of the home and so to all the arrangements made at home, at school and in civilised communities generally to safeguard health. Urban and rural areas do not always have the same problems, and may call for a different approach. Even within the same school it may be necessary to differentiate between boys and girls, though it is often urged that they should not be separated at any stage of their health education; theory varies, but in practice individual schools, teachers and children have very varying problems, and what is attempted must depend upon local circumstances.

Most of the work in a secondary school takes the form of instruction in specific subjects because, as the pupils become capable of more advanced study, they must respect the increasing differentiation between various fields of learning; in many schools the number of subjects taken by older pupils becomes progressively reduced as specialisation develops. In all kinds of secondary school health education is likely to cut across the main subject boundaries and it must make the fullest use of the possibilities which arise in the course of teaching other subjects; this may also benefit the subject concerned, which can often be illuminated from a new and interesting angle particularly, though not only, in advanced studies. It is from some such point of view that the following notes, which are anything but exhaustive, deal with five main teaching subjects. The key subject of physical education is, however, not touched here, since it is briefly discussed in Chapter 4.

Science

The whole of his scientific studies are relevant for the student of health education, for they exist to give him not only essential knowledge but also a grasp of scientific method. Innumerable examples suggest themselves. The special contribution of biology was considered in Chapter 8 and need not be further discussed here; whether or not specific lessons in health education are provided, the biology course in itself, if it includes a study of the structure and working of the human body, should be able to offer many opportunities for encouraging the growth of a responsible attitude towards health and social problems; biology also includes various forms of ecology, the study of living things in terms of their environment, and natural history which, for a number of children, provides a welcome hobby. Many aspects of physical science are involved, such as the transference of heat, the principle of levers, ventilation, breathing, electricity, all have their contributions to make in varying degrees. The human body cannot be understood without some knowledge of the process of combustion, while many chemical processes are

involved, particularly in breathing and digestion. Finally the profound implications for health of various forms of radioactivity claim consideration and the use already being made of radioactive isotopes in medicine should be of great interest.

Home Economics

Home economics is concerned with the everyday needs of home and family and pupils readily recognise its relevance to adult life. Although essentially a practical subject it provides opportunities for the consideration of personal, social and economic problems in the life of the individual, the family and the community. The fact that nearly all girls will marry, have homes and families at an increasingly early age gives the teaching of home economics in schools special importance. Most wives will continue their work after marriage and resume employment when family commitments allow them to leave their home. When the mother is working she will have less time to spend in the home, but probably more money will be available. It is essential that the running of the home be planned to provide not only a clean healthy environment, but even more important, an orderly serene atmosphere in which all members of the family play their part so that the housewife is not overtaxed and all have time for leisure. As home making is the joint responsibility of the father and the mother, boys should have an opportunity to join in some of the home economics teaching.

In the early stages the type of course usually provided for the girls offers opportunities for social training and general knowledge of health, hygiene, and nutrition. Many mothers encourage their children to take a substantial share in the preparation and cooking of meals. The wise teacher assesses this home experience and builds a school course whose main objectives are the establishment of good working routine; clean food handling; careful storage of food, cleaning materials and other household commodities; the teaching of nutrition through wise selection of food and knowledge of food nutrients; the preparation and service of meals based on adequate and suitable diets for the family; the ability to use recipe and reference books; the importance of saving time and energy and working at speed while maintaining standards; the knowledge of simple needlework and dressmaking and understanding of fabrics and their properties; the choice of ready made clothes and furnishings and the wise expenditure of the money available. All girls of high or low intelligence will need to acquire a skill in organisation which will help them to provide meals for the family; cope with household and personal laundry; shop for themselves and the family; clean their homes in the minimum of time; choose and care for clothes and soft

furnishings; budget their money and provide the love and security needed by the toddler and growing adolescent alike and be generally concerned with the welfare of all who live in the home.

The dual role of women in the home and at work will produce for many increased pressures, and it is essential that time and opportunity should be given within the school to plan for this. Courses for senior boys and girls in the broader aspects of home economics provide a preparation for home life which is of considerable value since pupils clearly see its relevance to adult life. Topics which include talks on personal relationships, money management, preparation for marriage, setting up a home, child growth and development, the care of the elderly and community living are of importance to boys and girls who are likely to assume family responsibilities at an early age.

History

The teacher of social history today has become very generally aware of the important part played by hygiene in determining the life of peoples in different ages and civilisations; without taking account of this, we should find it difficult to understand their ways of life or to make useful comparisons with our own. The pupils' attention may be drawn to the ideas which have prevailed in a given period about sanitation, housing, cleanliness, water supply, food supply and habits of eating and drinking, disposal of refuse, treatment of disease and similar topics. Many questions rise up in the mind when one starts thinking: what exactly was the great plague at Athens in the year 430 B.C. which Thucydides describes so vividly? What really were the economic consequences of The Black Death? How did the mediaeval monks manage through the long cold winters in such cold abbeys with so few fires, and does that help to explain the large size of their infirmaries? did people get enough to eat under the feudal system? How was it that both in the Middle Ages and much later too, when popular notions about health, disease and living habits seem to us to have been so crude and misguided, there was so often a physical robustness and calm confidence of mind which must be set against the prevalence of disease and the high mortality rates in assessing the real quality of life in such periods? Whatever the answers to such questions, their asking should bring us to a more just appreciation of the past, so that the picture is neither too rosy nor too dark; past practice and present knowledge illuminate each other and no period of history should be studied without reference to this essential aspect of its life.

Geography

The teacher of geography can point to major environmental factors, such as climate, which influence the health of the individual

and the community. Some parts of the world, such as Switzerland, California and New Zealand, have become famous as health resorts; others are notoriously unhealthy; others again, such as the Panama zone, have been converted from unhealthy into healthy regions and the number of these is growing. In some areas humanity is still exposed to deadly diseases such as cholera, malaria, plague, sleeping sickness and yellow fever, and also to more lingering infections, such as hook-worm or leprosy. All these diseases owe their origin to parasitic organisms and their transmission usually involves climatic conditions and animal pests. Some races succumb more easily than others, particularly when they migrate. But parasitic organisms and pests are not solely to blame. Human beings themselves are also responsible for much of what is bad for their health. In many undeveloped countries magic, superstition and tribal customs militate against healthy living, although the social habits of primitive peoples should not be condemned out of hand; often they are the result of centuries of adaptation to a primitive environment, combining sound instinct and much traditional good sense with what seems to us out of date and harmful. We should try to see the achievement as well as the defects, bearing in mind that we ourselves have by no means solved all our own problems.³⁶

It is possible, for example, to admire what civilisation has done to increase the world's food supply, arranging for its transport with the help of refrigeration and other means of preservation, and so making possible a more varied dietary and improved health, without feeling that the life of modern man in cities represents the last word; have not we ourselves still far to go? Such topics and questions as these should make a real contribution both to geography and to the study of health in its relation to the life of the community. It would certainly be relevant in the course of such studies to refer to the work of such international bodies as the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the World Health Organisation (WHO), the Food and Agriculture Organisation (FAO), the United Nations Children's Fund (UNICEF), and the Red Cross.

English

English offers obvious possibilities which illuminate language and literature alike, so long as pupils are not forced to deal with them as extraneous questions, as Robert Browning indignantly put it:

‘Who fished the murex up?
What porridge had John Keats?’³⁷

³⁶ For two interesting and readable anthropological studies on these lines see *Growing up in New Guinea* and *Coming of Age in Samoa*, both by Margaret Mead (Pelican Series).

³⁷ *Popularity*, R. Browning.

But nobody can read Chaucer, Shakespeare or Dickens without realising vividly how people lived in other times; the study of Shakespeare's views on sickness and health (which take full account of mind as well as body, and are particularly concerned with the significance of order) is a long story in itself. Nor is it possible to read Keats, the Brontes or R. L. Stevenson, or in our own century Katherine Mansfield, D. H. Lawrence, or George Orwell, without thinking of their tragically premature deaths, all from tuberculosis; would not most if not all of these writers have enjoyed longer lives today, and would they have written differently with better health? But beyond the individual example there is a deeper connection between literature and health. Young people are still forming their standards of value, and their attitude to sex and the other physical aspects of life will be profoundly influenced by their immediate surroundings, including contemporary books, films, broadcasting and the press. In the hands of a sympathetic teacher the study of literature can help, without preaching, to introduce them to standards going beyond their immediate environment and representing the human race at its finest. He will be dealing not only with literary but also with non-literary material, including argument and discussion, precis and notemaking, deductions or assessments to be made from words, graphs or other data, and, of course, the intelligent reading of a newspaper. Similarly in current affairs, local studies, and other aspects of education for citizenship, the opportunities should be evident. But the general principle is the same for all; here as in history any reference should be natural and unforced; for the great dead did not live merely

‘To point a moral or adorn a tale’.

Other special opportunities for health education may also occur in the course of a term. They include occasional or regular talks, whether by teachers or by outside speakers, films, study-projects, essays and short talks by the pupils themselves, and such ventures as the concentrated short course, perhaps at a time when for some reason normal work is not going on. The informality of these occasions should make them all the more effective. Some particularly interesting school broadcasts and television programmes have been provided by the BBC and ITV at regular intervals.

CONCLUSION

This chapter should end by reasserting the continuity between the secondary school and all that has gone before and will come after. All through the secondary school the fullest possible advantage should continue to be taken of the School Health Service; as before,

school medical staffs, teachers and other social workers should work closely together and their collaboration should not end in the school; it is as important now as earlier to win and hold the parents. But into this familiar pattern there should be entering a new element, the conscious contribution of the pupils themselves. Long ago, while they were still primary school children, they should have learned to approach doctor and dentist without fear or reluctance; by now they should be able in their own right to make an intelligent use of the health services. And they should by now be aware of their own personal responsibility to enter upon adult life with body and mind in a state of health which is something more than the mere absence of disease. Then, as boy and girl grow up, they will still be developing their own lives along a pattern which school helped them to establish and confirm. For school is only a beginning.

School and the Future Parent

The great majority of children will later marry, set up a home and bring up children of their own. In doing so they will satisfy their own deepest human needs, and at the same time play an important part in the building up of society. To play this part harmoniously and effectively, through early marriage, the first experiences of house-keeping, childbirth, and the rearing of children from infancy until they stand on their own feet, calls for a wide range of practical skills and of human understanding. On the practical side, the partners in a marriage will between them have to handle money affairs, the management of a household, the feeding of a family, and the care of children at all ages. In all this they must work in harmony, sharing their pleasures, helping one another in times of sorrow and difficulty, and meeting with love and understanding the emotional as well as the physical needs of their children. These demands are not impossibly exacting, as many examples of happy family life show, but there is no doubt that some preparation for marriage is necessary, and that a framework of practical skills and emotional understanding can and should be laid down during school years. Much of the knowledge and skill needed for married life and parenthood is also of course of value to those who will not marry, but will still have to make their way through life, and will have their own practical and human responsibilities.

How far this instruction should be given in the home, and how far at school is a matter of judgment: but children seldom get at home all the training they need, and there is a persistent and growing demand for instruction at school. A good deal of such instruction is now given at school in courses which include the practical skills, nutrition and the budgeting of money, time and energy. Both boys and girls may join in discussions on such subjects as personal relationships, setting up a home, child-care and the responsibilities of parenthood. For many years schools have included mothercraft in the curriculum for the girls who leave school at fifteen. A great many schools realising the importance of this subject to girls about to marry at an even earlier age than in the past, now plan a course for the older girls, sometimes taken by the Health Visitor, which gives

them a broad view of motherhood and introduces them to the welfare services and the help that is available when they have their first baby. Such courses include visits to child welfare clinics, nurseries or nursery classes; girls may go in twos or threes to work in the nurseries for a day each week for half or a whole term. This allows them to have contact with young children and to watch their development without the disturbance which would be caused in the nurseries by a visit of the whole class. Less formal contacts may also be made; sometimes for instance, a group of girls may prepare and serve a meal for a nursery class, keeping in subsequent touch with the children by making or mending toys, preparing special treats for dinner or tea, or making clothes for a particular friend or relation in the class. On a wider scale any general home economics course should provide all who take it with a simple background of good general knowledge covering the right kinds of food for everyone in the family, including small children, and the preparation and serving of a few simple dishes for special occasions or when mother or some other member of the family is ill. But elaborate lessons on 'meals for young children' are of less value, even if remembered; young children need not so much an elaborate diet of their own as simple family food, well chosen, prepared and served.

Schoolgirls often have small brothers and sisters to look after at home. It is then all to the good if they bring home some of the new ideas learned at school. Yet there remains a risk of the new learning clashing with mother's ideas; and it is not good at such a stage for girls to become involved in any conflict which may confuse their trust in their mother's judgment. Girls with small brothers and sisters have more than enough to do at home looking after them and it is doubtful if they should be encouraged to spend still more time at school on the subject at the expense of the pursuit of new interests which will help them to develop their own latent capacities.

Apart from specific instruction much time and thought is in fact given to parentcraft in any good secondary school, though not necessarily under this name. By raising the general level of intellectual attainment, school is helping its pupils to lay a better foundation for all that they may do later on, including the bringing-up of children; by touching their imagination with what is best in history and literature (see Chapter 10, page 79) it can give them at least the sight of greatness and an introduction to values that are not tawdry or ephemeral; it can provide them also with a good practical grounding in essential knowledge. And through the introduction of crafts and leisure interests which can be followed at home, school can help to associate recreation with something more than the passive reception of organised entertainment outside the family. Yet in all training of

this kind the responsibility of the home must never be forgotten; a child's natural love and regard for parents and home needs to be reinforced, not challenged or sapped. But an element of conflict between the standards of school and home may be unavoidable, and then it is up to the school to show understanding and tact.

The general health education and home economics teaching given by the secondary school should make an excellent foundation for family responsibilities. Boys and girls who appreciate the importance of good health and have some knowledge of how to achieve and maintain it will later on want their own children to be well fed, housed, clothed and cared for. In the same way girls will have learned how to cook, clean and sew, and boys how to be handy and helpful about the home. Both should have some idea of handling home and family economics, and how to organise and time their work, with a respect for method and some awareness of where to look, in books and elsewhere, for essential information. With or without actual lessons in parentcraft, every child who leaves school should have some understanding of the health and welfare services and how these can help family life. Instruction of this kind will probably be most effective towards the end of the school course; it is sometimes based on a series of visits and on talks from actual practitioners in various services, and boys and girls are often encouraged to do some useful piece of work in connection with local nurseries, children's hospitals or old people's homes, so that they may think of their own families and other people in terms not merely of physical surroundings but of human needs and service. Of great importance in all that is said or done is the personal relationship between adult and child, both at school and at home; boys and girls will show how they were influenced by their parents and teachers when they come to have children of their own.

Probably the most debatable issue in the whole of this field is concerned with the nature and scope of instruction in sex relationships. As a result aspects of sexuality and associated problems are often either exaggerated or passed over. Lack of sensible guidance on sex can lead to unhappiness and broken marriages. Ought instruction in sex to be given at school? Opinion is divided. Some feel strongly that anything of the kind is more often than not unwise; many married people have succeeded without such instruction; surely, they argue, boys and girls of good character will of their own accord develop satisfactorily towards adult life and marriage, finding out what they need to know from reputable sources. Yet recent surveys have shown that only the minority of children learn about sex from a reliable adult source, most 'picking it up' from other children. Fear and misconception often arise out of such a situation, whereas

children who have received an adequate insight into this important aspect of human life feel deeply grateful to the adult who imparted it, and the demand for some more definite form of instruction does seem to reflect a real need. Children brought up in the smaller families of today cannot compare with children of earlier generations or even with children living today in many parts of the world for direct experience of birth and death, and in many families they still remain far too long ignorant of vital facts. In this the main responsibility clearly rests with the parents; but often parents feel embarrassed about discussing such matters with their children, they may lack the right words or they are conscious of emotional difficulties which make discussion awkward. Certainly the evidence suggests that many parents are grateful when the school is willing to take part of this responsibility. The co-operation of parents should of course be sought at all stages. Many schools have found it valuable to invite them to a meeting at which they can be shown books and various aids to teaching which will be used in the work at school and can hear a talk about the kind of information and help their children may need at particular stages of development. Talks of this nature are often given by the school doctor, nurse, or a teacher. Speakers chosen for such work should be well qualified by personality, background, and training, to deal with the subject.

In everything which concerns sex education, the child's basic need is for knowledge and much of this is best given individually; any other approach may lead to embarrassment, misunderstanding, and harm. With younger children at least it is better to think in terms of gradually informing the individual child as he grows up than of any programme of set lessons or talks, however carefully planned. In any case the gradual approach is more likely to satisfy the child's needs. Every child gropes for understanding of the wonders of creation and will be curious from an early age about the parts of the body; quite early on many children begin to ask questions and these should be answered simply, naturally, and as fully as a child is capable of understanding at the stage which he has reached. The initial responsibility for answering questions lies with the parents but, as we have seen, the school is likely to be involved too, if only because the children are apt to ask questions at school as well as at home. One question can lead to another and some of them can be unexpected and searching. But however disconcerting such questions may be at times, they should be answered truthfully and at once, within the limits of the teacher's own capacity. For there will always be a risk that attempts to evade the question may cause a child to lose confidence in his teacher or, even worse, in himself; in any case many children will try to find the answers elsewhere, often from immature

or undesirable sources. It is also important not to give the impression in dealing with a question that it should not have been asked.

There is no need to answer more than the question asked or to make it the occasion for a sermon or lecture. If the teacher answers swiftly and honestly as he would on any other point, embarrassment is unlikely. As a rule the questioner will soon be satisfied with the answer given and at that point the questions cease, though younger children may forget what they have been told and ask again, perhaps more than once, later on.

Children whose questions have been consistently answered in this way will not stand in the same need of set instruction in the physiology of sex. But their understanding will be all the better grounded if it includes some first-hand acquaintance with living things. It was suggested in the last chapter that quite small children should, where possible, be encouraged to keep pets at school. This will introduce them quite naturally to the biological ideas of internal fertilisation and viviparity (live bearing) at a comparatively early age, when they are likely to take both for granted, and the questions which arise should be much easier in such a context. Both reproductive processes can be seen among insects, crabs, fish, amphibia and reptiles, as well as in the warm-blooded mammals; small mammals and tropical fish can be particularly useful when kept at school under the right conditions. Children who may have been discouraged earlier, often inadvertently, from asking adults questions about sex, and have therefore given up asking, may thus be helped by discussions arising naturally in the classroom situation.

Older children, particularly around puberty, often ask more searching and profound questions, and ones which may be more directly related to their own conditions and needs; these too should be answered by giving information within the limits of a boy's or girl's maturity and comprehension, just as with questions on any other subject. Questions involving human sex and reproduction are particularly liable to arise incidentally, during lessons in other subjects such as religious instruction, English literature, history, geography and science, and teachers of these subjects should be ready for them; sometimes related social and ethical issues will come up for discussion in this way much more easily than if one were to deal with them specially. All this means that the simpler questions of sex may fall to be dealt with by almost every teacher in a school and not merely by one or two specialists. This need not embarrass the individual teacher; an initial slight diffidence when first confronted with such questions is probably not uncommon, but it should not last long. Many men and women are grateful to the teachers who dealt with such questions as they arose. It is, of course, entirely for the

individual teacher to decide how far to answer them; but anyone who stands in the relation of a teacher to a group of children will not lightly consider leaving to others all responsibility for this aspect of their well-being. Where a teacher feels real hesitation about trying to answer a particular question, the pupil should be referred to someone else, whether the Head or some other colleague, the school nurse, or the school doctor; in schools the biologist on the staff will often be in a position to give advice or information. Whoever is concerned should bear in mind that, through films, television and other sources boys and girls may be in closer contact with the outside world than adults realise. Direct unemotional answers, of a kind that will fit in with what they know from the world outside, should have the best chance of being accepted with conviction, and much will depend on the general values which (over a long period and with the help of the parents) a good school can help its pupils to build up for themselves. Some of the questions asked are likely to reflect as much hesitation or anxiety about the values and tendencies of the world around them as about a particular issue concerned with sex and should be dealt with accordingly.

In many secondary schools the work of teaching young children about the ways of living creatures can be taken a stage further, developing by degrees in the direction of more advanced biological studies; for many children this is likely to be their first introduction to the physiology of sex. In biology boys and girls can be helped to find out about the physiology of sex in unemotional fashion, particularly if such work can be begun before the emotional difficulties which often arise with the onset of puberty. They can learn to consider reproduction as one only of the essential functions of living things, instead of singling it out as something exceptional. It should also be possible to help them to see the reproductive processes as adaptations, making in the long run for the better survival of the individual and the race.

It is impossible to generalise about the needs of pupils in different schools and different areas; but many schools have found they can be of the greatest help to their pupils by providing carefully planned courses which include a consideration of aspects of sexual reproduction and the changes of puberty. These are often phased to meet the needs of children at various stages of development and integrated with other work designed to prepare them for maturity. Children commonly suffer anxiety about the changes associated with puberty. Their need for information becomes great and they will try to satisfy an avid and natural curiosity, normally by discussing sexual relationships and the phenomena of growing up with their friends. It is at this stage that children require further information. To mention only

two examples: for a girl to begin menstruating without previous knowledge of the process, or for a boy to experience seminal emission unprepared, can cause much distress.

In learning to live a full life as an adult the adolescent must understand something of both personal development and social responsibility. It is the capacity for reconciling personal interests with social demands that leads to stability in relationships, to the appreciation of the other person's point of view and to the sacrifice of one's own interests, if need be, in the interests of the community. In the field of personal development the young are exposed to certain physical and emotional stresses in a form or to an extent that did not exist for former generations, and it is important that parents and teachers should be aware of the difficulties and discuss with boys and girls the physical process of growing up and its attendant emotional manifestations. First and foremost, and this is certainly the case with girls, there is the earlier physical maturity which, in addition to causing physical changes that make the girl appear older than her years, brings in its train all the emotional consequences that are involved in the maturing process. The young have to face puberty when they are still, in many ways, children, and before they can adequately come to terms with the changes that are taking place. They are made aware of the changes in their bodies before they are able to understand their accompanying thoughts and emotions. They early become aware of the attractions of the opposite sex and the result is the growth of boy and girl friendships at a much earlier age than has hitherto been customary, so that many boys and girls are 'going steady' in their early or middle teens. This naturally leads to early marriage. Moreover boys now outnumber girls—a reversal of the proportions which characterised earlier generations—and this has greatly increased the prospect of marriage for girls.

Closely associated with the physical and emotional situation in which boys and girls in their teens find themselves is the economic and social background to their lives. Virtual full employment means not only full-time work for fathers and for many mothers but for the school-leaver the easy acquisition of a job, the ability to move from post to post at will, and the acquisition of comparatively high wages at an early age. Parents, both of whom are frequently wage earning, do not expect to be given their children's earnings in full, and the young are frequently left with a considerable amount of money to spend on themselves. Unless their critical understanding has been developed at school, or at home, they become an easy target for commercial exploitation, and there is a growing market of goods with an appeal for them. They have money for cash payment and for hire-purchase and they embark on marriage confident—perhaps

over-confident—that means will always be available to pay for their commitments. State medical and dental services abolish the need to save for periods of sickness, and state pensions and government aid provide for old age.

This is the atmosphere of the adult world all around them, an atmosphere that reveals not only a greater facility for acquiring and spending money, but a greater permissiveness in moral attitudes. The breakdown of taboos and of organised religion has led to greater freedom in behaviour. The changed position of woman makes it necessary for her to reconcile her role as wage earner with her role as a mother. Early marriage followed by a period of working and a break for child-bearing leaves the mother free to return to work, either full- or part-time, and many children and young people are left to entertain themselves. Young people are aware of their value to the national economy. It is not, therefore, to be wondered at that they take certain things for granted. They expect to have money to buy the things they want; they no longer look for parental control; and they reject many of the scruples and taboos that acted as restraints upon the behaviour of their parents and elders. In short they see no reason why they cannot cope with life on their own terms. In some cases this may lead to irresponsible behaviour.

Most boys and girls in their teens welcome the opportunity to discuss personal relationships and the emotional difficulties of growing up. Such discussions can be of the greatest value especially if they take place in a small group and are informal, thus giving the young people opportunities to express their needs and points of view and to discover one another's attitudes. Teachers chosen to talk to adolescents and to encourage discussion will feel the need to read widely and possibly to attend training sessions which some authorities are providing. Where no teacher on a school staff feels able to undertake this work visiting speakers with special knowledge and experience are often invited. Such visits should be related to the general work of the school to avoid generating an undue emphasis on sex or sexuality. The attendance of teachers at sessions conducted by outsiders may be desirable on occasions; but the advantage of this must be set against the risk of inhibiting free flow of discussion which might result from the presence of more than one adult.

Some of the problems that trouble boys and girls, while seldom very novel or beyond the range of effective advice and help, are anything but easy for the young people themselves to bear or tackle unaided. Often these difficulties do not arise from ignorance or lack of principle, and it is now not knowledge which is needed, but help and comfort. The parents are often not in a position to help—even if asked, which is often not the case—and it can mean a great deal if

there is someone on the staff to whom the boy or girl can turn. Of course privacy, discretion, and above all mutual confidence are essential; sometimes a child's own teacher is the best counsellor, and in boarding schools and some day schools the housemaster or house tutor is often in a special position to help. Some children may anyhow find it easier to confide in a counsellor outside the school; they should be encouraged to do so, the teacher remaining in the background. There is, again, no ready-made answer; each individual problem is unique and its solution must be individual.

Little but preliminary instruction in parentcraft can be given at school, and it is inevitable that many boys and girls will leave school with only the sketchiest preparation for what lies ahead; even when further education is developed, there will still be a limit to what can be taught in the time. But whatever can or cannot be done to help young people later on, it is useless to cram prematurely while they are still at school; the best preparation in youth for parenthood is a good general education and the development of a personality at peace with itself and the world around. The time for really detailed help will come later, with courtship, marriage and the birth of children; this is when the preparation undertaken at school will prove its value.

The preceding paragraphs should give a general idea of the range and scope of the responsibilities in this field of the individual teacher. Much of course depends on the school as well as on the teacher; there is seldom a single way of doing things, and practice varies greatly in different schools. Headmasters and headmistresses are responsible for policy in this as in other matters, and they should choose as their helpers those members of staff who are constitutionally suited to deal with the more delicate problems of sex education; the presence on school staffs of experienced married teachers is of inestimable value in promoting this kind of work. Thus, while the young teacher should be prepared for the kind of question about sex that may arise at any time in ordinary school work, he need not expect at the outset of his teaching career to have to deal with all the questions raised in this chapter; some of them require considerable maturity and experience. While the questions that trouble pupils should always be dealt with quietly and without emotion, that does not of course mean that the teacher should be indifferent or off-hand. The boys and girls themselves will soon recognise, and appreciate, good will and good sense; even quite young masters or mistresses who have won their pupils' trust will often be in a position to help them when the need arises.

The responsibility for equipping students at colleges of education with a reasonable knowledge of sex instruction is now generally

accepted. The level of information which the students possess on arrival is almost certainly higher than it was, and many will have come through their own adolescence without difficulty. Yet many students still come to college very poorly informed in all aspects of sex and some may still be in the throes of emotional disturbance or immaturity; all these will need help which should be given individually. Students should be made to feel welcome if they bring their problems to a member of the staff. Sometimes the college matron is in a position to help. On the other hand a student may feel embarrassed at approaching any member of the staff; if so, an interview, in confidence, with his general medical practitioner may be valuable, or the college medical officer or principal school medical officer in the area can be approached. But whatever the difficulty, and whoever is consulted, the main thing is to know that sensible and knowledgeable people are there to help if they are wanted.

The whole problem was defined in the 1943 pamphlet on Sex Education³⁸ in words which could still hardly be bettered:

‘The really important point is not where the problem is treated but by whom. In each case the most suitable persons available should be entrusted with this difficult and delicate task. It should always be remembered that, while accurate and adequate knowledge of sexual physiology, as the mechanism of reproduction, is essential, the most important aspects of sex from the point of view of young people are the emotional and psychological aspects.’

And ‘Finally, it should perhaps be said that sex instruction in training colleges should be mainly directed to the personal effect on the students themselves. The students are, indeed, too immature to tackle fully at this stage the problem of how to instruct children in sex matters.’

By the end of their training the students should be as fully informed as possible about the normal physical and emotional development of children, and they should have been guided and helped to overcome or manage any problems of their own. With the necessary knowledge and a balanced point of view, the young teacher will be in a position to deal first with the natural questions which can arise at any time in any subject and later, perhaps, with some of the more difficult problems; only he must never forget that the solution for any of these will always be individual and unique.

³⁸ Board of Education, Educational Pamphlet No. 119—*Sex Education in Schools and Youth Organisations*, Her Majesty's Stationery Office (now out of print).

The Prevention of Communicable Diseases

Diagnosis of disease and prescription for its treatment are medical responsibilities, and for teachers to attempt either would be both unwise and dangerous. But teachers are particularly well placed for co-operating with school doctors and nurses; they can recognise the signs of illness at an early stage, make sure that advice is sought in good time, and help to see that such advice is carried out. It follows that every teacher should have some knowledge of the commoner communicable diseases and of their characteristic features.

THE TRANSMISSION OF COMMUNICABLE DISEASES

Communicable diseases are those which are caused by living germs; when these are transferred from one person or animal to another person or animal. This transfer may be by direct contact, or indirectly through the medium of household articles, clothing, toys, food, water, or sewage, or by way of insect pests. Infection is said to occur when disease producing germs gain entry to the body and multiply there. An epidemic arises when a disease spreads rapidly, attacking many people within a short space of time; sometimes what began as an epidemic becomes endemic, that is, continually recurring in a particular area. Each communicable disease is caused by a distinct type of germ or virus, which is capable of causing that particular disease alone and no other, though in a few cases differences in the site of infections or in their severity result in symptoms to which different names have been given.³⁹ Thus the diphtheria germ causes diphtheria, the poliomyelitis virus causes poliomyelitis; but neither the one nor the other can cause typhoid fever, which can follow only from infection of the body by the typhoid germ. Germs are minute living things, so small as to be invisible to the naked eye; indeed viruses, as the smallest of them are called, can as a rule be made visible only with the aid of the electron microscope. Like other living things, whether plant or animal, germs need suitable conditions in respect of food, warmth and moisture

³⁹ The haemolytic streptococcus, for example, can produce most varied symptoms.

for their growth and reproduction; given such conditions, a single germ may multiply rapidly, producing many millions in twenty-four hours. The varieties of germs which are capable of producing diseases are very few in number compared with those which are either harmless or beneficial, even essential, to man and other creatures, to agriculture and industry. Thus a human being may act as a kind of host to bacteria which live in his bowels and are able to manufacture vitamin B; this is then absorbed by the host who thereby derives benefit from his association with the bacteria concerned. Other kinds of bacteria assist in the nitrification of the soil and thus indirectly in the nutrition of plants, or help in the production of butter and cheese, or are used in the retting, tanning and pulping industries.

Three factors are necessary for the spread of communicable diseases. There must be a source of infection from which the germs are spread, a route by which they are transferred, and a region in which they are able to settle and grow; this last is the body of a susceptible person. The source of infection is always another person, or an animal, in whom the particular type of germ has established itself; usually the chief source of human infections is man himself. The individual who is responsible in any one case is most often a patient suffering from the disease, but sometimes a convalescent who has just had the disease; occasionally he represents the 'missed case' in which, owing to the mildness of the symptoms, the infection has not been recognised. Anyone passing through the incubation period of an infection may be infectious to others for several days before signs and symptoms indicate the onset of the disease in him. The 'carrier' is another well-recognised source of infection; he is a person who, without exhibiting in himself any symptoms of a communicable disease, is nevertheless harbouring the germs somewhere in his body, so that he is liable to spread them to others. He may be either a convalescent carrier recovering from an infectious illness or a healthy contact carrier, exhibiting no indications whatever of any disturbance of health. In carrier-borne diseases the germs concerned are most commonly found in the nose and throat or in the intestines. Carriers may unknowingly be responsible for causing scattered cases as well as 'explosive' outbreaks of a disease.

Disease germs may pass out of the human or animal source of infection through the agency of breath, saliva, sputum, faeces, urine, milk, blood, or skin. From their source they may reach other persons by a direct route, by an indirect route or through an intermediate host. The direct route of infection is the most important, the germs gaining entrance to the body by being inhaled, or swallowed, through a breach in the skin, or through a mucous membrane such as that lining the nose or mouth cavity. Infection is often spread by the

process known as 'droplet infection'. The breath of a person suffering from a disease of the nose, throat or lungs, or carrying disease germs in these parts, may contain many of the germs responsible for causing the disease; if so, whenever he breathes or talks (and still more when he is shouting, coughing or sneezing), he propels into the air, for a distance of 3 to 6 feet, minute droplets of moisture which are heavily laden with bacteria. The larger droplets may directly infect the nose, throat or eye of anybody in the immediate neighbourhood. Smaller droplets often evaporate, leaving suspended in the air minute infected particles which may be inhaled by other people at a considerable distance. Efficient ventilation will remove some of these infected droplets, but many settle on the floor or on articles of furniture, especially bedding, where the moisture enclosing the germs dries up so that they become part of the ordinary dust in the room. Such household activities as bed-making, dusting or sweeping launch them once again into the air, from which they can be inhaled, in this way spreading disease; the actual infection is, of course, conveyed by the droplets and dust in the air and not by the air itself. Fortunately, most of the germs die fairly rapidly, since, like other plants and animals, they need moisture and food, as well as warmth, to stay alive. Fresh air, light and sunshine help to speed their demise. Germs from saliva can reach new victims by contaminating crockery and cutlery, or such things as pencils which children have a way of putting in their mouths; soiled handkerchiefs also provide an obvious source of infection. Food may become infected by people engaged in its handling and preparation, if they are suffering from a communicable disease or are carriers.

Animals and insects frequently act as sources of infection. A cow may have tuberculosis of the udder, or undulant fever, so that the germs causing these diseases easily get into its milk. Mice often contaminate food with intestinal germs capable of causing outbreaks of food poisoning. Flies breed in refuse and manure and often alight one moment on filth and the next moment on food which they leave contaminated with germs that have adhered to their bodies; in order to feed at leisure, they actually regurgitate what they have already eaten, often upon human food, and the marks left by flies upon windows and walls are caused in this way. In countries where typhus fever exists lice provide the germ with a means of transit from an infected person to a healthy one. Malaria is transmitted by certain kinds of mosquito which suck up the parasite in the blood of an infected person; the parasites then go through further stages of development in the mosquito, to be subsequently injected into their next human host with the mosquito's saliva when it bites.

Whatever route germs may use in entering the body, there is

always an interval, called the incubation period, between the infection of the susceptible person and the appearance in him of actual symptoms; the length of this period varies in different diseases and, while it lasts, the germs are settling down, multiplying and producing their poisons. Anyone who has been in contact with a case of communicable disease must be kept under observation in case he is going to develop the disease; this is particularly important during the last few days of the incubation period when the potential victim may already be highly infectious to others, without actually feeling ill himself.

Whether disease follows infection depends upon the number of germs, their virulence and the individual's power of resistance. Immunity is the power to resist disease and may be natural or acquired. Everyone possesses a certain degree of natural immunity which varies from person to person, and in the same person at different times; it is due to certain constituents of the blood and tissue fluids and is greatest in those who are in good health. Natural resistance can be increased by fresh air, sunlight, exercise, sufficient rest and sleep and the right amount of food of the right kind. Many disease germs are almost always to be found in the nose and throat; but they do not cause disease unless resistance is low, or lowered for the time being, perhaps by overtiredness or exposure to cold. A more specific form of immunity from some communicable diseases may be acquired by an attack of the disease, as a result of which protective substances are formed in the body, making subsequent attacks unlikely. Although second attacks of most of the communicable diseases are known to occur, they are rare. Immunity may also follow from the repeated subjection of the individual to infection through small doses of germs which, without being enough to cause the particular disease in question, are capable of stimulating his tissues to build up full resistance against it. Probably many adults who have escaped certain diseases in childhood do not get them in later life because they have built up a good acquired immunity through exposure to repeated small doses of the germs involved. A similar process is used to produce immunity artificially, by vaccination or inoculation against such diseases as smallpox, diphtheria, poliomyelitis, measles, whooping cough, typhoid, paratyphoid, tetanus, cholera and plague; such artificial immunity lasts for varying periods of time, towards the end of which it can be renewed by further inoculation.

In the prevention of infection both the individual and the community have important parts to play. In accordance with the Public Health Act, 1936, and regulations made thereunder, all cases of certain communicable diseases must be notified to the local medical

officer of health, who is thus kept informed of the number of cases in his district and can take any necessary steps to prevent or reduce their spread. The Registrar General publishes weekly returns based on figures supplied by the district medical officers, so that any undue incidence of such diseases in any part of the country can be accurately assessed and the necessary action taken. Whenever international action is necessary, this is put in hand through the agency of the World Health Organisation at Geneva, which took over the responsibility in 1948 from the original International Office of Public Health established in Paris in 1907.

Infectious patients are isolated either in their own homes or, if they are suffering from one of the more serious communicable diseases, in an infectious diseases hospital, where modern methods of treatment may bring about rapid cure; this will also help to reduce the risk of infection being passed on to others. Anyone who has been in contact with cases of certain communicable diseases, such as smallpox, may have to be placed in quarantine, that is, kept under surveillance for a period of time equal to the longest incubation period of the disease concerned. Because children are particularly susceptible to the more common infections, they may be excluded from school after contact, although adults in the same family can safely continue to work; on the other hand, with several of the milder infectious diseases which are commonest among children, there has been a tendency in recent years to relax the rules about quarantine and exclusion from school.⁴⁰ When anyone concerned with milk production, or with preparing food for public consumption, has been in contact with infectious disease, he may have to be prevented from going on with his work until it is demonstrably safe to resume. Some contacts may prove on examination to be carriers; they will probably need treatment to clear up the condition. By means of disinfection an attempt can be made to destroy the germs producing the disease; all discharges from the patient, as well as any articles used by him, may have to be disinfected daily, and at the end of the illness his room and all articles and furnishings which may have become contaminated can be disinfected. In the past many elaborate chemical and physical methods of disinfection have been tried, but today it is generally found sufficient after most infections to rely on simpler methods such as washing with soap and hot water, exposure to sunlight and thorough ventilation. Small articles, such as handkerchiefs, crockery and cutlery, can be sterilised by boiling after a preliminary washing. When smallpox

⁴⁰ The reader is referred to the *Memorandum on the Closure of Schools and Exclusion from School on account of Infectious Illness*, issued jointly by the Ministry of Education and the Ministry of Health, which gives guidance in the matter of quarantine and exclusion of contacts from school. (Her Majesty's Stationery Office.)

breaks out, vaccination may be offered to all who have been vaccinated a long time ago or not at all. Over a long period such public health measures (already mentioned in earlier chapters) as good housing, the prevention of overcrowding, proper ventilation, the supply of purified drinking water and pasteurised milk, efficient disposal of refuse and sewage, and the cleanliness and protection of our food supplies, have been most effective in controlling and even stamping out some of the communicable diseases.

Everyone responsible for children at home or at school should understand how to minimise or if possible prevent the spread of infection. Obviously not all the possible sources of infection can be guarded against; but there are one or two basic rules which, if properly understood and put into practice, can do much to keep infection within reasonable limits. Merely to bring children together in school or nursery means in itself incurring some extra risk from droplet infections such as colds, bronchitis, measles, whooping cough and similar ailments. All children, and especially younger children, are relatively more susceptible than adults; if they are crowded together, they will be exposed to more varied types and a more massive dosage of germs. Overcrowding is always dangerous, particularly in winter when droplet infections are most prevalent. The present tendency to break up large groups into smaller units, wherever possible, and to avoid any action which involves massing small children together, is all to the good. Proper ventilation will help to disperse or dilute germs in the atmosphere, and so reduce the risk to the individual child. If children appear to be ill, parents should keep them at home for observation, in case they are incubating an infectious disease. Staff and children should always take care with the details of personal hygiene; 'Coughs and Sneezes Spread Diseases', and anyone who must either cough or sneeze should have a handkerchief ready, with his face turned well away from other people. Paper handkerchiefs are best, because they can be burnt. There is always a risk of infection from germs lurking in dust, whether on floors, furniture or bedding. Frequent use of soap and hot water for cleaning floors and other surfaces, and free access of light and air to all parts of the house will between them help greatly in removing or killing germs; soap and water are excellent disinfectants. Finally there must be a clear understanding among teachers, kitchen staff and children that in everything which has to do with the school meal absolute cleanliness is essential.

Measles

Measles is so infectious that to prevent the spread of infection from one child to another at home or school is most difficult; even so,

isolation of the first victim at the very outset may be successful. Measles is caused by a virus which is spread by droplet infection. The disease begins with a condition very similar to a common cold; it is at its most contagious during this early stage, often before the appearance of the rash on the fourth day of illness suggests what the trouble really is. Mortality is highest among children under the age of two, and it is worth doing everything possible to postpone an attack until after this age. An attack may also lead to much chronic ill-health; in particular, any children who develop chest complications should be kept under observation and treated, so as to reduce the risk of pulmonary disease in later life. Effective measles vaccines have been made and these were first offered for sale in 1966.

Whooping Cough (Pertussis)

The germ of this highly infectious disease also is spread by droplet infection. The characteristic whoop is not always present and occasionally diagnosis may be most difficult to confirm without resorting to laboratory tests. Any cough accompanied by vomiting is suspicious. The disease often begins in an indefinite manner; for some time there may be no suggestion that a child is suffering from anything more than an ordinary cold in the head and a cough, yet it is just at this stage that the disease is most infectious. The termination of the disease also is very indefinite and children often continue to whoop for weeks after ceasing to be infectious. From about six weeks after the onset of the illness, or four weeks after the beginning of the characteristic cough, there is no longer any risk of the patient infecting other people. Although deaths from whooping cough are not now common, the risk is very much greater to infants under one year old. Vaccination against whooping cough gives good protection and is frequently carried out at the same time as immunisation against diphtheria.

Scarlet Fever

In the middle of the nineteenth century this disease stood out among the infectious diseases of childhood as one of the main killers. Since then it has ceased to be a serious and fatal disease, although still prevalent. Scarlet fever is caused by the *haemolytic streptococcus*, which is frequently found in the nose and throat of healthy carriers; this is also the germ responsible for tonsillitis, enlargement of neck glands, discharging nose and ears, sinusitis, one type of impetigo, wound suppuration, and erysipelas amongst other diseases, and it is only the occurrence of the rash in scarlet fever which makes this manifestation of the germ's activity particularly noticeable. It is now generally accepted that a patient suffering from scarlet fever need

not be admitted to hospital as a matter of routine if he can be attended to at home.

Diphtheria

Diphtheria is caused by a germ which produces lesions, usually in the nose, throat, larynx or windpipe, and occasionally sores and ulcers of the skin. It is a serious, often dangerous, and highly infectious disease. The lesions of the throat and larynx may obstruct the breathing and cause death, or the toxin (the poison of the germ which circulates in the blood) may cause heart failure or paralysis of muscles.

The disease is spread by 'droplet' infection, contact with infective persons, and through such items as linen, blankets, clothes, towels, etc. The germ is sometimes found in the throats of healthy people not giving rise to any symptoms; such carriers can spread the disease to others and require isolation and treatment just as if they were actual cases of diphtheria. Up to 1940 there were about 50,000 cases of diphtheria each year, mostly among children under ten, and between 5 per cent and 6 per cent were fatal. But experience in Canada and America had already shown that the disease could be almost completely eliminated by immunisation. This involves treating the toxin or poison of the germ in such a way as to render it harmless, and when the prepared toxin is injected into the body it stimulates the production of antibodies. A person who has been immunised is thus armed against an attack. Immunisation was made freely available to all children between one and fifteen from 1940 onwards, through local health clinics and general practitioners. The result has been acclaimed as one of the most remarkable victories of medical science and the number of cases reported annually is now well below one hundred. In 1954 less than ten people died from the disease. Only twenty-five cases of diphtheria were notified in England and Wales during 1966: there were no deaths.

The ideal to be aimed at is that 75 per cent of all children should have had a complete course of immunisation before their first birthday. The course usually consists of three injections at monthly intervals and causes only a very slight upset in the vast majority of children; it will give protection against the disease germs for about five years. About the time the child starts school and enters a new community, a booster dose of the immunising injection is necessary, and this will give protection for a further five years. Before the war, even when there was no outbreak of the disease, most schools had a few carriers, and with any epidemic there was a considerable increase in the number of carriers. Though today it is rare to find carriers and cases are few, a high rate of immunisation, especially among children,

is still needed in this country if the disease is to be eradicated altogether. Experience in Europe during the last war showed that the disease could reassume its old incidence and severity where immunisation was interrupted.

German Measles

This is a mild feverish infection with a rash that may resemble that of measles or of scarlet fever or a mixture of both. Like measles it is caused by a virus. It is of short duration and generally without complications, though there is enlargement of the lymphatic glands in varying degree. It has risks, however, for the expectant mother in the early months of pregnancy since the virus may attack her unborn child and damage certain of its organs at a vulnerable stage of their development. This might cause the child to be born with serious defects, possibly of eyesight, hearing or of the heart. Second attacks of German measles are rare and a person who has suffered from this infection in childhood is usually immune for the rest of his or her life.

Mumps

This is another disease caused by a virus. Here the infecting organism has a bias towards the saliva producing glands and affects particularly the parotid glands, which lie in front of the external ear on both sides of the face, causing them to swell. More rarely other glandular tissue, such as the ovary or testis, may be attacked, particularly in persons past puberty. Though painful, mumps is otherwise usually a mild and short-lived ailment. Its spread is caused by droplets of saliva from an infected person.

Chickenpox

This highly contagious disease is one of the commonest of childhood; probably the greater part of the town dwelling population has contracted chickenpox by the age of 15 years. When the infection invades a school, it is apt to persist until most of the susceptible children have caught it. Transmission of the causative virus from person to person occurs by direct contact or droplet spread or occasionally through clothing or bedding freshly contaminated by a patient. Chickenpox is characterised by a skin eruption which is like nettle-rash at the outset, passing rapidly into a stage of water-blisters which finally dry to form scabs; the illness may be more severe in adults than in children, but it is essentially a mild complaint.

Poliomyelitis

Poliomyelitis is an infectious disease of the nervous system, caused by a virus; it is most prevalent in the warm dry weather of late summer and autumn, and the number of cases has fallen markedly

since the introduction of vaccination against it. The disease is popularly known as infantile paralysis, a most misleading term, since adults may also be infected and in any case paralysis does not always follow the infection. Indeed, it has been calculated that for every case recognisable through the onset of paralysis several other persons become infected without ever developing any paralytic symptoms; some of them, nevertheless, are capable of spreading the disease. The virus can be demonstrated in the nose, throat and faeces of patients and in the faeces of healthy contacts, so that it can be spread by persons who are apparently healthy, as well as by patients. Infection appears to be spread by the pharyngeal and intestinal excretions of infected persons; contamination of the hands with the virus, or of food or utensils, may play a part in the spread of the disease. It is therefore particularly important that everyone should always wash his hands after going to the lavatory and before meals; nothing else can do so much to limit the spread not only of poliomyelitis but of other intestinal diseases. There is evidence that operations for the removal of tonsils performed when poliomyelitis is prevalent may be followed by the most fatal form of the disease, in which the brain, as well as the spinal cord, is affected; for this reason operations on the nose and throat are not advisable when poliomyelitis is prevalent in a district. There is no need to close swimming baths during an epidemic, so long as they are well supervised, not overcrowded, and the highest possible standards of cleanliness are maintained. Fatigue, exhaustion and strenuous exercise may possibly transform a non-paralytic case of poliomyelitis into a paralytic one; it is therefore essential, when there is any risk of infection, for adults and children alike to avoid physical stresses. Any infected child should be isolated from other children for six weeks from the onset of the disease. Children in an infected household should remain away from school for a period of twenty-one days after isolation of the patient. Similarly teachers, school nurses, school meal workers, caretakers and others coming into intimate daily contact with children should be excluded from school for twenty-one days following the occurrence of a case in their household.

As has been shown in the case of diphtheria, an effective means of eradicating a disease is to increase the immunity of susceptible persons by means of immunisation. Many years of research on a vaccine to give protection against poliomyelitis culminated in 1954 in a successful field trial, in the United States, of a vaccine containing poliomyelitis virus which had been inactivated by formalin. This vaccine was known as the Salk vaccine after the doctor who devised it. Vaccination against poliomyelitis proceeded on a large scale in the United States and Canada. By the end of 1955 it was estimated

that some 10,000,000 children had been vaccinated, and the first reports indicated that the rates of attack were between 2 and 5 times less among vaccinated than among unvaccinated children. Early in 1956 it was announced that a British vaccine of the Salk type was available and vaccination of children in Great Britain began later in the year. The offer of vaccination was extended to adults and by the end of 1961, 16.7 million persons in England and Wales had been vaccinated. In February 1962, living attenuated, oral vaccine (Sabin) was brought into use as an alternative to inactivated (Salk) vaccine. Since then the number of persons vaccinated with inactivated vaccine has declined markedly. The number of notifications of poliomyelitis has fallen from 6,331 in 1955 to 90 in 1965.

Tuberculosis

Tuberculosis in man is caused by either the human or the bovine type of tubercle bacillus. People who suffer from active tuberculosis of the lung, commonly known as consumption, spray infected droplets into the air as they talk or cough. These droplets are often inhaled directly into the air passages and lungs of other people; or else they may fall to the ground, where they dry up and become part of the dust of our surroundings. Cows infected with tuberculosis of the udder excrete tubercle bacilli in their milk, from which the germs pass into the bowel and so perhaps into the system of anyone who drinks it. The human type of bacillus causes many more cases of lung disease than the bovine type, which particularly affects glands, bones or joints, is responsible for more cases in infancy and childhood than later on and can be prevented by the use of pasteurised milk. Many persons reaching early adult life appear to have successfully overcome a primary tuberculous infection at some previous period. If the child's general health is good, immunity may result, but if he is frequently exposed to heavy doses of infection and his general health is poor, actual tuberculosis may follow. It is now believed that children in what appear to be tuberculosis families do not inherit tuberculosis, but acquire it by exposure to infection. The annual death rate from tuberculosis has been steadily declining during the past 50 years, except during the two world wars, when the decline was temporarily arrested. So encouraging a trend has been due to a number of factors, such as improved sanitary and economic conditions and better diagnosis and treatment. Any scheme that will improve the general health of the population will at the same time increase its resistance to tuberculosis; good housing and town planning have played an important part by reducing over-crowding, and good food is essential.

The earlier tuberculosis is detected the greater is the chance of

limiting its spread to others and of curing the patient; as a rule, tuberculosis that is discovered early can be speedily arrested by modern methods of treatment. To this end, facilities for early diagnosis and treatment have been provided throughout the country. X-ray examination of the chest provides a most valuable means of early diagnosis, and since 1943 the use of mass radiography has made it possible to sift out from the general population those people who are suffering from early tuberculosis of the lung, so that early treatment can be offered. In 1966, approximately 3,291,000 persons were examined by the Chest Radiology Service and 4,183 cases of tuberculosis requiring treatment or close clinic supervision were disclosed, 1.3 per 1,000 examined. Special precautions must be taken to protect organised groups of children from any risk of infection by adults suffering from tuberculosis. It is advisable for students to undergo an X-ray examination of the chest before admission to a college of education, and this is compulsory on completion of the course of training. No candidate for employment involving close contact with groups of children should be engaged without a medical examination, which should include an X-ray examination of the chest; such examinations should be repeated at three-yearly intervals. No person suffering from tuberculosis of the lungs should be employed in close contact with children until the disease has been proved to be quiescent.⁴¹ In 1949 a scheme was started by the Ministry of Health for the use of B.C.G. vaccine in this country for persons who are known to have been in contact with tuberculosis. This vaccine is made from an innocuous strain of the tubercle bacillus, developed in France by Calmette and Guerin, and known as *bacille Calmette-Gurién*, from which the vaccine derives its name. The intention is to produce an artificially acquired resistance to the disease in selected members of the community, such as contacts in tuberculous households. In November, 1953, the Ministry of Health extended these arrangements so that local authorities could offer B.C.G. vaccination to children of thirteen years of age and upwards who were still at school; in January, 1961, the range of children eligible for vaccination was increased to include children aged ten years or more.

VENEREAL DISEASES

The two principal venereal diseases are gonorrhoea and syphilis. Both are caused by germs which gain access to the body during close sexual contact with an infected person. They are not caught from

⁴¹ See Ministry of Health Circular No. 64 of July, 1950, and Ministry of Education Administrative Memorandum 418 and Circular No. 248, both of March, 1952.

lavatory seats, door handles or from cutlery and crockery. The germs causing these diseases are quite distinct and it is possible for a person who takes the risk to become infected with both at the same time. A person who has been cured of either can catch the same disease again if he has sex relations with someone who is still infected.

Both diseases are curable if treated promptly and efficiently but if neglected they can be disastrous to the person involved and they may be transmitted to others in sexual intercourse, and in the case of a woman who becomes pregnant, to her child before or immediately after birth. Neglected syphilis may cause death or permanent damage to the infant; both diseases are recognised causes of sterility.

Gonorrhoea, commonly called 'the clap', follows sexual relations with a person who has become infected. In a few days or a week a man may notice a burning pain or discomfort when he passes urine; there will usually be a discharge from his penis. Untreated gonorrhoea may spread to the testicles and to the tubes that carry the sperm, sterility resulting; and can result in stricture of the urethra. By contrast, a woman may often never notice any pain or discharge when she has gonorrhoea so that it is possible for her unwittingly to pass on the disease to any man with whom she has sex relations. The danger is great in those who are promiscuous. The woman may not feel ill, and yet the disease can spread through the womb and to the tubes that carry the eggs from the ovaries leading to acute illness, chronic ill health and very likely to sterility.

During birth or afterwards the germ of gonorrhoea may pass from an infected mother to the baby's eyes, causing acute inflammation and perhaps blindness.

Syphilis, commonly called 'the pox', usually causes a painless sore on or near the sex organs. This can appear as early as ten days or as late as three months following contact. Occasionally the sore may be found on the fingers, lips or breasts. It may pass unnoticed particularly in a woman when it occurs deep inside the vagina. This primary infection, the chancre, is highly infectious. From it the germs spread throughout the body, as can be verified by positive blood tests. Despite this invasion of the body, the primary sore heals. Three to six weeks later a rash is likely to appear on the body, and sores may appear in the mouth and throat, indicating that the secondary stage of the disease has been reached. In this stage the disease may also be spread by kissing. The patient may feel unwell, and shedding of the hair occurs. These secondary signs and symptoms will also disappear in three to nine weeks without treatment to be followed by the tertiary stage, the most dangerous stage for the infected person, when many years later the germs may be found to have attacked the heart, blood vessels, the brain and the spinal cord.

A woman with untreated syphilis can pass the disease on to her baby before it is born; miscarriage then commonly results, or the baby is stillborn. A baby with congenital syphilis is weak and unhealthy, may be born with deformities or may later become blind or deaf. These tragic consequences can be prevented if the pregnant woman who has syphilis receives early treatment.

Syphilis can be cured readily if treated early. It can be cured even in its later stages, but the damage done by the germs to the various organs attacked is permanent and may be the cause of disability later in life.

The venereal diseases remain a serious problem. The increase which is world-wide has been less marked in England and Wales than in many other countries. However, the high incidence of gonorrhoea and the rising figures for syphilis reported from the treatment clinics give no justification for complacency.

In 1965 the increase in the number of cases of infectious syphilis, that is syphilis in the primary, secondary and early latent stages, was 22 per cent over 1964 with a male to female ratio of 4.5 to 1. There were six patients, 0.3 per cent of those notified, who were under the age of 16, and 29, or 1.9 per cent between 16 and 17.

Up to 1964 the increase in the number of cases of gonorrhoea had been consistent since 1954, apart from a slight fall in 1962. In 1965 there was again a slight fall, a decrease of 2.5 per cent on the 1964 figures. Nevertheless the problem remains formidable. Multiple infections are still common. There were 184 patients, 0.6 per cent of those notified who were under the age of 16, and 1,064 or 3.4 per cent between 16 and 17. The proportion of cases of gonorrhoea in young people, especially in girls, is considerable. In the age groups of 19 years and under the girls outnumbered the boys, although for cases of gonorrhoea in general the male to female ratio was 3.2 to 1

COMMUNICABLE SKIN DISEASES

(Pediculosis, scabies, impetigo and ringworm)

Despite the increased attention now given to cleanliness inspections, verminous conditions in school children are still a major problem in some areas. In most areas there are families which persist in remaining a reservoir or breeding ground for head lice, despite continuous efforts on the part of members of the school health service to cleanse them. In such families it is usually found that the pre-school children and young adult workers are infested as well as the school children. Such lousiness is, indeed, a family affair, and the aim should be to treat the head of every member of the family at the

same time, so that there can be no re-infestation of cleansed heads from dirty heads in the same family. From the children of such families infestation often spreads to the child from a clean home, so that all parents will be well advised to inspect children's hair regularly, washing it frequently and seeing that it is brushed and combed daily. The need for this can be explained to children, and they should at the same time be encouraged to take pride in the appearance of their hair. When the school nurse visits a school for her routine cleanliness inspection, she should take pains to see that children found to be verminous, and therefore in need of cleansing, are not brought to the notice of their school fellows; it is wrong to penalise the child because of possible lack of care or training on the part of its parents. Owing to the more prolonged effect of some of the modern insecticides, such as D.D.T. and gammexane, a cleansed child will be protected to some extent against re-infestation from other infested members of the family. But cleansing is not enough by itself; continuous education in personal cleanliness offers the only permanent solution.

Scabies

Scabies is caused by the itch mite, which burrows into the skin. It is commonly associated with overcrowded and dirty conditions, although occasionally it is acquired by a member of a clean family. The irritation caused by the mite makes the affected person scratch the place so much that often the skin is broken and becomes secondarily infected by ordinary skin germs, sores and pustules resulting. Scabies is usually a family infection, and it is wise to treat all members of the family at the same time, in order to effect a certain cure; clothes and bedding should be thoroughly washed and well ironed with a hot iron. Regular washing and bathing help to prevent the skin from becoming infected with scabies in the first place.

Impetigo

Impetigo is an infection of the skin caused by a streptococcus or staphylococcus. The exposed parts of the body, such as face and hands, are chiefly affected. Head lice should always be suspected if the scabs of impetigo are found on the scalp or neck. When the infection occurs in folds of skin, as at the corners of the mouth, or in the nose or behind the ears, troublesome cracks are likely to form, and healing is delayed. This skin condition is now much less commonly encountered than formerly; its spread is unlikely when strict attention is paid to cleanliness.

Ringworm

Ringworm is a fungus infection of the scalp or of the skin of the body. It is transmitted to man either from another human being or from animals, such as cattle, cats and dogs. Ringworm of the scalp is almost entirely confined to children, adults hardly ever being affected. The fungus spreads from the skin of the scalp to the hairs, which become brittle so that they can be pulled out easily, leaving a bare patch. Since the introduction of modern treatment, ringworm of the scalp has become a comparatively rare condition. Ringworm of the body and the areas between the toes is caused by a fungus different from that which affects the scalp. It responds readily to the application of preparations capable of killing the fungus.

Plantar Warts

Plantar warts (*verruca plantaris*), are caused by a virus infection of the skin of the sole of the foot. The weight of the body pushes the warty growth inwards so that, unlike warts in other sites on the body, they do not project outwards. Their presence is sometimes noticed because pressure makes them painful, but often they remain unnoticed. Girls seem more often affected than boys; cases are usually more often found in secondary schools than in junior schools, whereas infant schools seem quite free of them. Swimming baths and school showers, physical education in bare feet, and communal use of gym shoes have all been considered as possible sources of infection; mild injury may possibly play a part. Preventive measures must include the treatment of wood floors used for bare-foot physical education or dancing, to minimise the danger from rough surfaces or splinters; such floors must be kept clean and can be treated regularly with disinfectant solutions. Communal use of gym shoes should be avoided. Periodic examination should be made of the children's feet; infected children should not be allowed to go bare-foot during physical education or dancing and should not use the swimming bath until the condition has been cured; for physical education any infected child should, for the time being, wear suitable sandals and have the exclusive use of the pair chosen.

FOOD POISONING

Every year several thousand cases of food poisoning are notified to medical officers of health by medical practitioners, in accordance with Section 26 of the Food and Drugs Act, 1955.⁴² There must also be thousands more which do not come to official notice, often

⁴² The provisions of this Section of the 1955 Act replace similar provisions of the Food and Drugs Act, 1938.

because they take place at home. But for the individual victim food poisoning is likely to be equally unpleasant whether it is the result of eating poisoned food at home or anywhere else. The effect of bacterial or chemical contamination of food is much the same wherever it occurs. Thus the paragraphs which follow are in principle as relevant for the home as for the large-scale restaurant; in both, prevention is better than cure, and prevention is mainly a matter of cleanliness.

There has been a great increase in the number of cases of food poisoning in recent years, largely because more food is now being produced in the mass. For our feeding habits have changed of late, particularly since the war, and there has been a striking growth of communal feeding as a result of the development of the school meals service and factory canteens; for social reasons, too, people today are more inclined to eat some of their meals away from home than formerly. The link between this and the increased incidence of food poisoning is not hard to perceive. At home, where there may be six to cook for, any chance contamination of the food will be limited in its effect. But in a kitchen capable of cooking, say, 600 meals at the same time, the food is handled by many more individuals than would ever be the case at home, so that the initial risk of contamination is greater; moreover, a far wider circle of consumers is exposed to risk should contamination occur, and such an outbreak may be far-reaching. Another hazard lies in the manufactured foods, some of them particularly susceptible to bacterial contamination, which are produced daily in enormous quantities and given very wide distribution. One outbreak of food poisoning in 1964 occurred in an independent school where many of the staff and children became ill 24 to 48 hours after a meal which included a pork pie. A distinct variety of *Salmonella* germ was isolated from the cases, from food handlers in the kitchen and from the remains of the pie. Pork pies from the same factory were also reported to be the source of food poisoning outbreaks in three other large neighbouring country districts. In all these outbreaks the same variety of germ was isolated and over 100 persons were affected. The source of infection was traced to pork pies produced at one factory. When visited the premises were found to be unsatisfactory. It proved to be a typical example of an increased trade due to the previous high quality of products, but the increased production had led to a large number of faults in hygiene. The same variety of germ was isolated from the factory staff and premises. In 1964 ten deaths, chiefly in the elderly, were associated with food poisoning.

Most food poisoning is due primarily to bacterial contamination. There are several kinds of harmful bacteria which may find their way

into food in the course of its preparation; and having gained entry into the food, they multiply at a great rate in the rich medium it provides. How rapidly they do so may be judged by the fact that a single germ after about 12 hours' continuous growth can become 7,000 million germs. When the contaminated food is eaten, these germs, or the poisons they have secreted, act on the alimentary canal to produce some or all of the characteristic symptoms of food poisoning, such as nausea, vomiting, abdominal pain, and diarrhoea. There may be a constitutional upset of varying degree, sometimes resulting in collapse and severe prostration. Bacteria may cause food poisoning in two ways: they may either cause an infection of the victim, resulting in an actual illness, or they may bring about a simple intoxication, by pouring out into the food or retaining in their own bodies a highly irritating toxin or poison. The commonest producers of infection in contaminated food are the *Salmonella* organisms, a large group of bacteria of which several hundred different varieties have now been distinguished. The group includes the typhoid and paratyphoid germs as well as a very common organism that causes a kind of enteric fever in mice and a similar though milder ailment in human beings. It is probable that illness only occurs if these organisms are consumed in large numbers, so that chance contamination by a small quantity of them may cause no ill-effects. If, however, they are given time to multiply in the food, which may well have been allowed to stand for some time in a warm room, then the dose of germs in the food will reach dangerous proportions. Symptoms of the infective type of food poisoning usually appear in 12 to 24 hours and the illness lasts for one to eight days.

Of the toxin-producing varieties of organism responsible for food poisoning, the commonest are the staphylococcus and the bacillus or germ known as *Clostridium welchii*. The staphylococcus is widely distributed and is a not uncommon denizen of the nose, throat and skin of healthy individuals; it may also be the infective organism in whitlows, boils, suppurating wounds, and one variety of impetigo. Staphylococci of a particular strain will, in a suitable medium—such as custard or gravy, though few types of food are entirely exempt—kept in a warm room, secrete a toxin as they multiply; this toxin causes the symptoms of food poisoning. The symptoms usually come on rapidly, from two to six hours after the tainted food has been eaten, with vomiting, colic and diarrhoea; recovery is likewise rapid and should be complete within six to 24 hours. The other intoxicating organism, *Clostridium welchii*, is interesting because of its notorious family connections. An organism of the same species, should it penetrate a deep wound, can cause gas-gangrene, the complication which worked such havoc among the wounded of the first world war.

A member of a different species of the same group, *Clostridium botulinum*, can cause food poisoning of the deadliest sort, from which few victims recover, although botulism, as the condition is called, is now fortunately rare. The same cannot be said of outbreaks due to *Clostridium welchii*, which are becoming increasingly important. This organism flourishes in airless conditions, and the strain responsible for food poisoning can resist boiling for more than four hours. In most outbreaks the germ is probably already contaminating the meat on delivery to the kitchen, and in meat dishes which have been cooked and allowed to stand in a warm room, or to cool slowly, it will multiply. A certain amount of toxin exudes into the surrounding food and some remains in the bacterial bodies themselves. When the food, thus admixed with germs and toxin, is ingested, symptoms begin to show in from eight to 22 hours, and usually last for between 12 and 24 hours; they consist mainly of abdominal pain and diarrhoea.

Both raw and processed foods are subjected to a great deal of handling and may be exposed to considerable risk of contamination before reaching the kitchen. Vegetables may be soiled by manure of faecal origin which, perhaps, contains the eggs of parasitic worms as well as disease-causing germs. Unpasteurised or 'raw' milk may harbour a variety of germs causing illnesses common to man and the cow, such as tuberculosis, undulant fever, and streptococcal infections; it may also have germs inadvertently introduced into it by the person who does the milking. Meat may be contaminated in the slaughter-house with a *Salmonella* organism or *Clostridium welchii*. *Salmonella* organisms have been recovered from the intestines of many different creatures forming part of the human dietary, such as turkeys, geese, pigs, chickens, and cattle. Duck eggs are particularly liable to infection; the organisms invade the bird's ovary, and, when the egg is laid, its contents are already contaminated. *Salmonella* organisms are rarely found inside hens' eggs; these, however, may become contaminated while they are being broken in large quantities for freezing or spray drying, when fragments of shell, soiled with faecal matter, drop into the egg mixture. For this reason dried or frozen eggs should be regarded as potential sources of infection, only to be used in foods that are well cooked.

In the kitchen itself the risks are intensified; as we have seen, the greater the number of meals turned out the more far-reaching may be the results of contamination. Any one of the food handlers may be a possible danger, since quite unwittingly he may be carrying harmful bacteria and introducing them, again unwittingly, into the meal at a critical stage of its preparation. There is a further risk, not so far mentioned, of contamination by minute but harmful quantities of

poisonous metals while the food is being prepared. This type of food poisoning is rare, but it does occur from time to time; lead, zinc, and copper utensils have all been incriminated in different outbreaks. A number of children and school staff became ill on one occasion after eating stewed apples that had been cooked in a copper vessel. The vessel was tin-lined, but the metallic copper was exposed where the lining had been worn away in places; copper, in harmful amounts, was subsequently detected in the remnants of stewed apple. In the kitchen itself it is always necessary to be on guard against contamination by rats, mice and insects. Mice, as has been observed, may be infected with *Salmonella* organisms and transmit them in their droppings. Similar organisms have been isolated from cockroaches. Greenbottle and bluebottle flies have been found to be carriers of *Clostridium welchii*. Our food is, indeed, menaced from every quarter.

In spite of the many dangers to be negotiated, cooks do nevertheless succeed daily in piloting meals safely through. The measure of their success may be judged by the fact that the school meals service, for example, in a year in which 850,000,000 meals were served, experienced only 28 outbreaks of food poisoning associated with them; ideally, of course, there should have been no cases at all, so there is still room for improvement. The same, no doubt, could be said of many canteens and domestic kitchens. The strict observance of certain principles will go far to achieving absolute food safety. First and foremost the kitchen staff should be fit and have high standards of hygiene. Food handlers with septic fingers, sore throats, or diarrhoea should be excluded from the kitchen. Proper provision should be made for washing the hands after going to the lavatory, and the staff should be drilled in its use. Clean finger-nails, hands, aprons, and suitable head-coverings should be insisted upon. The food itself should be at least in visibly sound condition on reaching the kitchen and must not be handled more than necessary. Bearing in mind the danger, which is always present, of possible contamination by the staphylococcus or heat-resistant *Clostridium welchii*, meat, gravy, and custard should be cooked on the day they are to be eaten and never left to stand in a warm kitchen. If meat has to be cooked and kept overnight, it should be cooled quickly after cooking so that its temperature may soon fall below the point at which germs multiply most rapidly; finally, not less than two hours after cooking, it should be put in a refrigerator for further storage. Duck eggs should be cooked for at least twenty minutes before being eaten. Dried egg mixtures should be used at once after being reconstituted and not allowed to stand in a warm room; both dried and frozen egg mixtures, as has already been pointed out, need thorough cooking. Cooking utensils and implements must be kept clean and in good

repair, and the kitchen itself maintained in good order. Windows, particularly in the store-rooms, should be fly-proofed and infestations by rats, mice, or cockroaches promptly dealt with; the local health department will always be ready to give advice about this. Walls, floors, sinks, washing-up bowls and cloths, should all be kept scrupulously clean. Crockery and cutlery should be properly washed and sterilised after use; the best method is the two-process system, which means washing them in water as hot as the hand can bear, and then rinsing them in water half-way further on to boiling point (i.e. at 170° to 180° F.) for half a minute; the dishes are then allowed to drain without wiping and are stacked on covered shelves. Large food containers need special attention. Washing-up machines and detergent powders or solutions should all be effective when properly used. Drying cloths are best avoided. Staff in any way engaged in dealing with food or food utensils should be clean in person and intelligent enough to realise the risk to others that may result should they depart in the slightest degree from a high standard of kitchen hygiene.

Finally, if in spite of every precaution an outbreak should occur, the compulsory notification already mentioned on page is very important; it means that cases, and also suspected cases, can be brought promptly to the notice of the local medical officer of health, who can carry out investigations and take any necessary action. Investigation usually involves intensive enquiries at homes, schools, factories, or other places connected with the affected persons, as well as the collection of suitable material for laboratory examinations. At any stage of the investigation it may be possible to prevent further cases by such measures as stopping the sale of suspected food, recovering unconsumed portions already sold, or refusing to allow a food handler, suspected of being a source of contamination, to continue at work. Many school kitchens make a practice of preserving a sample of the day's meal in the refrigerator in case it is required for examination. It is particularly important for teachers to realise that, when food poisoning is first suspected, steps should be taken immediately to ensure that no left-over food is thrown away. Any suspected foodstuffs should be kept cool, if possible in a refrigerator, until they can be removed to a laboratory for examination.

Mental Health

Introduction

Good health depends on the state of both mind and body. Each exerts a direct influence on the other, but owing to the power of mind over matter good mental health is of supreme importance. It is a complex subject to which justice cannot easily be done in a pamphlet of limited scope. However, in view of the importance attached in previous chapters to the mental and spiritual aspects of health, a brief review of at least some aspects of mental health is essential. Such a review may serve as an introduction to further study.

Normal Development

In order to learn how good mental health can be nurtured it is essential to know something about the normal emotional development in a child. For unless this normal process receives due attention it is difficult, if not impossible, to reach a right understanding of its variations or to appreciate when deviations from the normal are taking place, particularly if these are slight. On the other hand, a behaviour manifestation, such as aggressiveness, which would be normal at a certain stage of development, may be thought abnormal by anyone not familiar with the normal stages through which a child grows up to maturity.

Every child needs love and security from birth. All through his childhood his sense of security depends very largely on the quality of affection, care and protection which he receives from his parents, especially from his mother (particularly, though not only, in the very early years) and also from his teachers during the years at school. Given these two basic requirements, he can feel that he is someone and that he is wanted, thus laying a sure foundation on which his emotional development can be built up.

In 1950, the Minister of Education appointed a committee to enquire into problems relating to maladjusted children. During their deliberations the fundamental importance of this basic knowledge of normal development was recognised and in their report⁴³ a chapter

⁴³ Report of the Committee on Maladjusted Children, 1955. (Her Majesty's Stationery Office.)

was devoted to it. Owing to its essential significance this chapter has been included in this pamphlet as an appendix. Its study warrants close attention so as to promote a wiser and better understanding of mental health.

Mental Ill health

At the end of 1965, of the 464,560 hospital beds available for all forms of illness nearly one half were occupied by patients who were mentally ill. Surveys have also shown that absence from work for illness of all kinds is more frequently caused by functional mental or nervous conditions than by any other cause. But no statistics give a true picture of the total amount of mental ill health in the community, for so much of it is unrecognised by, and remains personal to, the individual concerned. Nevertheless, this does not make it any less serious either for the individual or, because of its social implications, for society. Failure of an individual to adapt himself to the stresses and strains of modern life may lead to anxiety, depression, anger, irritability or other manifestations which point to mental ill health. Marital disharmony preys upon the minds of the parents and this is bad for their children whose emotional development may become warped. Inwardly they often rebel against environmental or home influences, they may become ill at ease with persons or things or they may retreat into themselves, becoming solitary, quiet and silently fretful. Alternatively their emotional upheaval may lead to anti-social behaviour, such as viciousness, lying, disrespect of persons or things, or stealing. Many delinquent acts of children are incited by their own mental ill health.

'Prevention is better than cure' applies with particular force to mental health. Once there is a serious breakdown, recuperation is likely to be a long, difficult and expensive process. It follows, therefore, that the sooner mental ill health can be detected the better are the chances of rapid treatment and final recovery. But the goal should always be to prevent mental ill health from arising by the promotion of good mental health through right personal relationships and happy environments.

The foundations of mental health are laid in childhood and the pre-school years are particularly important in this respect. Mental ill health in older children and adults can frequently be traced back to a failure in personal relationships or to some other harmful influence experienced during childhood. It may well be that by the time the child first enters school some seeds of mental disharmony will have already been sown. Teachers, therefore, are in a very influential position, not only as regards the nurturing and furtherance of good mental health through their own wisdom and resources but

also in dealing with disturbed behaviour by seeking early advice from others with greater knowledge of such matters.

The Teacher's Personality

In the first place, the teacher's own personality is of the utmost importance. Unless he has himself reached an emotional maturity which is stable and healthy, he is not equipped to exert the right influence on the receptive child. What he is himself cannot help making a very significant impression for good or ill upon most of the children in his care. Therefore, he should know himself. If he has problems or misgivings, either personal or in relation to his work, he should seek advice from others who can help him; this may come from any person who possesses the right qualities and experience, such as a relative, a friend, a fellow teacher, a doctor or a minister of religion.

Next, personal relationships with relatives, friends, associates, parents and other persons require careful scrutiny. Good relationships are among the hall-marks of a good personality. If they are slow to develop, or even perhaps wanting altogether, it is well to ask why. The other person is not necessarily at fault; it may be salutary to examine one's own self. Close friends and acquaintances who are well informed and understanding can often help in this by their intimate friendly criticisms and helpful observations. No one relishes criticisms, even if fair and offered in a spirit of warm comradeship; but without them it is hard for a man to know himself.

The physical health of the teacher can have repercussions on the child as well as on himself. It may well be that, if he is off-colour, weary or suffering from an ailment, he tends to become impatient, irritable and lethargic; work is less satisfying and the results are not so good as they should be. Indeed, unwittingly, he may be doing harm to the child. So it is of real importance for the individual teacher to ensure that his health and well-being are maintained and that advice is sought or adequate treatment obtained if any signs of sickness arise.

The Teacher's Understanding

The child is an *individual*, with his own body, mind and personality; no two children are alike. This being so, the knowledge and understanding of children can only be acquired and built up over the course of years. Initially, a student's knowledge of children must start with his own childhood with its personal associations, joys and difficulties. His judgment in his early years will mainly have been formed by impressions gained from brothers, sisters, and other relatives, and from the children whom he met and played with. As he

grows older, his knowledge increases, becoming more mature even though it may not be completely correct in main conception or detail. The young student will have prejudices, fears, doubts and assertions which to him seem correct and worthy and may tend, therefore, to colour his views and outlook. He may find it difficult to assess the qualities in another except from personal standards of right and wrong which, however good in themselves, are often narrow and somewhat immature. Then, as training continues, an adjustment and a broadening of views should begin to follow from living in a community, studying, getting to know children under supervision and guidance. Understanding of children develops and begins to take a more definite shape, their similarities and differences become more apparent, as the student shakes off prejudice and gains confidence with increasing experience.

This informed training in child development and health should lay the foundation of the knowledge and understanding of children, but only experience and association with children can promote and nurture the growth of a wider and fuller wisdom. For something fresh can be learnt from each child a teacher meets. Year in and year out everybody else is adding to one's own personal stock of experience, which is therefore never complete or all-embracing. But as this experience grows, so does understanding of the child; it should be possible to build up by degrees both knowledge and real understanding of a normal child. The limits of normality are astonishingly wide; what may be normal in one child may be abnormal in another; indeed what may be normal in one child may in certain circumstances or conditions be abnormal in the same child. These facts can only be fully grasped as experience mounts up.

The attitude of adults towards a child must always be reasonably consistent. Contradictory orders or the toleration at one time of conduct which is forbidden at another cannot but undermine a child's feeling of security. A child must be allowed to grow up knowing what he can expect from day to day; it is wrong to treat him like a plaything one moment and expect from him something like adult behaviour the next. He must realise that praise and appreciation usually follow from good behaviour and that bad or anti-social behaviour is likely to lead to the opposite. All children require training; so long as this is consistent and understanding and does not undermine the child's self-esteem (a factor of great importance in mental health), it should help to increase their sense of security. Education should invariably attempt to provide a child with something positive that he can do, and not with a frequent repetition of negatives of the 'Don't do this', or 'Don't do that' order. In a situation that might provoke a clash of wills it is often helpful to

associate oneself with the child through a positive suggestion, 'Let us do so and so', thereby avoiding a negative command.

Most children are eager to go to school and enjoy the time spent there. They welcome the chance to learn new things, especially if they have been encouraged at home to do things for themselves. A child's sense of security is all-important; school and parents can help to maintain it by keeping in step with each other about matters which concern his welfare. Teachers must be careful not to do anything which might cause any conflict of loyalties between school and home, and of course no child should ever be allowed to hear criticism of his parents or home.

Play is of course essential from a very early stage of childhood; as children grow up, work gradually takes the place of a great deal of the play, but for a full and happy life both are necessary. Opportunity and space for children to engage in noisy active play must be found; space is very important for them, though they also need cubby holes and nooks and corners to which they can retire occasionally, and provision for these should not be forgotten. Children need long periods of free play as well as organised activities; during free play it can be observed how very great are the differences in the rate and direction of their individual development. The varied activities of very young children, so incessant and often so aimless to the adult eye, should not be needlessly hindered. This is particularly so of the ceaseless movement and physical activity of young school children, especially boys.

So many adults fail to appreciate how important apparently simple things may be to children. If only those in charge of children would keep fresh in their minds the days of their own childhood, they might be less quick to prevent some childish activity merely because its meaning and interest are not obvious to them. It is true that much of the behaviour and actions of a young child may be disturbing to the adult (though perfectly normal for the child's development); but this does not justify describing such behaviour or actions as abnormal or bad. In fact there is little that a healthy energetic child does that is bad, in the sense that it calls for correction or is worth a scene. If there are any difficulties, it is better to give a simple explanation of what is wrong than to tell a child in general terms that he is naughty or bad.

No attempt should be made to force on a child standards which are too mature for his age and stage of development; children are keen to learn and quick to imitate the behaviour and actions of adults. It has already been suggested more than once in the course of this pamphlet that, if adults set high standards for themselves, their example will do more than anything else to educate a child. Thus

courtesy and good manners between adults, and between them and the children, will in the long run always have their effect; in the same way a child will be truthful if parents and teachers have deep respect for truth; promises must never be broken nor made if they cannot be kept.

Adults must also take seriously the innumerable and varied questions which a child asks, and truthful answers suitable to his understanding should invariably be given. Every child is a personality whose likes and dislikes, hopes and fears, and general outlook should be acknowledged and respected. It may often be better to deal with a child as if he were emotionally older than he is than to treat him in too babyish a fashion; the point is particularly relevant when dealing with older children. As a child grows, he should be encouraged to become increasingly independent and to accept responsibilities suitable to his age. Children generally like to be helpful and only practice can make their hands confident and steady; any jobs that they do should be adjusted to their age and capacity. Even though the adult may be able to do the job better and quicker, a child has to learn and his initiative should not be curtailed. The successful accomplishment of a piece of work, for instance, will give him great satisfaction. The teacher should applaud a child's successes for such recognition gives a powerful reinforcement to learning and relationships. Appreciation and thanks should also be accorded where they are due, just as they would be between one adult and another. Some children feel insecure when they constantly experience frustration, or failure to achieve what might reasonably be expected of them; these may be overcome or at least alleviated by encouragement and acknowledgement of effort.

The sanctity of childish collections and possessions must be respected; possessions need a home of their own, to which the child alone has access. A place can always be found for a treasure-drawer or bag for the sole use of the child.

It follows from all that has been said that, in the interests of the children's mental health, the teachers in a school should be conscious of one overriding aim: to create in their school the kind of environment and the kind of relationships which are known to be most conducive to normal emotional development of children, however varied their personalities. Without normal emotional development physical and intellectual development may also suffer. Thoughts, actions and even bodily functions may be affected by emotional disturbance.

The Need for Referral

Once a wider knowledge of the normal child has been acquired any deviations from the normal will be more accurately assessed.

Initially, only the more gross manifestations of disturbance of mental health may be easily recognised. Later, with increasing understanding of children, the less obvious ones may be identified; while later still, in the fullness of experience, the subtler indications of trouble may be suspected. These changes in behaviour require immediate attention, and the earlier they are noticed the better are the chances of modifying underlying causes. For it must be evident that unless maladjustment receives enlightened attention early it tends to increase, becoming deep-rooted and perhaps incapable of reversal even under skilled treatment. Certainly, many children who now have to be given prolonged treatment in a clinic or hospital might not have needed this if only their difficulties had been recognised in time.

In this respect the teacher's role is often crucial. However wise he may be and however willing to learn, he is not himself an expert in mental health. He must turn to others for help and guidance, both in considering what should be his own attitude to and management of a particular child who may be causing him considerable concern, and in obtaining the proper investigation and treatment of the child.

The noisy, boisterous or aggressive child is readily noticed and seldom neglected; but the shy, retiring child, so silent and good, is apt to be overlooked, even though he may be insecure, unhappy, and in need of remedial treatment. It is not natural for any child to be always very 'good' or very quiet; if he is either, then the teacher should consider whether there is any underlying trouble which might be making him unduly passive. Occasionally failure may be due to defective vision or hearing which has passed unnoticed, or to innate dullness or the efforts of parents or teachers to drive the child beyond his capacity. In any case, evidence that a child is not doing as well as might have been expected of him should be taken as a sign that some skilled investigation is called for.

Sources Available for Help

Within the schools there are two main sources of help. First, there is the School Psychological Service. An educational psychologist is one of the specialists in the field of child guidance, being an expert in the psychology of both the normal and its deviations. He should be in the closest touch with the teachers and their schools as a result of frequent visits, which should enable him to give first-hand advice on the spot, learning from teachers of their difficulties with individual children and investigating any cases in special need of help. The maladjustment of so many children is closely involved with educational difficulties or misfits, and the psychologist, with his expert knowledge, can often bring about 'a readjustment'; he is also able to select those children who should be sent to other experts. This

intimate personal contact with the schools is essential if preventive work is to flourish.

Second, the school health service can offer a great deal. An experienced school medical officer will have much knowledge and experience of the normal child and his development. He is able to recognise any deviation from the normal, and to give advice to parents and other interested persons. He will also be able to distinguish those children who need referral to a specialist for further investigation and treatment. Teachers may ask advice from him when he visits the schools or they can send a child to the school clinic for an examination, seeking an opinion about the next step to be taken. The school nurse, too, in her more frequent visits to the schools, can give advice within her capacity.

Outside the schools, but very closely associated with them through the psychologist and the school medical officer, is the Child Guidance Clinic. Here children with emotional disturbance can be referred for a full investigation and the initiation of treatment by the team of skilled workers, which also includes a psychiatrist and a psychiatric social worker. Reference to the clinic can be made through the educational psychologist or through the school medical officer, or in special circumstances, direct by head teachers. Parents, too, have the right to make a personal approach to the clinic, if they wish to do so.

The Team as a Whole

Parents, teachers, psychologist and medical personnel must work closely together if good mental health in children is to be achieved. Every teacher must see himself as belonging to this team, whose aim includes the promotion and maintenance of a healthy emotional state in every child. Each member of this team has an important part to play; however large or small his part, each helps to make the work of the team more effective and complete. A psychologist may not be available where an authority has no school psychological service but every school is visited by a school doctor and school nurse. The modifications to periodic medical examinations that are being introduced enable the doctors and nurses to visit their schools more frequently. This increases the opportunities for personal contact with the teachers and results in greater mutual understanding from which the children ultimately benefit. If, under these circumstances, the liaison is slight or non-existent the adults concerned need to look to their own relationships.

Drugs, Alcohol and Tobacco

A drug has been defined as 'any substance or mixture of substances destined for administration to man for use in the diagnosis, treatment, investigation or prevention of disease, or for the modification of physiological function'.⁴⁴ The source may be from nature (plant or animal) or from chemical manufacture. A drug may act on the body, usually affecting its function, but sometimes its structure as well. Other drugs act on organisms infecting the body, or on parasites. The action of a drug is seldom simple, and is related to the dose employed and may vary to some extent from one individual to another. Thus two tablets of a barbiturate may induce a good night's sleep, thirty tablets may kill and, in certain people, even one tablet can cause an alarming skin rash. It is for this kind of reason that the supply of many drugs is regulated by law. They can then only be obtained on prescription from a qualified doctor.

There is no doubt that the development and provision of so many powerful new drugs, particularly in the last fifty years, has greatly improved medical treatment. Tuberculosis which was until fairly recently 'The captain of the men of death', now kills barely one-twentieth of the numbers of twenty years ago; this improvement is largely due to modern drug treatment. Infections like pneumonia and typhoid fever, can now be controlled to a considerable extent by antibiotics. Diabetes can be treated successfully with insulin, and for many epileptics, fits can be controlled by anticonvulsant drugs. Even the progress of some cancers can be held in check for a time.

However, for medical treatment with drugs to be effective, certain rules must be observed. In the first place, a diagnosis must be made. There are many causes, for instance, of abdominal pain. The appropriate drug for one of the conditions causing abdominal pain, could well be lethal for another condition, or could so obscure the issue that the cause of the trouble could not be determined and could therefore not be treated. Thus, drugs should not be given until the cause of an illness has been diagnosed. This is one of the reasons why self medication is often unwise. When the diagnosis is known,

⁴⁴ Committee on the Safety of Drugs. UK Departments of Health, 1964.

the appropriate drug can be selected and given in the correct dosage. Thereafter, the patient's progress must be supervised especially so that a watch can be kept for any untoward reactions. Clearly the uninformed and indiscriminate use of drugs can be very dangerous, and it is important to recognise the fact that doctors only use drugs in the prevention or treatment of disease and for the purpose of restoring patients to health. There is no justification for believing that drugs can improve the ability and performance of someone who is already fit. Self medication and the taking of vitamins should not be encouraged. Teachers can help their pupils much more by helping them to understand and follow the rules of good health.

Among the drugs which may be prescribed by doctors are those which alter the state of mind. The hypnotics, such as the barbiturates, are intended to promote sleep in those suffering from insomnia. The analgesics, such as aspirin, or in severe cases morphine and pethidine, relieve pain. In addition to these effects, the morphine group and the hypnotics give rise to a dreamy state of mind and a relaxed attitude which contributes to the relief of anxiety.

More recently other psychotropic drugs (drugs that affect the mental state), have been introduced. These include the tranquilizers which have proved of great value in the management of various mental disorders, among them schizophrenia. Schizophrenia is popularly known as split personality. It used to be almost impossible to help patients suffering from it and many had to spend very long periods of their lives in mental institutions. The stimulants, among which are the amphetamines, exert a stimulating effect on the mind. The antidepressants lift the mood of depression. Both these can help people who are chronically and excessively miserable. Finally there are the hallucinogens, of which lysergide (L.S.D.) is the best known. They have been said by a few psychiatrists to have a possible use in treating certain otherwise intractable psychological disorders. But there are real dangers which make it essential that they are only used under strict medical control, if at all. One feature of medication with psychotropic drugs is that, as the underlying mental condition so frequently persists, the drug taken for its alleviation may have to be taken almost indefinitely. Patients feel that they dare not relinquish this form of support. They have become dependent on the drug, but this state of affairs is medically induced and controlled and, because the patients are overall better for it, it is accepted.

For patients who are subject to mental illness the prolonged administration of certain drugs under medical guidance is often advantageous. There are nevertheless people who take drugs which have not been prescribed for them. Some of these people take drugs in an attempt to solve their problems, to give themselves self confidence

or to help them face up to the realities of life. Others may do so because they feel the need to revolt against teachers and parents and the established order of society. It might be said that all these people have emotional problems and that with drugs they can create a new, more tolerable but false world. If in fact the drugs did no more than make good the existing deficiencies in their personalities, their drug abuse may almost be a form of therapy. However, a new and more dangerous situation is developing in which it appears that drug taking has become an accepted practice among certain groups of normal young people. Drug abuse has many dangers. In most instances, there are undesirable side-effects and with use, tolerance may ensue and dependence develop. Tolerance is a state in which a person has to take increasing doses of a drug in order to obtain the effect originally produced by a smaller dose. Dependence is characterised by an overpowering desire or need to continue taking the drug and to obtain it by any means, a tendency to increase the dose and a psychological and sometimes a physical dependence on the effect of the drug. People who have become 'hooked' in this way are afraid to face the world without drugs. At the same time they become progressively less useful members of society, and frequently their personalities deteriorate.

Accurate statistics about non-therapeutic drug taking are not

Ages of 'under 20' heroin addicts known to Home Office

	14	15	16	17	18	19	Total
1960	—	—	—	—	—	1	1
1961	—	—	—	—	1	1	2
1962	—	—	1	—	—	2	3
1963	—	—	2	2	2	11	17
1964	1	—	1	8	11	19	40
1965	—	8	5	19	42	71	145
1966	1	17	26	68	111	106	329

available since the practice is largely illicit and unreported. During the fifteen years following the end of the Second World War, there

were at any one time, about four to five hundred addicts to narcotics (chiefly morphine and heroin) known to the Home Office. Most were middle aged or elderly many of whom had been started on drugs by their doctors for some painful illness. Some were in professions that gave them access to drugs. Though hardly valuable members of society, they at least did nothing to attract other people to their habit and normally made no contribution to crime. Almost suddenly, about 1960, the figures began to rise and have done so ever since and with an accelerating trend. Today there are well over one thousand three hundred heroin addicts. What is particularly disturbing about these findings is that there are many much younger drug takers. Of these narcotics addicts, some are under twenty and some no more than fourteen or fifteen years of age.

Alarming though this situation appears to be, it is only part of the problem. There are probably many heroin addicts who are not known to the Home Office. And in addition there are many people using other psychotropic drugs. No-one can be sure of the extent of this habit. Part of it represents the misuse of sedatives obtained on prescription and partly misuse of amphetamines which have been illicitly obtained. Inspired guessing as to the extent of this practice, is all that can be done.

Dr. T. Bewley, 1966 *Bulletin on Narcotics*, suggests that between 100 and 200 persons per thousand of the population are to some extent dependent on drugs. Dr. Bewley believes that about the same number may be taking psychotropic drugs not prescribed for them by their doctors.

Misuse of drugs is a group activity among some young people. The fact that a number of pop musicians are believed to use drugs has added glamour and acceptability to the practice. Drug abuse seems to have developed as a local cult and mainly in urban areas but there is real danger of a wider spread.

The principal drugs likely to be involved, however, are those having too powerful an effect on the mind and mood and these may be summarised as follows:

Narcotic Analgesics. This group includes opium, morphine which is extracted from opium, heroin (which is diamorphine and made from morphine), pethidine and methadone. Heroin is the most commonly abused today and it is often called 'H', the 'hard stuff' and 'horse'. The narcotics relieve severe pain and are indispensable medically, for this purpose. They also create a feeling of euphoria and it is this that the heroin abuser seeks. But repeated use rapidly leads to tolerance and dependence, especially when the drug is taken by intravenous injection ('main lining'). The dependence is very strong and the addict deprived of his drug suffers fearful physical

agonies. The heroin addict soon finds that his life is concentrated on his drug taking and on obtaining supplies. There are numerous physical hazards in taking heroin and the heroin addict ('junkie') degenerates both mentally and physically. The average age of death of a young heroin addict is the mid-thirties. By international agreement, nearly every country in the world imposes rigid restrictions over the production, distribution, export, import, sale, supply and administration of drugs scheduled in this category. In Britain, the Dangerous Drugs Act, 1967, is the relevant statute. Doctors are granted a special privilege to obtain and use these substances, in so far as they are needed for the practice of their profession.

Cocaine. Cocaine is a stimulant. It gives a sense of well being, excitement, inhibitions are shed, muscle strength seems enhanced. This state of mind is gradually superseded by false impressions of persecution (paranoia), in which the subject may become violent. Misuse is most commonly of intravenous injection of cocaine and heroin ('speedball'), though it may be taken as snuff. Today cocaine has little medical use, though it is occasionally used in local anaesthesia. Like morphine and heroin, cocaine is also subject to the provisions of the Dangerous Drugs Act.

Cannabis. Cannabis is known by a wide variety of names including marijuana, hemp, hashish, bhang, gauga, weed, pot and tea. It has no medical use in Britain today. It is usually smoked, when it produces changes in mood and perception and gives a feeling of irresponsibility. Hallucinations occur. The effects of hashish vary very much according to the individual and his surroundings. Repeated indulgence is said by some not to lead to tolerance and true dependence, but those countries which have suffered from its misuse for centuries would certainly not accept this. Cannabis is controlled as a dangerous drug, and can only be obtained illicitly. Its use may draw the taker into group activities which open possibilities of access to illicit supplies of far more damaging drugs.

The amphetamines. These are synthetic drugs which are prescribed medically as appetite suppressants for people who want to lose weight, and to lift the mood of depressed people, and for a few other conditions. They give a sense of self confident well-being and excitement. They produce insomnia and it is for this effect that young people sometimes take them for all-night parties. These feelings may progress to tremors, truculence, aggression and even violence (the 'horrors'). Repeated usage leads to tolerance and dependence and even to a serious paranoid state called amphetamine psychosis. Most amphetamines are taken as tablets or capsules ('dexies', 'black bombers' etc.). Methedrine is an amphetamine which has been used in the treatment of psychiatric patients. Recently it has been abused

by drug takers as an alternative to heroin, when it is taken intravenously. In spite of their dangers, the amphetamines are not subject to rigid control as Dangerous Drugs under the 1967 Act but, under the Drugs (Prevention of Misuse) Act, 1964, they can be supplied and administered only on the authority of a registered medical practitioner (or a registered dentist or veterinarian).

Psychomimetics, e.g. Lysergide (L.S.D.). This substance is notable for its activity in minute doses, and for its fantastic effect on the mind. The subject experiences violent alterations in perception; time, colour, smell and sound become mixed and transposed. Rationalising by ordinary standards is abandoned. The overall effect may be acute mental breakdown and extremely frightening. Death due to overdose has not been reported in man. But unreasonable and highly dangerous acts may be committed while under the influence of the drug. For instance the subject may attempt to stop a train going at high speed or to fly from a high window and deaths are believed to have occurred in consequence. There is also a danger of psychosis (a particularly severe type of mental illness). There is some evidence to suggest that L.S.D. may possibly effect unborn babies and cause deformity. At the present time, the medical use of lysergide is confined to a few specialist psychiatrists and its place in medical practice has not yet been determined. Repeated taking of L.S.D. rapidly leads to tolerance, but on discontinuing it the tolerance soon disappears. True dependence is said not to arise. A devotion to L.S.D. may be cultivated by groups of people, in which it serves as a means for generating fantasies and pseudo-religious experiences.

Solvents, etc. Dependence can arise from almost any drug as well as from repeated exposure to substances having no use in medicine and which may be extremely toxic. Petrol fumes, glue solvent, industrial solvents and methylated spirits may be used. The chief dangers of these substances are that they may damage the kidney, liver and nervous system.

Many teachers will be aware that young people themselves are becoming very concerned about drug taking. Both teachers and young people may even know of or suspect incidents of drug taking among members of the school. Teachers may feel that it is their responsibility to identify and help such young people. A letter from the Principal Medical Officer of the Department of Education and Science to Principal School Medical Officers, dated 25th July 1967, said, 'As regards the identification of children taking drugs, it is well known that the diagnosis of drug dependence is extremely difficult and that in the early stages of the condition, there are no specific signs or symptoms whereby it may be recognised with certainty. Whilst it may manifestly affect a child's behaviour in a variety of

ways, such behaviour may equally be due to other causes than the taking of drugs. In so far as the incentive to experiment with drugs is primarily social in origin, though it may ultimately lead to a situation calling for medical, including psychiatric help, the early detection of drug dependence lies in the early recognition of a measure of maladjustment that warrants investigation. For this reason it is especially important that those who are in daily contact with young people, and particularly teachers, should be alert to behaviour clearly uncharacteristic of the child or to a developing pattern of behaviour likely to interfere with his educational progress and social development. Furthermore it is essential that they should be fully appraised of the need to seek medical advice regarding children showing such behaviour. This advice should be available from school doctors, to whom head teachers (acting also for class teachers) should turn in the first place'. Teachers will also wish to give pupils the kind of help which might prevent drug taking. While objective, scientific information about the dangers of drug taking may protect pupils, the subject should not be handled in such a way as to lend unnecessary glamour or to encourage its concealment. Thus drug taking should be discussed in its proper context as an aspect of health education, the proper use of medicaments and the solving of social problems.

The use of both *tobacco and alcohol* is socially accepted in this country but as both can be dangerous to health, they are subject to limited control by law. They may not be sold to children and both are heavily taxed.

Young people may begin to drink and smoke at the stage when they wish to appear grown up, and problems may occur. Here the example, advice and general attitude of the teacher or youth leader may be of value. Today's social patterns operate against the person who tries to live without alcohol and tobacco and a recent survey has shown that social pressure is the greatest single factor in inducing young people to smoke.

Health education should attempt to inform young people about the risks of misuse, of both tobacco and alcohol and, even more important should try to impart attitudes which allow young people to make independent decisions and free them from the necessity of always following their social group.

Although the moderate consumption of alcohol gives pleasure and benefit to many people, alcohol can cause very serious problems. It is important for pupils to have knowledge which will enable them to avoid the dangers of drinking excessive amounts of alcohol and to obtain its benefit, should they wish to do so.

The misuse of alcohol presents a far greater social problem than

does the misuse of drugs. Alcoholism frequently causes deterioration of personality, family breakdown, loss of jobs, severe poverty and premature death. It is estimated that there are approximately 300,000 alcoholics in this country today, and the behaviour of people who are not alcoholics, but who are temporarily under the influence of drink causes many distressing problems and even tragedies.

Alcohol is not a stimulant, though its effect is to release high spirits and easy conversation. It is in fact a sedative and a depressant. It depresses the activity of the higher centres of the brain, whose function is to maintain self control, judgement and control over movement. Therefore, the moderate consumption of alcohol releases some inhibitions and thus can make social intercourse easier and more pleasant. But if the intake is increased, inhibitions are shed to such an extent that very foolish decisions may seem right and desirable. Thus people may lose control over their sexual behaviour or their tempers. Occasionally girls whose knowledge and experience of alcohol is inadequate, become drunk at parties and allow sexual intercourse to take place. When sober, they regret their behaviour bitterly. Similarly, boys can lose control to such an extent that their aggressive instincts take command, and violence and fighting occurs.

The depression of control over movement and judgement, make precise activities such as driving a car difficult. But the driver feels that he is driving particularly well and is unaware of his poor co-ordination.

Experiments on human subjects have demonstrated this effect. Five trainee typists, all moderate users of alcohol, underwent a series of forty-four experiments. When given 20 grams of alcohol, (less than two glasses of beer) they averaged 29 per cent more errors. Many years ago a similar experiment on experienced bus drivers gave the same type of result.

Teaching about alcohol should, as with drugs, be put into its proper context, in order to avoid the "limelight" treatment as in the delivery of special lectures on the danger of alcohol and its improper use. It may be that "limelight" treatment could encourage experimentation among pupils as yet too young to partake.

Thus alcohol can be discussed as part of a health education programme. The school may also ensure that other teachers, such as those responsible for English literature and Religious Instruction find opportunities to advocate moderation and self discipline, by providing pupils with facts on which their judgement can operate and by appealing to their commonsense.

In recent years, evidence and proof about the dangers of cigarette smoking has accumulated. There can now be no possible doubt about the fact that it is a serious cause of ill health and premature death.

The report of the Royal College of Physicians, *Smoking and Health*, which appeared in March 1962, contains a careful examination of the evidence produced by research in a number of countries. The evidence that cigarette smoking is the principal cause of lung cancer, is conclusive. Eighty people a day die from this disease, far more than die on the roads.

Deaths from lung cancer could be prevented if people did not smoke. A smoker is 30 times more likely to die, between the ages of 35 and 60, than is a non smoker.

Many doctors were so impressed by this evidence that they have given up smoking. As a result the incidence of cancer of the lung among doctors is lower than in any other section of the population.

Smokers who give up smoking can decrease their likelihood of premature death due to cancer of the lung. Thus, it is never too late to stop smoking, but the longer a person has smoked, the more likely he is to get cancer and die from it.

An American report, published in 1967 called *Cigarette Smoking and Health Characteristics, a Public Health Service Review*, gives new evidence of the harm caused by cigarettes. The report discusses the relationship between smoking and death from coronary heart disease. The evidence strongly suggests that cigarette smoking is one of the causes of this disease. Smokers are more likely to die from it than are non smokers. More people die from this disease than from cancer of the lung.

This report also discusses evidence that smoking may cause other kinds of cancer, for instance of the mouth, gullet, voice box and so on.

It has been known for some time that people who smoked were more likely to get chronic bronchitis than are non smokers. Chronic bronchitis is a long, unpleasant and crippling illness for which little can be done and which is very common in Great Britain.

The American Public Health Service report also studied the time smokers had to take off work due to illness, and it found that they were off for longer than were non smokers.

In all, it is now an obvious and inescapable fact that the smoker is risking his life and his health. But still people smoke and the problem of the health educator is to find ways of stopping children from smoking and helping them not to start. One of the reasons why this is so difficult is that smoking is still a socially acceptable habit, and one which tobacco companies strive to encourage by advertisement.

A recent report carried out for the Ministry of Health, *Adults' and Adolescents' Smoking Habits and Attitudes* by A. C. McKennall and R. K. Thomas, points out that school smoking policy and health

education have had little effect on young people. It is well known that prohibition is rarely effective. But this does not mean that the school cannot help. It is possible that in the past teaching techniques have been inappropriate and sporadic smoking health education ineffective against the constant pressure of public opinion and advertising. Nevertheless it is encouraging to know that the incidence of smoking among adolescents has decreased in recent years.

The Ministry of Health report is interesting in that it makes suggestions, which, because they are based on scientific information about young peoples attitudes, could make teaching more effective.

Smoking certainly produces dependency of a psychic and social kind, in many people. Thus it is much more difficult to give up the habit than it is to refrain from starting it. The most fruitful line of attack is therefore in dissuading the young from starting, and this should be done as part of a health education program.

The Ministry of Health report found that the fact that smoking causes cancer of the lung is now common knowledge. But people do not act on this knowledge, because of their attitudes towards it. These attitudes are a form of self defence: only between a quarter and a third of adolescent smokers felt that cancer of the lung was a risk for them, and a far smaller proportion of adults felt this. Adolescents produced various arguments: "I don't smoke enough"; "I am healthy, others are not". Attempts to launch an attack on these resistances produced a boomerang effect—that is, even greater resistance. In short, the hard sell defeats its own object. But, as a point of information, children should know of the relation between smoking and lung cancer, though this point should not be used to frighten them. Fear does not usually deter people.

Smokers appear to be much more influenced by the minor health effects of the habit. These are important for a near majority of adolescent smokers and can be used in health teaching to indicate that smoking does affect the body. The minor health effects (cough, sore throat), can be produced as tangible evidence of the power of tobacco to harm the body.

Monetary considerations are the most frequent single reason for wishing to give up smoking, though adolescents are slightly less impressed by this than are adults. Nevertheless, this is a point worth making with children and young people, particularly those who have not yet started to smoke.

Many adolescents say that they wanted to stop smoking as a test of will power. They want to know that they are not slaves to a habit. Thus it is useful to discuss the self confidence produced by knowing self control to be possible.

This report also investigated factors which started people smoking.

The wish to conform, that is the social pressures provided by the group, was a potent factor. And social pressure is the commonest reason why ex smokers resume smoking. If smoking could be made to seem unfashionable, fewer people would do it*. With children and young people, example was also very important, particularly that of the parents. Parents exert a significant and lasting effect on the smoking habits of their children. But the example and precept of teachers is none the less important. No teacher should be seen smoking cigarettes by pupils.

* Useful aids to teaching in the form of posters etc. are available from the Ministry of Health Information Department, and the films *The Smoking Machine* and *Smoking and You*, from the Central Film Library, on free loan.

Accidents

With the increasing complexity and pace of modern life, accidents have become responsible for an increasing proportion of the losses sustained by the community in sickness and death. How far can the educational process help to reduce the accident rate, beginning with the home, the school and the streets? And what can be done for children? Accidents of all kinds are now running almost level with all the infections and respiratory diseases put together as a main cause of death among school children and they cause permanent deformity to many more: thus in 1964 accidents were responsible for 37.7 per cent of deaths among young people aged 1 to 19 years and for 3.6 per cent under 1 year; 43 per cent of all deaths among boys aged between 5 and 14 were due to accidents and no less than 39 per cent between 15 and 19, the corresponding figures for girls were lower at 28 and 27 per cent. The schools are playing their part in a continuous effort to cut down such figures; in this way they are helping both the children themselves, the adults so often involved in accidents caused by children and in their long-term consequences, and also, in due course, the next generation when today's children grow up and take with them something of what they have learned. But we have not yet reached the limit of what can be done; those who have done most to cut down accidents will be the most aware of all that still needs doing, in the schools and elsewhere.

Most accidents involve an element of bad luck, to which excessive importance may be attached. Occasionally this seems quite unavoidable, as when insurance companies speak of an 'Act of God'; in this category one would place accidents caused by earthquake or tornado, though even here carefulness may have its place. There are accidents which happen almost entirely through understandable failure of the human element, as when two children run into each other while playing. But as a rule each accident seems to involve first human carelessness and second some unfortunate circumstance which often seems pure bad luck: thus, to take some examples, the driver 'took a chance' but he did not know that the road was blocked; the mother should never have left either her young child alone in the kitchen or the milk on too high a gas, but it was bad luck that the milk boiled over when it did; the door should not have been left open, but the

gust that made it slam was quite unexpected. In most cases of this kind the human agent has taken far too great a risk; he might have known it at the back of his mind, like many a driver, or he might not, because of settled habit—which is the ultimate cause of many accidents in the home. Most of these accidents need never have happened; it was not possible to control circumstance (the road over the hill, the precise moment that the milk boiled over, the unexpected gust of wind) but in each case the human being could with a little common sense have coped properly with his side of the matter; in each case momentary human weakness usually turns out to be the consequence of long-standing habits.

It is here that the educational process can make its greatest contribution, in helping boys and girls or men and women to be responsible and careful to begin with. Admittedly, it also has an important contribution to make in respect of knowledge and technique: an expert swimmer has a better chance of reaching safety, whatever the cause of his being in danger, and good driving technique has saved many a driver from a dangerous situation of his own making. But more important still, education can do much to make the individual more responsible and careful at the outset; such a task is certainly concerned with techniques, but it goes far beyond them and must also take into account the whole approach and attitude of a person. The time to begin it is in childhood, while habits of mind are still forming; both home and school must play their part.

Accidents at Home

'The average individual has not only to learn how to prevent accidents in his home; he must first be convinced that the various dangers exist.' It is seldom realised that more deaths are caused by accidents at home than by accidents on the roads; between 1960 and 1965 the ratio between them was roughly 6 : 5. Most of the victims of accidents at home are children and old people, about an eighth of them being under 15 and almost two-thirds over 65. Both of these groups are at greater risk than children of a more responsible age and adults in the prime of life. By far the greatest number of accidental deaths in the home are caused by falls (53 per cent in 1964), which are followed by coal gas poisoning (12 per cent), burns and scalds (10 per cent) and suffocation (10 per cent). Nearly 90 per cent of the falls, over two-thirds of the coal gas poisonings and well over half the burns and scalds involve old people over 65; nearly 75 per cent of the cases of suffocation (often due to babies turning over on a down pillow) and 15 per cent of the burns and scalds happen to children under 5. The commonest causes of death through accidents at home to children under 15 are suffocation, burning and scalding

and falls. In one recent investigation of 1,639 cases of burning, 70 per cent of the victims were children under 15 and more than 80 per cent of the deaths were due to injuries caused by ignited clothing; most of the non-fatal cases required long periods of hospital treatment. Burns and scalds could be greatly reduced if fireguards were universally used, if inflammable materials were not used in clothing, and if children could be protected from electric fires, kettles, irons and teapots. Falls would be fewer if householders were more on their guard against trailing flexes, frayed or torn carpets and poor lighting on staircases and landings; the figures here vary seasonally in a way which suggests that many staircases are not properly lit by artificial light.

When accidents happen, our first instinct is to blame their immediate instrument, the unprotected wire, the rickety ladder, the offending saucepan. That is in keeping with primitive instinct; throughout the middle ages and indeed until 1846 personal chattels which were the immediate occasion of death were legally 'deodand', that is to say, they were forfeited to the Crown and any money obtained for them was applied to pious uses. But, of course, the chattel is not really to blame; it has no mind and is at the mercy of unpredictable outward circumstances. What can be influenced is the mind of the human agent, as we have seen. Carefulness begins at home; it is for the parent to make quite sure that his home and all its equipment is properly kept and used. This involves a proper regard for individual items of equipment and a proper carefulness on the part of the user. School can help towards both; there should be many opportunities at school for specific instruction on such danger points in the home. In their home economics courses girls should learn to cook safely, to look after electrical equipment, to keep the house clean and in good repair, and to keep poisons, disinfectants and drugs in their proper places; particular attention is given in home economics colleges to the students' training in such matters. Boys, too, should be given equivalent safety training in any domestic work that they may do at school, in woodwork, metalwork, electricity or in other practical studies. But the underlying aim of all such instruction in technique goes beyond the immediate exercise; it should be to encourage the pupil to appreciate when care needs to be exercised and to be capable of taking the necessary precautions.

Accidents at School

The number of accidents at school is also higher than is often realised, but only a minority of these accidents occur during physical education lessons and very seldom through the use of climbing apparatus. As a rule, children are very carefully supervised while at

school, not least in the playground; but for this the figures would certainly be much higher. Yet accidents continue to happen which could be avoided and every effort must be made to keep down the accident rate in schools. It is true children are naturally high-spirited, and boys, in particular, tend to play games which involve a slight but definite degree of risk; a policy of eliminating every conceivable possibility of accident would involve so strict a regime as to defeat its own ends by weakening the pupils' sense of personal responsibility. Some accidents to children there will always be, but with vigilance and intelligent discipline it should be possible to keep the accident rate within reasonable limits. And all teachers should have had such training as will help them to render first aid in any accident that does happen in school.

Accidents on the Roads

The community is by now thoroughly aroused by the problem of accidents on the roads; the scale of the problem, particularly as it affects children, is frightening, though the figures suggest that the hard work put into teaching children the elements of road safety has had a real effect. It is true that nearly one third of all the children who die from road accidents are aged 5 or less, and therefore unlikely to have received much direct instruction at school; even so, the influence of school upon these children too must be considerable, though it comes at one remove through parents and older children. By the age of 6 the direct influence of school should have become evident, with good habits beginning to form. But carelessness in crossing the road, playing in the street, and the often all too careless use of scooters, toy cycles, bicycles and ultimately motorcycles all take heavy toll, quite apart from accidents for which the motorist is mainly to blame. For boys, road accidents represent the single most frequent cause of death between the ages of 5 and 19; the figures in 1964 were 21 per cent of all deaths between 5 and 14 and 50 per cent between 15 and 19, the corresponding figures for girls being 17 per cent and 27 per cent; thus children, particularly boys, become increasingly accident-prone as they grow older. Accidents affect all road users—pedestrians, cyclists, riders, drivers and passengers; in 1965 the casualty figures reached a daily average of 22 persons killed and 1,068 injured. Child deaths numbered 900, the highest total for 14 years, and 61,104 children were injured. Six out of ten of the casualties to children were pedestrians, and one in five were pedal cyclists. The number of children under 5 killed on the roads in 1965 was 291 and the number seriously injured was 3,112. In this age-group the number of fatalities has been kept fairly steady over recent years, but the number of serious injuries has shown an upward trend. With

children under 15 generally the casualty figures have been creeping upwards, reaching a new peak in 1965; but the level of child fatalities is still appreciably below the pre-war level. Child casualties averaged 170 per day throughout 1965, which is a grim enough fact in itself. But it is nevertheless possible to detect some signs of improving standards in the figures. For example, the increase in child casualties bears no relation to the rapid rise in the number of vehicles in use; a similar observation applies in the case of child pedestrians in particular. A most gratifying trend has been the considerable reduction in casualties to child cyclists; the figure has decreased steadily from 14,613 in 1959 to 11,935 in 1965. Here one can undoubtedly attribute a great deal to the National Cycling Proficiency Scheme, organised by The Royal Society for Prevention of Accidents. In 1965 nearly 195,000 children were trained and tested under the Scheme. The target is for 300,000 children to be trained annually, which would mean in effect that every child cyclist in Great Britain will attain the high standard of safe cycling which the Scheme promotes. The development of child safety education is gradually bringing about a situation whereby all citizens will have grown up acquiring a fundamental sense of road safety.

Any real reduction in road accidents must involve a number of factors, some of which, such as traffic density, weather conditions or the ability of the highway system to cope with the traffic, have little direct reference to education. But there are also very many accidents that education can help to reduce. Some factors such as the driving technique and general carefulness of the average driver are amenable to the forms of educational work that can be applied to adults; the new Highway Code, like its predecessor, represents a major effort in this field. There remains all that the schools can do in conjunction with parents in particular, and also other adults in setting a good example and in training boys and girls in proper road habits so that they acquire 'road sense'. Admittedly this cannot come at once and its strength varies with different children. Yet much can be done to develop it throughout school life. Thus children should be taught kerb drill as soon as they come to school, and there are many games to help them. Police officers will sometimes be willing to give periodical talks in schools and assist in the inspection of bicycles used by children cycling to and from school. In such ways children can also discover for themselves that the policeman is a friend. Local authorities now appoint school crossing patrols to look after the children at the beginning and end of school hours, where traffic conditions make this necessary; both the local authorities and the voluntary societies concerned with the prevention of accidents will always help with advice and sometimes with direct assistance, as in

arranging tests of cycling skill. But nothing is so likely to be effective as the patient daily effort of the school; the rest can add to the value of the school's own work but never take its place. Here again the ultimate aim should be a positive carefulness which combines good technique with the right attitude of mind.

In the schools' work for road safety, as in other branches of accident prevention, help from outside in the form of lectures or demonstrations may be really valuable, yet it cannot take the place of what goes on from day to day or month to month at school. Serious as all the child casualty figures are, they would be much worse but for the devoted attention which teachers have already given to prevention. A continuing contribution from the schools, supplemented by occasional contributions from outside, will have great effect over a period of years. It does not matter if some of the detail learned at school is forgotten later; here, too, carefulness and consideration for others have a better chance if they begin early. And the work of the schools probably does more than is realised in keeping down the number of those people who appear to be so particularly accident-prone that even their choice of jobs has sometimes to be limited; too often such people never learned to be careful at the beginning.

Carefulness

Much has been said about carefulness in this chapter. As a virtue, carefulness is sometimes taken more lightly than it deserves. Yet it is anything but a negative virtue; for example, as any old soldier will agree, carefulness is not an enemy of courage but rather an invaluable ally. At no point does real carefulness ever consist of merely 'taking care'; it embraces consideration for others such as is shown by mountaineers roped together on a difficult pitch or, less dramatic but also important, the considerateness with which a responsible person will avoid leaving bottles or empty tins lying about where they might hurt other people (to say nothing of spoiling the landscape). It also involves good technique and craftsmanship; one need only watch a really good driver or an expert craftsman to realise that first rate technique includes and embodies the finest safety training of all. Every cyclist should realise that to ride safely and skilfully on the roads is as much a craft as mountaineering or riding on horseback. And every school should give its pupils at least something of the craftsman's understanding of the material in which he is working and his regard for the tools which he uses. Girls should take pride in carrying out their domestic tasks quickly and with the right technique, so that they never become flustered or careless. Boys should learn to use tools skilfully and carefully, cleaning them and putting

them away properly after use. A cyclist should look after his bicycle with as much loving attention as a cricketer of any quality gives to his bat, or a mountaineer to the rope on which his life may depend. In the practical science lessons every pupil should be taught as a matter of course to take care with bunsen flames, to look out for such things as the danger from invisible steam, and to handle chemicals, apparatus and electrical equipment cleanly and competently. So too, later on in technical colleges or in other similar places the need for safe and helpful methods of working will still need bringing out at every stage. The carefulness and good craftsmanship which they have learned will serve all these pupils well at school or college, at home, on the roads, and later on in their work; if they enter industry they will realise more quickly the close connection between skill and safe working.⁴⁵ However many regulations and protective devices there may be in a factory to safeguard the individual, he will still be responsible for his own safety and that of others. Throughout life, carefulness, consideration for others and good craftsmanship represent different aspects of the same virtue. To cultivate them at home and at school should be not merely the best form of accident prevention, but also part of a good general education.

First Aid and Life-saving

When, for whatever reason, accidents do happen, a knowledge of elementary first aid may make the difference between life and death. Certain simple forms of first aid should be within the grasp of every boy and girl of secondary school age. But in considering what to include in a first aid course there are always two questions to ask; does the staff include anyone with real knowledge and experience of the subject? And is there a risk of inadequate first aid doing more harm than good? Children should not be trained to undertake responsibilities in advance of their years; they must realise that first aid has two main aims:

- (1) to recognise whether a particular injury needs more than simple attention;
- (2) to render such immediate help as will prevent aggravation of an injury or deterioration in the state of an injured person.

In both there are limits, which must be recognised, beyond which elementary first aid cannot go. Of course school is not the only place in which children can learn first aid; many children while still at

⁴⁵ See also *Industrial Accident Prevention*, a Report of the Industrial Safety Sub-Committee of the National Joint Advisory Council (Her Majesty's Stationery Office) 1956, especially Chapter I, which gives figures showing the number of industrial accidents affecting young people under 18 each year, and Chapter 7 on 'Schools, Colleges and Universities, and Education in Industrial Safety'.

school become interested as members of voluntary organisations, and those who come to join a Civil Defence organisation will find it vital. One particularly important form of first aid is life-saving from drowning. As many older boys and girls as possible should be instructed in rescue and resuscitation; they have been practised with great success by innumerable schools and provide a valuable link with more theoretical work in biology. Here, too, faulty technique can be dangerous for both victim and rescuer; if life-saving is taught, it must be taught effectively and only when the essential proficiency in swimming has been reached. A sound training in swimming comes first.

The Teacher's Part

The teacher's part in helping children to avoid accidents includes an intelligent understanding of how accidents happen and can be prevented, particularly at home, at school, and on the street; it also presupposes a wide understanding both of how children learn in general terms and of what is really meant by responsibility. It includes a sense of craftsmanship and here, as in all else, teacher and student will not forget that children learn from personal example. Finally, as has already been suggested, every teacher should have a good working knowledge of simple first aid.

Health Education and Youth

Adolescence is a mixed state, in which childhood and adult life overlap, not always with ease. Many of the problems are much the same whether a boy or girl has left school or not: and in many respects the wage-earning adolescent is just like the school boy or school girl of like age; the needs of mind and spirit are the same, and the processes of learning are not essentially different. But for the young wage-earner school is over for ever; he is earning his living in a wider and insecure world, and this tends to give him an air of apparent maturity which his friends at school have still to achieve. He is also understandably suspicious of anything that smacks too obviously of his own childish past, however happy this may have been. Two of the symptoms of growing up met by every youth leader are the desire to smoke and the desire to have a drink in imitation of those who are already grown up. Young people must be helped to realise the dangers inherent in these desires, and the example of youth leaders and in fact of all adults is of the greatest importance. These topics are considered in more detail in Chapter 14.

With the new physical powers come many changes of mind and mood. Some of the changes are attractive; the body rejoices in its strength; boy and girl discover each other, and each wishes to be and look his best for the other's sake; some are conscious of new-found vocations. But adolescence is also the time of breaking voice, pimples and puppy fat; self-consciousness, insecurity, hesitation and loneliness are all at their worst over this period, and the instincts of sex are difficult to cope with. Young people at this stage meet a variety of standards of behaviour and thought, some of which are markedly different from anything which they have met so far. Rules which they have observed for years may be endangered. For example, new excitements or the claims of work or study are apt to encroach upon the time available for sleep. The principles on which sound dietary rules are based may be quickly forgotten. With irregular meals come irregular habits of elimination, and the new working conditions may make bodily cleanliness harder to maintain. Somehow rules learnt earlier must be brought to the adolescent's notice again; but the guidance must be unobtrusive, opportunities being tactfully sought, as when an interest develops in personal appearance or in physical

prowess or endurance or when a desire to appear mature can be associated with intelligent decisions about choice of food and indulgence in alcohol, drugs or tobacco, and the establishment of regular rhythms of exercise, rest, elimination and ablutions. Though most adolescent boys and girls realise their own insecurity and are very susceptible to the standards of those around them, it is often curiously difficult at this stage to turn to home for help, for home itself may seem a little cramped and lacking in privacy; apart from that, many parents find it hard to accept that their children are growing up. Increasing independence, curiosity and a taste for adventure inevitably tend to prejudice young people against any kind of restraint or advice which seems to them based on a timorous regard for the conventions. They would rather find out for themselves, and anyone who would help must respect this independence.

The opportunities for health education among young people seem to fall into three main groups, according to their sources. First comes everything which a young worker learns in the course of his employment that may have a bearing on his general education in matters of health. Under the Factory Acts careful provision is made for his welfare and many firms supplement the legal minimum in their own way; the actual job and the training needed for it may also be of real value from the point of view of accident prevention, hygiene or general physical development. But the knowledge and practice which are disseminated in this way are in practice very unevenly distributed; many of those who need help most do not get it.

Next comes all that can be provided through the young worker's further education. Although the county colleges envisaged in Sections 43-46 of the Education Act of 1944 have not come into being, the last seven years have seen a remarkable increase in the numbers of young workers released part-time for further education. The effect of the Industrial Training Act, 1964, will be to expand this provision rapidly, an expansion which already has the support of the Henniker-Heaton Report on Day-Release. Admittedly the vocational element predominates in most courses; in many of them however time is found for general studies in which young workers have an opportunity to discuss with their tutors problems of immediate concern to them including those of health, morals and conduct. Some useful suggestions are contained in the Department's Report: *General Studies in Technical Colleges* (HMSO 1962). Colleges commonly encourage Students' Unions, many of whose affiliated societies are concerned with various forms of physical recreation.

Many more young people at the present time are able to take courses in their spare time at evening institutes. Many institutes in the last decade have developed rapidly into centres for informal,

cultural and recreative activities for adults, and adolescents are usually in a minority. Many girls none the less are able to extend their understanding of home economics and elementary hygiene learned at school by attending classes in institutes where they work alongside adults. Classes in physical activities help young men and girls to develop their bodily control and to keep in good trim and, where conditions allow, to continue the good practices of changing and showering. The major contribution of the institutes, however, in the field of health education is to adults rather than to adolescents and more will be said of them in the next chapter.

The youth clubs and similar groups organised by local authorities and voluntary associations provide the third main groups of activities in this field. All regard social training as a main aim and an increasing stream of volunteers to train for this work is a welcome feature of recent years. Nearly two hundred men and women with experience of voluntary youth work proceed to full-time courses for professional youth leadership and over thirty Colleges of Education now include youth leadership as an option in their three-year courses for intending teachers; an increasing number of authorities appoint youth tutors or teacher-leaders to the staffs of secondary schools, to divide their time between youth work and teaching. Most leaders would regard training in healthy living in the widest sense as an important aspect of their duties. It frequently figures in a more direct way in club activities, as in courses in home nursing, first aid, home-making and camping.

If one takes account of all that is going on, the result is a varied and lively pattern of informal education with health education a strong ingredient. Club activities may include instructional courses; but their major contribution is made in helping individuals to see themselves in relation to the surrounding community, discovering for themselves what they can give in service to club and community and what there is to receive within a congenial group. Public recognition of the value of such experiences has led to an increasing flow of funds to provide purpose-built, attractive and hygienic premises and well-trained leaders to guide the work. Funds are also available to provide facilities for many and varied outdoor activities such as sailing, canoeing, rock-climbing, pot-holing, mobile camping, all of which have increased remarkably in popularity.

In such activities leaders find many opportunities to introduce discreetly good teaching in the principles of health, and schemes such as the Duke of Edinburgh's Award Scheme set standards for adventure courses in great variety. It is in work of this kind, as in all club activities, that a high code of behaviour can be set without priggishness and in a way which young people can accept as being in

line with their own ways of living and thinking. Such a code may be little discussed, but its workings can be seen in the respect with which members of the opposite sex are regarded, the attitude towards caretakers and cleaners, the courtesy shown to visitors, the consideration shown for people living in the immediate neighbourhood, and the care that is taken of the club premises.

As boys and girls become older and more interested in each other, they often become conscious of needing more information and advice in questions of etiquette, ethics, and general behaviour, particularly with members of the other sex, in general fitness and personal poise, in sexual problems and the problems involved in becoming a parent; one need only read the weekly column of advice in any journal much read by young women to see how greatly these questions agitate and often confuse the next generation. Boys are perhaps more reticent, but both sexes turn eagerly to all apparently reasonable sources of help. Some turn to their parents, some to a minister or priest, some to the doctor; often the circumstances of the moment may provide a potential counsellor. Yet many find it difficult to confide in older people; young people have always tended to react against the good intentions of an older generation and sometimes natural independence drives them to very dubious sources of advice. All those are fortunate who know an older and more experienced friend, who is still young enough to speak the same language, does not offer too much advice, and is none the less there when needed. Sometimes a young lecturer or tutor, sometimes a friend of the family, or a senior member of the youth group or some similar society, is in a position to give this kind of help. The contribution made by the best youth leaders is outstanding, and authorities are wisely providing them with training in individual and group counselling. Their training should give them knowledge of outside agencies they can turn to for expert help when they feel the need for it. Contributions from outsiders to club programmes designed to help members with problems of personal relationships are a growing feature of their activities.

Health Education and the Adult; The Parent as Partner

When one considers some features of modern society; the burden of ill-health, much of it the result of ignorance of basic principles of healthy living, the misuse of the National Health Service—over-use by some and the suffering which goes unrelieved because many others fail to consult their doctors or dentists or disregard or misinterpret their advice—the gullibility of many who when subjected to social pressures or to the subtle persuasive influences which have been called ‘admass’, make the unwise decisions to over-eat, to smoke or drink heavily or to experiment with drugs, one must conclude pessimistically that our education system sorely needs buttressing. There is much to set against such a gloomy view, however, more books are read and purchased than ever before, more informative articles—often on health topics—appear in the popular press, health programmes produced by the BBC and Independent Television have a large following. Critical assessment of advertisements and products—including many which make claims in the field of health—is finding a considerable following, and further education in various forms is available on a vastly increased scale for adults.

Health education for adults comes in many guises. Books, magazines, newspapers, films, sound or television broadcasting and various forms of advertisements all help to reach many who could not have been reached in any other way. Chapter 2 has dealt with the contribution of the National Health Service, which is increasingly orientated in the direction of preventive medicine. The doctor in general practice has an important role in health education when he can spare the time for this important work with his patients. Some practices organise special education sessions for those of their patients who care to attend. The doctor’s organisations, too, provide a highly valued service through their publications which are widely available at booksellers and in chemists’ shops. The local authorities through their Medical Officers of Health have a special responsibility to provide a health education service for the community and this has been reviewed recently by a Committee under the chairmanship of Lord Cohen. Its findings and comments have been embodied in a

report entitled *Health Education* (HMSO). For the purposes of this chapter it is only necessary to quote as follows from its recommendations:

'Health Education must do more than provide information. It must also seek to influence people to act on the advice and information given, and must seek to counteract pressures which are inimical to health.'

'High priority should continue to be given to the health education of mothers.'

The report stresses the need to educate the public on 'a truer understanding of cancer' on 'dental care', 'about suitable kinds of footwear', on 'mental illness' and 'the emotional needs of parents and children'. The special needs of immigrants are mentioned and the importance of health education 'to discourage over-eating and smoking, and to promote the habit of exercise and the healthy use of leisure at all ages; special attention should be paid to middle-aged men'.

The Government has accepted the Committee's advice which suggested the establishment of 'a strong Central Board which would promote a climate of opinion generally favourable to health education, develop "blanket" programmes of education on selected priority subjects', and which would, among other things, 'evaluate the result achieved by health education'.

The Committee's findings should give encouragement to all working in the field of adult education, whether they be voluntary workers in the various agencies which provide health education, health service workers, or those in the education service providing the wide range of courses available for adults.

Most evening institutes and colleges of further education now provide non-vocational courses in cookery and home economics, so supplementing and building on what the schools provide. Many more courses for those recently married are now available, as well as courses under such titles as 'Keep Fit', 'Deportment and Charm', or 'Education for Parenthood'. At least one organisation, the Royal Society for Health, awards a diploma for successful completion of a course which would come under the last of these headings. There is an increasing need to provide courses for those approaching retirement and seeking advice on how to adjust to the change; but in a few areas this is already being met. There can be little doubt that the demand will grow and will be met. The Cohen Committee's reference to the needs of middle-aged men has pin-pointed one gap which should be filled. Fortunately the opportunities for physical recreation at this stage in life are legion and there is a steady increase in the

numbers who take advantage of them. It would be unfortunate if the nation's attitude to health became too negative and education campaigns concentrated too much on prevention of illness rather than the enjoyment which comes from healthy living. One speaker, a heart specialist, at a conference for middle-aged executives, recently put it succinctly, saying: 'The dread of ill health is commoner in Britain than ill health itself'.

All effective education ultimately depends on the personal link between giver and receiver and much of the educational work carried out by the health services is of this personal kind. It includes not only all that is done to help the family, but also such advisory services as the different forms of after-care provision being developed by local health authorities and by hospitals and clinics; with the increase in the proportion of old people in the community, the efforts now being made at geriatric clinics and in other ways help them to keep active and physically fit for their age.

But there will always be certain points at which the educational process can be brought to bear with particular effect. For the adult perhaps the most important period of all begins when the young man and the young woman marry and in due course renew the family cycle with children of their own. The need for help at this stage is greater than at any other, if only because, as we have seen, there are such manifest limits to what can be done long beforehand at school; the time to learn in detail how to rear a family is when the family is actually beginning. It is because the family is so important, not only for the individuals concerned but also for the community as a whole, that so much provision is made out of the community's not unlimited resources for helping young parents.

The family should be considered against the normal background of marriage. Jane Austen expressed it with truth and elegance at the end of 'Northanger Abbey' (written in 1797 and 1798 and published in 1818):

'Henry and Catherine were married, the bells rang and everybody smiled To begin perfect happiness at the respective ages of twenty-six and eighteen, is to do pretty well.'

The relative importance of the many social factors which have influenced the age of marriage has varied much with time, place and social group. But whatever the age, any preparation or guidance for marriage must be personal and private. Some turn to their parents for information and advice, others consult the doctor, a clergyman or a trusted friend; voluntary bodies such as the organisations for marriage guidance have done much to improve the general level of advice and information available. In any case, information, however

important in its own right, is not enough in itself; most important of all will always be the personal devotion of husband and wife to each other. Before the children begin to come, husband and wife should as a rule have gone some way to work out between them that ultimate relationship which means so much for the new family, however much the children themselves may in time deepen their parents' understanding of each other.

It is against this background that the health services concerned with parents and young children are so particularly rewarding; at no other time is the adult so open to suggestions and help, since the parents have undertaken a formidable commitment and are likely to be glad of all the help that can be given. It is thanks in great measure to doctor, health visitor and midwife, to clinic and maternity ward, and to all sources of help available during a child's infancy that the parents today can hope to build up their family without losing sight of each other in the process, and that the mother, in particular, can hope to perform her heavy task without any longer becoming worn out before her time. Nor is there any real risk that the new agencies provided to help the parents may between them reduce the sense of parental responsibility. Some parents take their duties too lightly, just as others make a burden of them; both kind will be known to welfare workers and teachers. But most parents take their responsibilities seriously, though not to the point of priggishness; those people who have themselves wrestled with the day-to-day task of bringing up children are seldom under any illusion that outside agencies can take the parents' place. As for the experts, the whole trend of current thinking is in any case to emphasise and build up the family unit within the larger framework of society, not to replace it. Where a family is not functioning properly, it needs to be helped to do better and rehabilitation is often possible; institutions may be needed in case of complete breakdown, but they cannot take the family's place.

It is through the maternity and child welfare services that the mother can at every stage be given that detailed help in respect of child care which would have been premature at school, though any help and instruction given now will be all the better if based on a good school education.⁴⁶ It is still not always recognised how much the work of these services is adult education of the highest order, in which the learner can find out for herself under guidance what she needs to know and then be helped to put it into practice. For a mother's own instincts and personal stock of knowledge, however valuable, cannot tell her all that she ought to know about the child's feeding, washing, exercising, rest, growth, mental development and

⁴⁶ See Chapter 11.

general health, quite apart from her own welfare. And, as in other forms of education, a mother can be helped in developing her own general health sense in all that pertains to her family, so that she can deal intelligently with daily routine and also judge when outside advice is needed.

Apart from any visits to the mother's home by the health visitor, which will necessarily be limited in number, personal contact between the welfare services and the mother is maintained through the ante-natal clinic and the child welfare centre, both of which often provide, besides routine weighing and medical examination and advisory talks, group discussion (probably even more useful than talks) and a variety of material for visual education, particularly posters. As the same mothers meet each other week by week, a friendly atmosphere is likely to develop, and informal meetings of various kinds may result, with further opportunities for health education. The value of this work is very great indeed. With many immigrant women whose ways of life are different from our own and whose knowledge of matters of health is often limited, contacts at ante-natal and child welfare centres may provide the only opportunities for health education.

The role of the school health service is also important, for at this stage, given co-operation, much can be done not only for the child but also for the parent. At certain times the parents' presence and interest can make all the difference, particularly at medical inspections in school; children being examined for the first time are usually accompanied by a parent, but the number of parents attending subsequent inspections seem often to be much less, either because many older children prefer not to have their parents with them or because travelling distances to the secondary school are often greater. Yet the inspection misses a good deal of its value if the parent is not present to tell the doctor about her child and also, if necessary, to be advised by him; often the school nurse can help to link parent and doctor when the parent is not present, but she cannot convey everything.

It is becoming increasingly recognised that the school health service and the schools need the co-operation of the parent if the best is to be done for handicapped children. Parents often need advice on the proper handling of their children; sometimes too they are in doubt concerning their mental or physical development and should then seek medical advice without delay. This is particularly important if they suspect that the youngster is not hearing as well as he should, or if he is backward in walking or talking. So too with a maladjusted child or a child who is not making satisfactory progress in school; the teachers and the workers in the school health service, whose partner-

ship has already been considered in Chapter 2, can do much more between them if they know something of his home life and have secured the support of the parents; the difficulty may be due to such a simple and frequent cause as going to bed too late, or it may reflect something deeper such as overcrowding, irresponsible parents, or an unhappy or broken home. The aim should always be a three-cornered partnership between the school health service, the teacher and the parent.

Perhaps more could be done through organisations like Parent-Teacher Associations to educate parents and give them counsel when necessary. Their active participation is needed, of course, and their importance is universally recognised but there are times when they sorely need advice and they should know where to find it when they need it. The place of the school in the community is changing, and a changing pattern in the school health service, which is tending to strengthen the partnership of parent, teacher and school health service, will give the school a central role which should strengthen family and community life.

As parents turn more and more to schools for advice from professional people this should strengthen and not weaken their own confidence and initiative. Modern psychology tends to confirm that what the mother has done instinctively and naturally is often right. We have learnt this, for instance, in controversies about infant feeding. The expert's knowledge is unique and valuable, and so is the mother's; both are needed and the relation between the two should be one of mutual appreciation. Here (as in other fields of adult education) the relationship of monologue or unrelieved question and answer is not enough; so much, for example, can be discovered or settled at school or in the clinic, at medical inspections or on other occasions when the partners meet, if only the expert, whether health worker or teacher, knows how to elicit what the parents have to give. Only where father is feckless or mother wholly ineffective may it be necessary to speak straight out to the parents, though never in front of their children. Even then it is worth remembering that the mother may be worn down through malnutrition; where things go wrong she tends to be the first victim and a number of the mothers in the two lowest of the five social groups into which the Registrar General divides the population are undoubtedly suffering from nutritional anaemia, sometimes aggravated by lack of rest and continuing exhaustion. In the face of such difficulties some mothers do fail and need understanding as well as help. But far more parents deserve respect or admiration for what they have achieved; given respect, even routine contacts can often inspire that sense of active partnership which makes education come alive.

We see then that health education should last as long as life itself. Many agencies have a hand in it; but none is more powerful than a well-run school. The pattern of health education, like the pattern of the educational system itself, may change over the years; but public spirited people control by their ideas and initiatives what the role of the elements in that pattern shall be. Where they are active and are backed by sound and vigorous education and health services the general health of the community benefits enormously. Physical health contributes to mental and spiritual health; the strands cannot be separated, yet all three need the attention of men of good sense and good will. There is still scope for advance. Perhaps attitudes to mental health are making the greatest changes at present, and services for the care of the aged and their comfortable assimilation into the community give cause for greatest concern, but even here some areas are leading the way and others may be depended upon to follow. Progress of recent years reflects not only all the research and discovery that has been going on but also the good sense and willingness to learn of ordinary men and women.

The Training of Teachers

Any serious study of health education must take into consideration its role in the training of teachers. Students in training have their personal needs, and at colleges, as at schools, the health service for the students must be closely linked in partnership with the academic staff concerned with health education so that these personal needs are adequately met. The introduction to this pamphlet speaks of 'the teacher's special relationship with young people at school' and his 'unique opportunity of giving them training in matters of health'. The whole of the handbook (as well as Education Pamphlet 49: *Health in Education*) is therefore of interest to those in Colleges of Education who have a particular concern either to meet the personal needs of the student or to prepare him for his vital role in health education when he comes to have the care of children in a school. What should the student learn and why? What part has health education to play at this important point in the whole cycle? The answers to these questions must influence critically the programme provided at the College. Although they must obviously be sought in the text of earlier chapters a brief stocktaking will now be attempted. No special reference will be made to graduate students in university training departments; their needs in respect of health education are seldom different in kind.

The pattern of training reflects, yet differs from, the general pattern of health education in the schools; this, as we have seen, is not so much a conventional teaching subject as a form of education, pervading the whole life and work of the school and involving headmaster, headmistress and all their staffs. Every teacher has a contribution to make and must be properly briefed. First he must know the essential facts about health. Equally important, he must understand the children whom he is teaching, how they grow, how their minds work, what health means for them and how they can be introduced to it in such a way that they will still practise what they were taught even after leaving school. Finally he will to a great extent be teaching by personal example; to carry conviction in matters of health, he must himself practise what he is preaching. Knowledge, understanding of children and a good example, all are necessary and the college will be concerned with all three.

At college, unlike school, health education must clearly be treated as a distinct and definite subject, to be taken by all. Students and staff must ever be conscious of the overlapping fields of interest of biology, sociology, home economics, and physical education all of which can contribute to health education both as part of the continuing personal education of the students and also as part of their training for teaching in schools. A student's studies of education should be closely linked with his work in health education, the one reinforcing the other, particularly in relation to his developing understanding of the needs and nature of growing children. And lastly there must be the closest possible link between the rest of the student's studies in health and all that is done by the college to promote their own personal health; this involves the whole of daily life, including work, play, meals and rest, and the general physical and spiritual development of every student.

Most students attend one or two weekly lectures on the subject throughout their training. The lectures are often given to large groups, though sometimes the subdivision into infant, junior and secondary groups, which is so often adopted for Education lectures, has been found useful here too. Since a diet containing too many lectures may make the students unduly passive, some colleges follow up the lectures with tutorials in small groups at which the students can discuss as well as listen, bringing with them their school experiences and any personal problems which may lend themselves for discussion; such a combination of lecture and tutorial is of great value. Within any one college the general responsibility for the health course usually lies with one of the lecturers in education, science or physical education. But some colleges have in recent years formed a special committee of lecturers in contributory subjects, the individual members of the committee sharing the work between them; such an arrangement is likely to make for closer working between the various departments involved. In certain colleges a qualified medical practitioner has lectured on health education with great success and several doctors have chosen this as a full-time occupation.

The organisation and content of health education courses must vary from college to college in keeping with the needs of the students and the qualifications and interests of the staff. In the few cases where no direct appointment is made it is important to see that someone is given overall responsibility for the work in the college. Too often what is not someone's responsibility becomes nobody's business and a vital aspect of work is neglected. No attempt is made here to give an exhaustive list of topics which should receive attention in a health education course. Many topics can equally find a place in other courses and organisational decisions must be made to avoid un-

necessary overlapping. The most fruitful development of many topics can only arise where there is well developed team-work among the staff, one lecturer's contribution coming by careful planning to reinforce those of several others.

Some topics, however, present themselves as obvious ones to find a place in health education courses. Many are drawn from fields of interest which might be called social biology. The teacher in training must obviously be concerned with all the aspects of growth and development; the changing balance between the various organs of the body; the developing sense organs and nervous tissue; the homeostasis which is provided by 'feed-back' of information to the controlling systems; the blood system from embryonic stages to middle age and beyond; the hormone balance, how it varies through life, particularly at puberty, in pregnancy and in middle age and its influence on behaviour and personality.

A positive attitude to health should develop from adequate study of this great topic; but some consideration is also necessary of the natural history of diseases. This would cover such topics as sources of infection; the gateways for infection; the body's defences against infection; the history and conquest of disease; signs and symptoms of diseases which one may encounter in the classroom.

A third major topic with a strong claim for inclusion would be the social biology of nutrition. Every citizen should be familiar with the principles of nutrition, yet how many are? The student teacher has both a personal and a professional interest in this as in so many other topics. Fortunately, as recent reports of the Department of Education's Chief Medical Officer, 'The Health of the School Child', show so clearly, we see few signs of malnutrition among children today. We do see, however, something of the special problems of the more fortunate nations, particularly obesity in childhood. A linked topic here and one which is the particular province of the health education lecturer is the burning question of the population explosion, how it may be brought under control and its effects alleviated by increased food production in all parts of the globe by better distribution of food. To quote just one example: a recent report has pointed out that 'At present 400 million get the overwhelming share of the world's animal protein, while 2,500 million are deprived of this essential nutrient'. 'Fish production of Peru, at present exported as fish meal, could, if consumed in South America, raise its nutritional status to that of Italy'. Equally important in any consideration of this problem would be an appreciation of the life-saving work of the World Health Organisation. All should be familiar with some of the facts of malaria-prevention campaigns and of international programmes designed to eradicate yaws, leprosy, bilharzia

and other debilitating infections, while appreciating that increased expectation of life, enhanced care of mothers and children all add to the central problem of increasing population and how it is to be fed.

A fourth great topic which should find a place in health education courses would be a wide-ranging study of evolution and heredity. What a child makes of its life is a nice balance of what his hereditary make-up and his environment make possible. In a recent lecture Sir Julian Huxley (Fawley Foundation Lecture, Southampton, 1962) has suggested that the motto of a modern society should be 'Varied Excellence', 'Freedom in Inequality' being 'a good basis for an educational system to work on'. He would give ecology a vital role in educational systems in all countries as it is the 'basis for good land-use and productive development'. He considers it vital that an educated person should appreciate the role of ecology in any study of man's 'triple tier of environments—material, social and psychological. Ecology in the customary sense deals with man's relations with the forces and resources of external nature. Social ecology deals with man's social problems, within and between human societies. Psychological ecology deals with man's relations with the forces and resources of his inner nature, and the environment of ideas and beliefs with which he has surrounded himself'. 'Education', says Huxley, 'must have a unitary pattern, reflecting the unity of knowledge and the wholeness of experience; and it must give growing minds a coherent picture of nature and themselves'.

So we see, once more, how a health education course must contribute to an integrated curriculum even in covering this vast topic. It can contribute to a study of genetics, from the broad principles and how they have been established in recent years, bringing out incidentally the fascinating stories of the age-old wrangle between spermists and ovists; to some of the detailed evidence for genetic differences in general intelligence, in speed of maturity, psychosomatic differences of physique and temperament and the recently acquired knowledge of human chromosomes and genes controlling some mental aberrations as well as metabolic defects such as phenylketonuria. Health education might also be expected to contribute to a student's understanding of evolution as the modern biologist sees it, grasping something of man's place in nature, the strength and weakness of his body and his inheritance from mammalian ancestors, the instincts and inherited drives which he must foster in development and those which may hold him back from maturity in the fullest sense. With this goes what Huxley and others have called 'socio-genetic inheritance'. 'During biological evolution, what is improved is bodily organisation. But in human evolution, what is improved is psychosocial organisation—the organisation of

knowledge, ideas and beliefs and the cultures and social systems related to them'. So we see how social biology needs the support of sociology and all are needed as 'improvement as individuals, as well as the eventual improvement of man as a type, depends largely on the improvement of education.'

Most syllabuses today include some study of the public health services and of national insurance, and in many, prominence is given to the family as a social unit; sometimes family studies have evolved from instruction in sex⁴⁷, helping students in the process to see this in a more natural perspective, and at one college the entire syllabus has been built up around 'the family'. Visits to hospitals, clinics and schools for special educational treatment are included in most courses; particular attention is often given to this last, both for its own sake and for the light which it can shed on normal standards of health and on any deviations from these.

Apart from the normal courses, many colleges arrange for some of their students to make a special study of some health matters, usually during vacation. Studies of this kind are frequently concerned with the organisation of public health departments and institutions, town planning, or with some particular aspect of their work. Visits and personal investigation should be encouraged, though the student should remember that the time of the people whom he meets is precious and not to be wasted.

In their studies of health, whether in lectures or tutorials in other subjects or in observation or practice in schools, the students should lose no opportunity of seeing their subject through the eyes of the children whom they will soon be teaching. As in number or in language, so in health; to thrust adult conceptions on a child before he is ready will only confuse him. It is so tempting to seek too much too quickly, particularly where the instruction may be mainly incidental, the time available short and irregular, and the children themselves not nearly so aware of the laws of health as adults expect; most people who see much of children have had occasion to wish that they were more innately sensible in what and when they eat, less messy, less fond of sitting on damp ground and so on. Yet there is no short cut; one can move only at a child's own pace and it is essential to have some idea of what health may mean to him as opposed to an adult; then and then only is it possible to judge what to expect of him. All this, of course, is closely related with what the student will be learning in the course of his other college studies. Yet for him too all this will be only a beginning; students, too, can absorb only so much and will make their best progress if they

⁴⁷ The problems of instruction in sex at the college of education are more fully considered, in Chapter 11, in connection with similar problems in the school.

concentrate on understanding as far as they can go, rather than on going further still.

The student should also be learning to see how the individual child is shaping generally; it has often been the teacher's eye that first noted something wrong while there was still time to put it right. His power of observation will be particularly useful where there are children who in various ways and degrees are handicapped, bearing in mind that, while severely handicapped children will always need specialised schools, many others with a little help should be able to follow the standard educational course and will be all the better for working with their completely normal fellows. Such children have their own difficulties; they tend, for example, to be more than usually vulnerable to any infectious diseases that may be about; in other ways, too, they can occasionally be tiresome to their neighbours; and yet a very little extra help and training within the school will often make all the difference in enabling them to stand on their own feet. In such work—and indeed at many other points in the school day—the young teacher may not find it easy to deal effectively with the problem of pupils whose intelligence is in some cases low compared with his own or to plan a health course that will make sense to them. For this his own knowledge, which will have been based quite rightly on an understanding of the basic sciences, needs to be transposed into something much more direct and personal; such a task demands more experience than students normally possess, but at least a good beginning in this direction can be made while still at college.

A human problem of some difficulty often arises for the young teacher who has succeeded in establishing good relations with parents. Once these have learned to value his advice in connection with their children, they will often bring him their own troubles for solution. Colleges can do a good deal to prepare their students beforehand for such a situation when it arises, warning them of the need to consult with headmaster or headmistress in matters raised by parents; even so, this is a field in which every teacher needs all the tact and knowledge at his command, and also some understanding of the ideas and prejudices commonly held by adults, particularly where their own past education has been limited. It may on such occasions help most of all to know where to look for help; to be effective each member of the health team should know of the work of the other members of the team, besides having some knowledge of the statutory and other resources available. Every student should be given a clear idea of the school health service, what it tries to do, what fields it covers, and how, to be successful it must work in close association with teachers. To this end students should be aware of,

and be encouraged to read, such documents as the reports of Principal School Medical Officers and of the Chief Medical Officer of the Department of Education and Science on 'The Health of the School Child'.

Finally there is the personal health of college students. Day-to-day supervision of this is carefully carried out by the matron, usually a State Registered Nurse, and the college medical officer; their work is particularly valuable when carried out in close touch with the academic staff who are seeing the individual students continuously and can judge of their progress. The students' own development is helped by the physical education and games which are taken by all, irrespective of their future work; their general course in health and the work in other subjects should also have brought out the need for personal fitness both now and later. Now is the time to learn the habits of work that will be needed later on, remembering to allow for reasonable spare-time occupations, including exercise, and personal interests.

Life at college should be very congenial to any reasonable individual; it is a well-balanced life, occupied with absorbing work in which there is always a strong human interest, not to mention the satisfaction of feeling that one's own development is going ahead; there is the satisfaction of working and playing on equal terms with an intelligent group of contemporaries in an atmosphere free enough to allow young men and women to discover their own capacities and limitations yet not so haphazard that there is nobody to turn to when need arises. But it is always a strenuous life, as is the subsequent vocation of teaching; and there is sometimes a sense of strain which, however characteristic of modern life in general, is not good for the student.

The importance of individual example in the school has already been discussed; this will also be the single most powerful educative force in any kind of college. Its continuous impact includes more than the sum of the individual contributions of the lecturers and tutors; each college derives from its staff and students a distinct and unique corporate personality. Two institutions may have almost the same time-table and the same load of work, yet one will give the impression of intermittent wear and tear while the other retains a serenity based on forbearance and personal understanding. But that is not all. Sometimes one is also conscious of an exceptional warmth of human relationships, lighting up every transaction of the day's business; the avoidance of friction then becomes less important, since there is a harmony in which everyone can get on with the job in hand and friction is hardly conceivable. Everyone knows what is meant by a 'happy ship'; leadership has much to do with it at every level,

beginning with the Principal and ending with the students. The fortunate students of such colleges will have discovered for themselves at the outset of their career just what can be achieved and should be sought.

Nevertheless, this ultimate form of health is much to ask for. The difficulty lies not so much in the feeling (already expressed in these chapters) that ultimate health can never be defined merely in physical terms as in the feeling of many sincere people that such aims are too high for real life. Yet the conception of corporate health outlined in the last paragraph has often been achieved by groups of quite ordinary individuals; in any case the ideals with which a college may try to inspire its students are not less valid because no single person or college can live up to them the whole time. If the student is to teach health or any other subject effectively, he must set an example; the vocation of teaching, which few people understand who have not tried it, will not ultimately admit of less. The point was magnificently put by Milton in words which are as relevant for health as for language: 'And long it was not after then I was confirmed in this opinion that he who would not be frustrate of his hope to write well hereafter in laudable things, ought himself to be a true poem; that is a composition and pattern of the best and honourablest things; not presuming to sing praises of heroic men or famous cities unless he have in himself the experience and practice of all that which is praiseworthy'⁴⁸. Health is at once a personal and a corporate quality; it is at college that the would-be teacher should begin to realise something of what example means for achievement.

Finally, however much he may have learned at college, the young teacher at the outset of his career will still have much to learn both in practical experience and in theory. In health education he will only just have begun; experience, more advanced forms of study, reading, short courses and conferences, and practical work, all can further his own education. Apart from that, our knowledge of health is not likely to stand still in coming years. The whole question of further study needs more attention than it has so far received; many opportunities are there for those who will take them.

⁴⁸ John Milton: *Apology for Smectymnuus*, translated from the Latin, Bohn, iii, 117-118.

APPENDIX A

'Normal Development.' Chapter III of the *Report of the Committee on Maladjusted Children*, 1955.

NORMAL DEVELOPMENT

DEVELOPMENT AND MATURITY

Education is deeply concerned with the process of maturing: indeed, it is in essence the means by which the immature are enabled to become mature. In this sense it takes place not only at school; the whole environment, both human and material, in which the child grows up is the true educative medium. Modern research suggests that the most formative influences are those which the child experiences before he comes to school at all, and that certain attitudes have then taken shape which may affect decisively the whole of his subsequent development.

No human being is fully mature, nor does the degree of his maturity remain constant. Under stress of violent emotion anyone can regress temporarily to a childish form of functioning—as when a man kicks and abuses the door which 'will not' open. The level of a person's maturity will vary with his state of health, the ease or difficulty with which his basic needs are being met at the time, or the company in which he finds himself. In essence it may be said that the mature person is one who accepts the responsibility of ordering his own life and making his own decisions, and who does not act simply on the impulse of the moment.

A feature of maturity is that conduct becomes expressive and characteristic of the person himself. Principles and values are integrated into a coherent system which gives shape and stability to the personality. Inner conflict and indecision are thus reduced, and it becomes possible for an individual to exercise control and persistence, and to pursue remote ends.

MEANING OF NORMALITY

Normal development, therefore, is development towards independence, stability and control, and the gradual drawing together and realisation of all man's capacities. One very important point at the outset is the meaning to be attached to the term 'normal'. A criterion of normality is peculiarly difficult to obtain, for the following reasons:

- (i) What is normal for one child may not be normal for another. Every child is unique, and his personality is a complex blend of hereditary traits and environmental influences—the latter including not only the people and objects round a child, but also the attitudes, feelings and events which affect him or to which he may respond. On a child's make-up will depend what is normal for him. A child of introverted temperament will, for example, normally be cautious in making friends with other children, but an extrovert will not. The child of high intelligence will normally not be slow in learning to read, but the dull child will.

- (ii) Behaviour of a certain kind may be normal at one stage but not at another. It is natural, for example, for a very young child to be completely dependent on his mother, but it would be abnormal if this continued until he was much older.
- (iii) Development takes place in many directions, and not all of a child's powers will mature at the same rate, though for good adjustment and healthy growth there should be some degree of harmony between them. Concentration on one aspect of growth may temporarily retard the growth of another, as when a baby becomes less vocal while he is perfecting manual dexterity, or a six-year-old more demanding and dependent while he is struggling with formal work at school. On the other hand, the development of one power often assists the development of another, as when a child of twelve months becomes more tractable as he begins to crawl, or a two-year-old as he learns to speak or becomes steadier on his feet.
- (iv) Normal behaviour is not always 'good' behaviour. All children will from time to time display behaviour problems, but, if development is taking place normally, so far from these holding up the maturing process they will promote it. Compare, for example, the frantic compulsive destructiveness of a maladjusted ten-year-old, which teaches him nothing and may so stifle his curiosity that he is unable to learn at all, with the dispassionate destructiveness of a normal two-year-old, which helps him to understand the material world better and so to control it.

From what has been said it is clear that the normal must be thought of as a group which includes wide variations rather than as a single type. This notion is generally accepted in the sphere of intelligence, where the normal group is thought of as comprising the central 50 per cent of the population. Progress towards maturity is even more difficult to measure than intelligence, and it is not possible to chart clearly either the range within the normal at any age or the line of progress from one stage to the next. All that can be attempted is a description of the manner in which a child progresses and the series of experiences and satisfactions which naturally come his way.

THE WAY A CHILD PROGRESSES

As a child grows, he should increasingly become independent and at the same time capable of forming satisfactory and lasting relationships with other people. This is in essence an affair of the feelings, but the feelings do not mature in isolation and there is constant interplay between all the aspects of the child's growing self.

Each phase in development has its own appropriate emotional satisfactions. The normal course of development seems to be to experience these satisfactions in an unhurried, confident fashion, gaining something from them and either leaving them behind or building them into the next stage. Deprivation, curtailment or perversion of these natural satisfactions may lead to regression or to a general disinclination to go forward; and

advance to the next stage is only possible if previous stages have been satisfactorily accomplished. Even on the physical plane this seems true; it may be said, for example, that an infant learns to walk from the neck downwards, progressively coordinating the muscles of the neck, back and limbs, as he learns first to hold up his head, then to heave a shoulder off the pillow, then to sit up, crawl, stand and finally stagger forwards.

Advance toward maturity is helped at each stage because the child's mind, body and feelings mature together. He is constantly discovering, often by accident, substitute satisfactions for those it is time to leave behind, and these new satisfactions in their turn help on the maturing of his feelings. When he begins to run about, for example, he can occupy himself better in play and find new interests for himself, so that he has alternative pleasures to fall back on when his mother is too busy to give him her attention. Painful contacts with table corners or doorsteps help him to distinguish fact from fantasy, and to adapt his responses to it. He also plays his way into a dim realisation of what it will be like to be a grown-up person, and may find it both possible and likeable. In this way he is helped by seeing older children, as well as his parents and other adults, obviously enjoying a more mature way of living which, because of its manifest controls and disciplines, may to the natural man in him seem impossibly difficult and distasteful. In this way he is led on towards maturity, finding at each step that he gains more than he loses and that he is equal to the increasingly complex demands which are made on him.

INFANCY AND EARLY CHILDHOOD

The first act of the drama in a child's struggle for independence is normally played out within the family, and in it the mother normally takes the leading role, since it is she who makes his first essay at independence possible and it is from her that he must first detach himself. But before the child becomes the man, the struggle has to be repeated more than once, each time on a more complex and conscious plane and accompanied at each repetition by the possibility of stress and breakdown. Roughly speaking, the first cycle takes seven years and may be described as the period of infancy and early childhood, in which the support and approval of adults are the most potent influences on a child's development.

To enjoy satisfactory relationships with people is always vital for a child's development, but his capacity for making them will largely depend on the quality of his emotional and physical experience in the first years of life. An infant has all his feeling in his body; from the start he feels the attitudes of other people through their care of his body—for example, through the way in which his mother picks him up, holds him to her and feeds him. The world is presented to him right from the beginning as predominantly good or bad according to the quality of the mothering he receives. He needs one person constantly with him, not only to feed, care for and love him, but also to allow him to enjoy this relationship. In this way he builds up the sense of security which he needs if he is to reach out or respond to other people sufficiently to commit himself and run the risk of getting hurt; and it is not until a person has the confidence

to take this risk that he can fully give or receive affection. The same early experiences appear to affect a child's moral sensitiveness, his curiosity and liveliness of mind, and his ability to learn up to the limits of his native capacities.

Even for an infant who is loved and wanted, life soon presents problems. He quickly realises that the giver of good things can also refuse them. The first great crisis of separation occurs when he is weaned and has to learn to take solid food. Even at this early stage the principle of substitute satisfactions is at work, for by this time an infant is usually learning to sit up, curiosity is developing and he is beginning to play.

If a child is assured of his mother's love he can bear to be away from her, and by about the age of two has advanced sufficiently both in knowledge and bodily skill to want to do so, although at first only for short periods. The good mother, while maintaining a steady, secure intimacy with the child, is at the same time directing his interest away from herself, helping him to improve his speech and the use of his body and encouraging him to make friendly advances to other children. It is, however, during this period, somewhere between six months and three years, when a child is detaching himself from his mother through play and exploration, that he needs her most and that maternal deprivation is most damaging. This is seen in the way he will sometimes not play with a new toy until his mother gives it to him; and in the way he rushes back to her for protection as soon as anything goes wrong with his attempts at friendliness with other children or with animals.

The question whether the world is fundamentally a friendly or a hostile place is continually before a child in his first years. Somewhere about the third year this uncertainty culminates in a period of conflict with authority, when he is often wilful, aggressive and difficult to control. On the handling he receives at this time will largely depend his ability to accept discipline and frustration in later years.

At this period, a child's relationship with his father becomes increasingly important. The father takes his place as the embodiment of authority in the family, not only protecting and supporting the mother, but by firm though affectionate control, buttressing the young child against his own aggressive feelings and designs. It is natural for a child to want to be grown up, and the father, by giving a satisfactory example of grown-up life and by allowing the child to watch and share some of his masculine activities, provides a further means of stimulating development. Through this second and significantly different relationship the child emerges out of a world centred on his mother into one of wider human relationships.

If the period of conflict with authority is brought to a satisfactory conclusion, a child normally enters on a much calmer phase, greatly helped in his progress towards independence by the development of a genuine desire for friendship with other children. This stage is often reached during the fifth year and makes the second great separation from the mother, when he goes to school, much easier to endure.

From this point the teacher takes over some of the functions of the mother, and it falls to the teacher to give the child in school the warmth

of affection needed if he is to learn satisfactorily. The teacher also makes it possible for him to continue his emotional education. To this end she encourages the formation of small groups, both for play and work, and, while seeing that children do not harm each other, allows scope for feelings to be expressed naturally, including feelings of hostility and aggression. Like the good mother, the teacher has to accept a child's dependence and need for protection and at the same time encourage him in every way to become independent of her. In this, skilful teaching in the narrower sense is a great help; for the more a child knows, the more confidence he has in managing his own affairs. Growth in understanding the use of numbers, for example, may encourage him to lay out his pocket money for himself, and being able to read may make him less dependent on adults for his pleasures.

The young school child will, however, transfer to his teachers the attitudes he has taken over from his parents; he will welcome the chance to learn new things if he has a mind 'innocent and quiet' and has been encouraged at home to do things for himself. As he progresses through the school, he has gradually to forsake real things for symbols and learn to deal with the abstract; this will be a very difficult and painful process if growth is not continuing satisfactorily on the emotional side, as, for example, if he has been unable to tolerate the separation from his mother. Many children go through a period of nervous tension at about the time when the formal business of learning to read and write commonly begins, but this is normally quickly over; most children enjoy going to school and probably find membership of a large group a relief from the close-knit, intimate atmosphere of the family.

The fact that important steps forward are being made on the intellectual level at this stage also helps on emotional adjustments in other directions. The child of six or seven can usually distinguish between fact and fantasy, although the ability to do this is likely to break down under emotional stress (as when he is badgered to 'own up'). Having a better understanding of the world around him, he can accept it more easily; he realises, for instance, that if he wants parts for his Meccano set he must wait until he has saved up enough for them. At the same time, he may still protest violently if he does not get his own way. He also begins to grasp that the rules and restrictions of life apply to other children as well as to himself. As he grows up physically he gains more confidence in his relationships with other children. Fortified in all these ways he enters, somewhere about the eighth year, on the period of later childhood.

LATER CHILDHOOD

It used to be held that the years between the ages of seven and twelve constituted a kind of golden age, when a child gave little trouble and lived happily and thoughtlessly, reaching an almost mature state of stability and reasonableness towards the end of the period. It has, however, recently been remarked that the eighth and ninth years constitute one of the peak periods for references to child guidance clinics, and educational backwardness also becomes a pressing problem at about the same age. There is

some truth in both points of view. Whether a child is happy and stable in this period, or unhappy and out of step with society or with his lessons, largely depends on one thing—the adequacy of his early nurture.

The average child of eight has developed a capacity for stepping outside himself, as it were, and viewing himself as he appears to others. He needs the approval of other children and has become keenly aware of any differences between himself and them which are likely to diminish their approval. This may have either good or bad effects on the maturing process. For example, he may first begin to suffer consciously at this age from failure, whether at work or play. On the other hand, the result may be an improvement in his standards on both the social and the intellectual planes. He likes to look at the work of other children and compare it with his own, he considers their skill in relation to his own, he notices how they behave in the face of frustration, rebuke or victory. He wants to know as much as they do and to be as well thought of, and so he strives to emulate them. Above all, he wants to be accepted by them, and this often stimulates him to control his feelings and adapt his behaviour to the requirements of the group. If he is accepted, he can be very generous in his praise of others who are more successful than he is.

In this way he identifies himself with a larger group and can enjoy vicariously its success, so that the quality of his own individual performance matters less. As a result of his identification with the group, he thinks less about himself. Like the child of two or three years, he becomes absorbed in outside interests, and these are no longer confined to what is happening in his immediate environment. His actual world is likely to be rather restricted; he does not travel much, does not meet many people and cannot exercise much control over the kind of experience which comes his way. But his imagination, though realistic and practical, is well developed and active, and in poetry and story or through the cinema and wireless he can enter into the lives and feelings of people still more remote and unfamiliar. He turns from one interest to another without much persistence, but all the while he is comparing, noting, and widening his experience. In this way he lives in a perpetually expanding universe, and his mind and feelings expand in harmony with it.

Although the influence of other children is very great at this stage, adults still play a most important part in his development. At school what some of his teachers say and do will have a lasting effect on him. The most formative influence in his life will, however, still be his home, and the security of a good home is vital for his sound growth.

One of the most important factors in fostering this sense of security is a harmonious relationship between the child's parents. Another is the existence, in the parents and the other adults with whom children come into contact, of firmly held moral principles and standards of conduct. These will not necessarily be based on religious beliefs; many parents without religious beliefs bring up their children satisfactorily, just as others with such beliefs fail to do so. But there are many people who feel that children who are brought up believing in a loving and merciful God and thereby helped to develop harmoniously and without constraint; and that

a child can more readily get rid of a sense of guilt after wrong-doing, and can more readily forgive other people, if he knows that he himself is loved and forgiven.

In this period a child's life and interests are no longer entirely centred on his home and his school. He may join other groups where he will meet adults in a rather different guise, as leaders of co-operative enterprises in a freer and more friendly atmosphere than is usually possible in school. His passion for experimentation, his desire for independence or the influence of other children may occasionally lead him to lie, cheat or pilfer, but by the end of the period he has normally developed considerable resistance to temptation and he is reliable, cheerful and co-operative.

ADOLESCENCE

Adolescence is often thought of as an unsettled period between two relatively settled ones. The junior school child should have adjusted himself to the world of childhood, and he can usually disregard the problems of the adult world. His body and mind serve him so well and his feelings trouble him so little that he is not tempted to introspection or self-mistrust. When maturity has been finally reached he will normally return to a like state of stability and serenity, and will feel himself confident to deal with the problems which in childhood he disregarded. Whether the transition from childhood to adult life is made easily or with difficulty will to a considerable extent depend on whether the early nurture of the child has been good or bad, and on the degree of strain and pressure which his environment is exercising at the time.

The far-reaching physical changes of puberty are matched by equally far-reaching emotional and intellectual changes. These may be described as the breaking down of an established pattern and its forming again on a more adult and complex level. The adolescent has to learn to manage a more adult body and to deal with unfamiliar and stronger feelings. This is made even more difficult, because the system of values which sufficed to control feeling during the previous period is itself being broken down and re-formed. The adolescent will have a wider interest in the world around him—in its day-to-day problems as they most immediately affect him, in broader political and social issues, and perhaps in the nature of the universe and the purpose and meaning of his and its existence. There will at this time often be an awakening or deepening of his religious feelings and a quickening of his aesthetic sensibility. He has to re-mould and make his own the principles and beliefs with which he has been growing up in infancy and childhood.

The period of adolescence is one of such instability that it is particularly difficult to determine what constitute the normal limits of behaviour and adjustment. An adolescent may, for example, give way to uncontrollable bouts of temper or crying, may wander off, pilfer or romance, and may swing from exultation to depression, now flinging into society, now withdrawing into solitariness. All this may merely mean that, like the infant, he is adjusting himself to an unfamiliar and complex world by means of a

personality which is itself unfamiliar and fluid, and that, also like the infant, he has to experiment in order to understand and control.

Adolescence has been described as having more in common with infancy than with the intervening period of childhood. The main need of the adolescent, as of the infant, is emancipation. Whereas, however, the infant has to emerge from a life centred on his mother into the family, the adolescent has to emerge from the family into the world at large. He has to free himself finally from dependence on adults, and to accept the responsibility of ordering his own life, even though he may go on living at home. In a way, therefore, he repeats the infant's struggle with authority and may experience again something of the infant's hostility and antagonism to his parents. But his struggle is more conscious, and is often accompanied by an ability to formulate and express criticism which may make it far more bitter and distressing both to himself and to the adults around him. Out of it, however, normally comes fuller understanding, an increased tolerance and a new relation of friendly equality. He may experience again something of the conflict which occupied him as an infant, in that he desires both protection and freedom, both fears independence and is irresistibly attracted to it. But between him and his infancy lies the period of childhood in which he has experienced the pleasure of comradeship with his peers, and the natural course of his maturing feelings is to drive him still further beyond the family, to form lasting friendships and to find new objects for his affections.

In the early part of adolescence there is generally a greater emotional interest in the same sex. This is a normal phase, which ordinarily gives place in the later teens to a greater emotional interest in the opposite sex. If a person has had ample opportunity to experience the progressive emotional stages of infancy, childhood and adolescence, he will as a young adult make a satisfactory adjustment more easily in the sphere of personal affections.

The adolescent needs also to come to terms with his work and to develop ambitions which are both possible of achievement and satisfying to his feelings of self-respect and self-interest. If he has to leave school at fifteen or sixteen he may not have much choice in what he does and may have to look elsewhere for his main interests, but at least he has the satisfaction of earning his own living and of having money to spend as he pleases. Absence of this obvious stage of independence may make the period more difficult for those who continue full-time education, but they have compensating opportunities for pursuing the career of their choice and for achieving intellectual emancipation, and have more leisure for reflecting on the world in general. In either event, the adolescent as he matures identifies himself to some extent with both his work and the community at large; he is prepared to accept the requirements and restrictions of both and to contribute what he can to their successful functioning.

SUMMARY

In reviewing this process of development from infancy to maturity one can pick out various pointers to normality or the reverse. At every

stage the child who is progressing satisfactorily is able to profit from the experiences which can normally be assimilated by someone of his age and innate equipment. A child will, for example, learn to talk or to read at about the time when children of his intelligence commonly do. On the emotional side also, he becomes increasingly sensitive to the feelings and wishes of others and is able to profit to the normal degree from the opportunities which life offers him of learning to control his feelings. One might even say that physically he profits in the same way; his food does him good and he is built up by fresh air and exercise. The concept becomes clearer if one considers instances where something has gone wrong with the process of development: the child of average intelligence who, though present at all the lessons, does not learn to read; the nervous child who may eat voraciously and who fails to thrive for no obvious physical reason; the clever child who remains pig-headed and babyish in dealing with frustrations; or the ten-year-old delinquent whose face still looks chubby and infantile, as if experience had washed over it without leaving its customary mark.

All through the process of development the normal child keeps in reasonable touch with the world around him (though with many sidesteps into fantasy and evasion), respects it and tries to adapt himself to it. In this way he gradually learns to control fantasy, accept discipline and persevere in the pursuit of more distant goals, and his prevailing mood is one of serenity and optimism. Year by year he is building up his own style of life, developing characteristic ways of meeting situations and dealing with problems. The older he gets, the more difficult it becomes to alter his life pattern and to modify a faulty style. His way through life from birth to maturity may be likened to the progress of a Channel swimmer, necessarily affected by waves and current and exulting in the resistance they offer him, but shaping a course to the opposite shore in spite of them.

APPENDIX B**RECOMMENDATION No. 63****To the Ministries of Education
concerning
Health Education in Primary Schools****The International Conference on Public Education,**

Convened in Geneva by the United Nations Educational, Scientific and Cultural Organization and by the International Bureau of Education, meeting on the sixth of July, nineteen hundred and sixty-seven for its thirtieth session, adopts on the fourteenth of July nineteen hundred and sixty-seven, the following recommendation:

The Conference,

Considering that the proposals and suggestions contained in Recommendation No. 20 adopted on the 8th July, 1946, by the 9th International Conference on Public Education organized by the International Bureau of Education, concerning the teaching of hygiene in primary and secondary schools, have still a topical character and interest,

Considering, however, that, as teaching methods have developed, on the one hand, and as progress has been made in preserving health, on the other, health education can and should take the place of the mere teaching of hygiene,

Considering that health education means the whole process which helps to inculcate good habits, sound knowledge and an enlightened attitude concerning the health of the individual and the community,

Considering that the scope of health education covers a person's physical, intellectual and emotional development, and that such education covers the health of individual, family and community, with reference to home, school and place of work; the problem of nutrition, mental health, sex education, accident prevention, first aid, use of leisure, etc.,

Considering that health education given at school is an important aspect of the general education of a child and one of the essential ways of improving individual and public health,

Considering that such education must occupy a prominent place throughout the child's schooling and particularly during primary education,

Submits the following recommendation to the Ministries of Education of the various countries:

- (1) Health education suited to the age, needs and interests of pupils, first of a practical nature and subsequently of a practical and theoretical nature, should be given by the teachers in conjunction with the appropriate health departments; the form, content and methods of this education should be determined through consultation among the various authorities concerned.

- (2) This education should not only inculcate good habits in the pupils, likely to promote their physical and mental well-being, but also awaken in them a sense of their individual and social responsibilities, by teaching them to respect the health and well-being of other people, as well as their own.
- (3) Such education should find its natural roots in the life and working conditions within the school. These should include the wise planning of the school day, with a balanced proportion of work, play and rest, together with adequate accommodation and facilities and suitable sanitary installations.
- (4) The methods used in health education should involve not only the child's memory and his reasoning powers but also (and especially) his imagination; account should also be taken of his leisure activities and above all of his healthy living.
- (5) Health education should be related to local circumstances (urban or rural surroundings), to the climatic conditions of each country and to its economic and social development; in the light of these circumstances the teaching should emphasize the basic demands of various regions in regard to health and hygiene; teaching should also include some preparation for the probable conditions in which the child will be living and working.
- (6) The teachers should be prepared to give health education during their training courses by means of specialized instruction, which takes into account the aims, as well as the methods, of imparting such education.
- (7) Possibilities for further training should be offered to teachers in service to enable them to keep up to date with the latest developments, in the methods and means used in health education, as well as with the progress of preventive medicine.
- (8) Primary teachers should be provided with the materials necessary for their pupils' education (textbooks, apparatus and audio-visual aids) as well as books and periodicals and other documents from which to draw their own information; such materials, based on the country's geographical, climatic, ethnic and cultural requirements, should be produced in collaboration by those responsible for the school syllabuses and the medical and health authorities.
- (9) At the same time, steps should be taken to inform and educate parents by means of co-operation between primary school teachers and the medical and health authorities (e.g. through regional and local information centres).
- (10) Specialists in health education (such as doctors and nurses) who are assigned to work which is linked with health education (e.g. medical inspection) should be prepared for these educational functions in the course of their professional study through appropriate health and educational training.

- (11) Any initiative should be encouraged, whether public or private, which, in school or out of school, is taken by young people or adults and is likely to promote health education or training in first aid; this may include groups of scouts or pioneers, Red Cross or Red Crescent Societies, members of youth first aid clubs, etc. and their various activities or manifestations (lectures, competitions, periodicals, exhibitions).
- (12) Assistance should be given to any research of a medico-pedagogical nature which, in the matter of health education, is intended to ascertain the needs, to assess the results of the measures taken and the experiments carried out and to improve the methods and media used.
- (13) In the context of each country's particular planning, health education should have a place among its fundamental objectives, as an essential factor in social, economic and cultural development.
- (14) A permanent scheme of co-operation (as, for example, bilateral or multilateral conventions) should be established among the various countries to facilitate the exchange of specialists and of research information.
- (15) Use should be made, where necessary, of technical assistance provided by specialized international organizations, which may help the various countries to create a basis for health education, draw up syllabuses, design and produce teaching material and train staff, by means of advisory services, scholarships and material for demonstration purposes.

APPENDIX C

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A Handbook of Health Education is a comprehensive guide to the main aspects of health education, including some understanding of its scientific basis. 'It is the business of the whole community, and in particular of the parents', says the author, 'to see that the rising generation gets the best possible general training in matters of health.' This handbook, which replaces *Health Education* (Education Pamphlet No. 31), provides a study in the relationship between education and health and gives advice on many practical matters of this important subject. There are chapters on the biological basis of health education, nutrition and food, drugs, alcohol and tobacco, school and the future parent and many others.