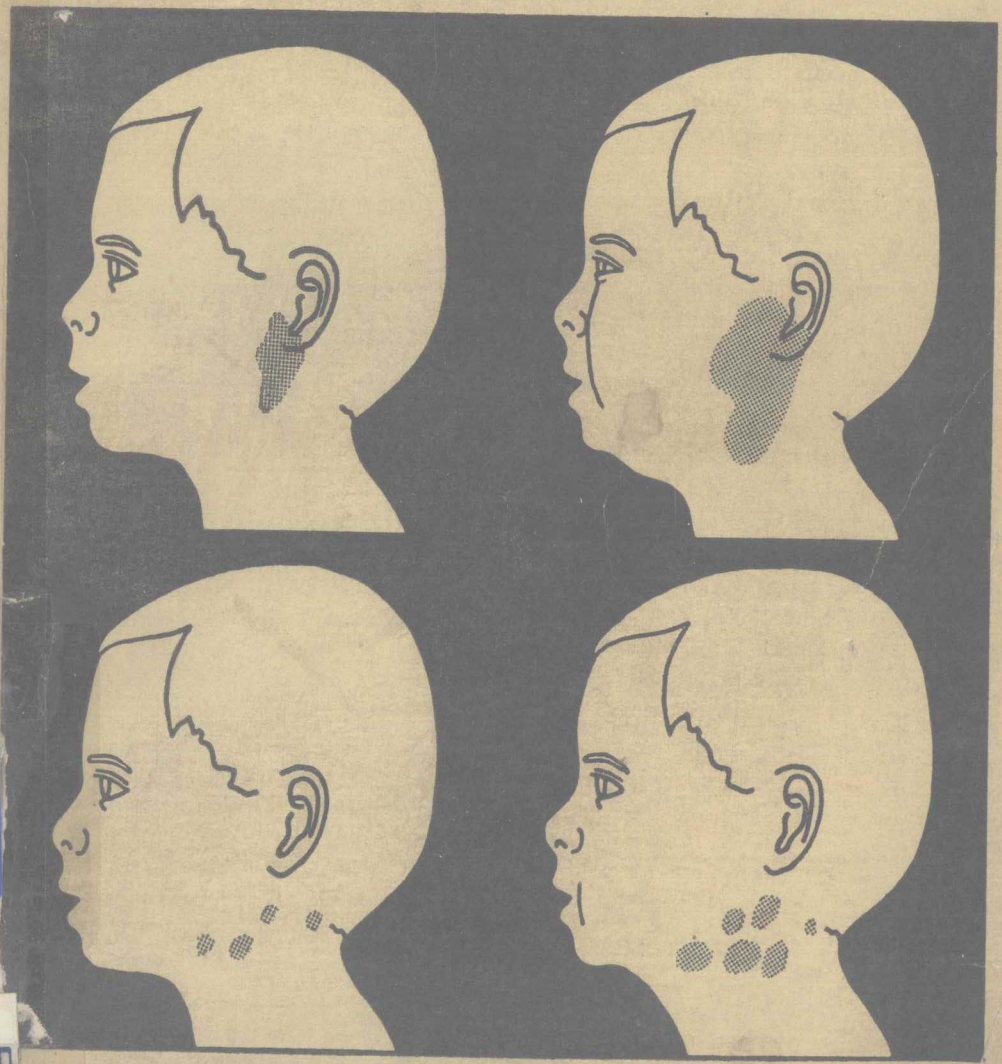
ESSENTIAL PAEDIATRICS

DAVID HULL / DEREK I. JOHNSTON



Essential Paediatrics

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Preface

This book is intended primarily for medical students to help them master the essentials of paediatrics in the brief time provided for this purpose in their clinical course. It may also serve as a useful introduction to paediatrics for other health professionals.

Attention is mainly directed toward the common conditions. Genetics and heart disorders are considered in more detail than other areas because we believe it is important that they be understood thoroughly from the beginning. Many of the rare disorders are mentioned by name only just to note their existence. Occasionally they are discussed at more length because they are life-threatening or have genetic consequences or simply because they are of interest.

No book is an alternative to clinical experience acquired by talking to and examining children and discussing their problems with their parents. It is our hope that by providing a text which covers most aspects of paediatric practice, readers may feel more able to approach a sick child with confidence and that time spent in paediatric wards and clinics will be remembered with pleasure.

The authors are indebted to the contributors, listed on page vii, who offered expert advice regarding the accuracy, relevance and balance of the sections dealing with their respective specialties, in some cases virtually rewriting them. We also acknowledge our debt to medical artist Mr Geoffrey Lyth, whose contribution to the text is invaluable. Finally, we should like to thank Miss Kath Reed who typed tape recordings and handwritten drafts with unbelievable speed and accuracy.

Nottingham, 1981

D.H
D.I.J.

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Contents

1
The Ill Child and his Doctor

In paediatric practice it is not possible to make a full diagnosis or draw up an appropriate care programme without some knowledge of the child, his age, size, abilities and personality. Furthermore, a child is part of a family; to understand him one must know something of his family, particularly his parents, their life styles, their family life, their capacity to look after their children and in particular their relationships to our patient and attitudes towards his illness. Families live in communities and as the child grows older and becomes more independent he relates more directly to the community, in particular to his school and his peers. Thus, it is helpful to know the main features of that community and the child's and family's relationship to it. The mode of presentation, the symptoms and even the signs of disease may be influenced by the nature of the child, his family and their surroundings and experiences. Likewise, treatment will depend on the reserves and resources of the family and community.

THE INTERVIEW

First impressions are important. Even very young children are quick to sense an atmosphere and the reactions of their parents to it. As they grow older they become expert at masking their feelings. In uncertain situations they are more likely to demonstrate what they think by actions rather than words. They will look to and reach for those they trust. Children, not unlike adults, warm to those who like and admire them, and they are less suspicious than adults of ulterior motives. A relaxed, friendly beginning to the interview not only eases its passage, but is essential for its success.

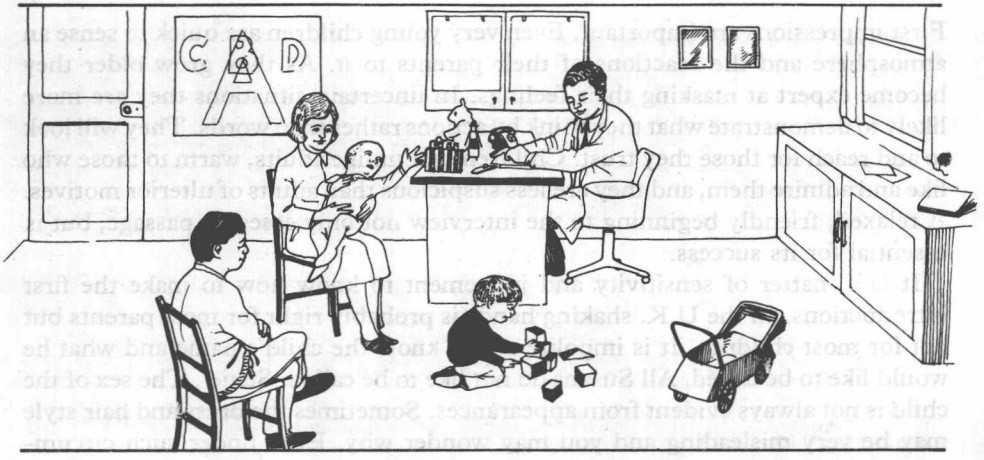
It is a matter of sensitivity and judgement to know how to make the first introductions. In the U.K. shaking hands is probably right for most parents but not for most children. It is impolite not to know the child's name and what he would like to be called. All Susans do not like to be called 'Suzie'. The sex of the child is not always evident from appearances. Sometimes the dress and hair style may be very misleading and you may wonder why. Even under such circum-

stances, to call a boy 'she' is a mistake. His mother will not like it and neither will he if he is old enough to understand. Never refer to the baby as 'it'. Next ascertain the names and the relationship to the child of the adults who accompany him. Children belong to their parents, parents are responsible for their children so it is the parents point of view that, in the first instance, you want to know. Not infrequently parents differ in their interpretation of their child's symptoms and signs. Neither parent has a monopoly on objectivity. Sometimes unaccompanied mothers will say, referring to her husband, that 'he disagrees with me and says I fuss too much', or alternatively that 'he told me to bring the child along because he is not right'. Some grandparents are a tremendous support to their children when they start their own families but others tend to be interfering busybodies. The latter, if they are present at the interview, should be encouraged not to interrupt or enlarge upon the history given by the parents, though their attempts to do so may help in understanding the total situation.

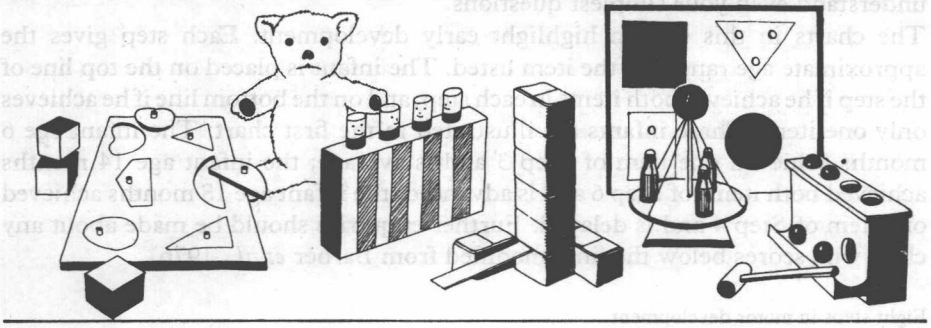
The ability and willingness of children to describe their own symptoms varies widely. If in doubt always ask. It is instructive, for example, to find out why the child thinks he has been brought to see you. The answers are often revealing if not too helpful with the diagnosis. Another very important question, possibly best asked at the end of the interview, is what does the child and what do the parents think is the cause of the child's illness? In particular, what do they fear it might be?

In the main, children are not interested in adult talk so as the interview gets underway the majority of the younger ones will become restless and seek ways of entertaining themselves; but never make the mistake of thinking that they are not listening to what is being said. Toys for every age group should be scattered on the desk, shelves and floor. Play will not only occupy the youngster, it will also give valuable clues to his motor skills, mental abilities, interests and personality. So whilst taking the history watch the child. In particular, watch the way he moves, how he uses his eyes and ears and hands and feet. Does he follow up a challenge? Is he constructive? Is he relaxed? Watch the interplay between the child and his parents, and the child and yourself. It will not only help interpret the history but

The interview



Suggested types of toys which should be at hand for children of varying ages



also give some indication of how best to examine the child later to get the most information. For example, if a four-year-old stays on his mother's knee and demands that the toys be brought to him, he is obviously feeling very threatened or is limited either by his illness or in his abilities. In these circumstances it is probably wisest to make the preliminary examination at least, whilst the child is on his mother's knee. Know something about the toys in the room; for example, at what stage can a child be expected to put a square block in a square hole, or to lift it out to find pictures underneath, or to name what he sees. If he does not do it you have not learnt much — it might be simply because of the situation — but if he does you may have learnt a great deal.

History

Every doctor develops his or her own way of collecting information. It is best to start by noting the main complaint or complaints. If there are a number, then a simple opening problem list helps. Then enlarge and define each problem and enquire about associated problems. An obsessional enquiry about all the bodily functions is not usually necessary, it wastes time and may interrupt the flow of the interview. However for most medical problems, and always for any child admitted to hospital, certain background information is essential.

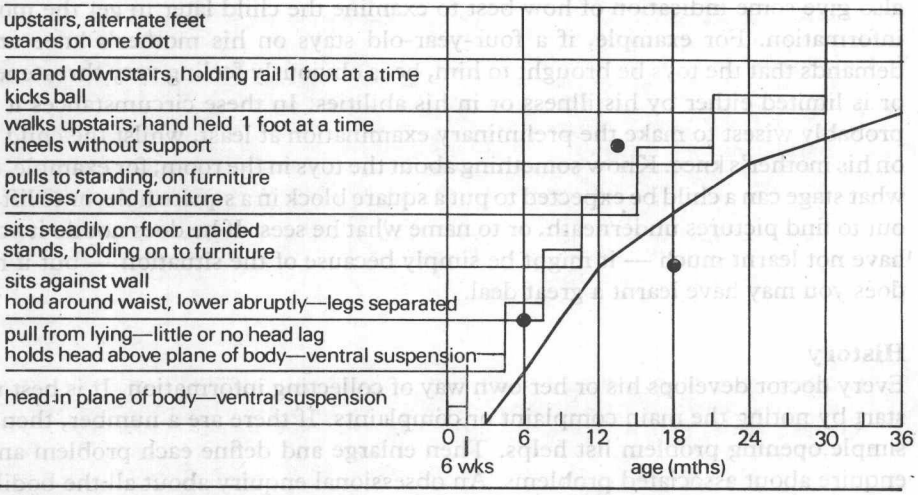
Firstly, it is important to collect information about the child's own life. Was the pregnancy, labour and birth normal? What was the birth weight? How was he in the first days of life? It may be important to note whether he was breast or bottle fed and when he was weaned. Has he had the common childhood infections? Has he been immunised? Has he been treated in hospital and, if so, when and where and for what?

Secondly, an assessment should be made as to how the child is progressing. Full assessment of motor and language achievement and mental and social responses demands considerable skill and experience. However, for most purposes a simple enquiry about the principle stages of development is all that is required and should be within the competence of anyone presuming to advise parents about the care of their children. For the older child, ask about progress at school. It is not acceptable to make a note that the child is slow or retarded without indicating the basis for that conclusion. Indeed, labels of that nature are best avoided altogether. If a child is not speaking at three years of age, write that he has delayed speech, but

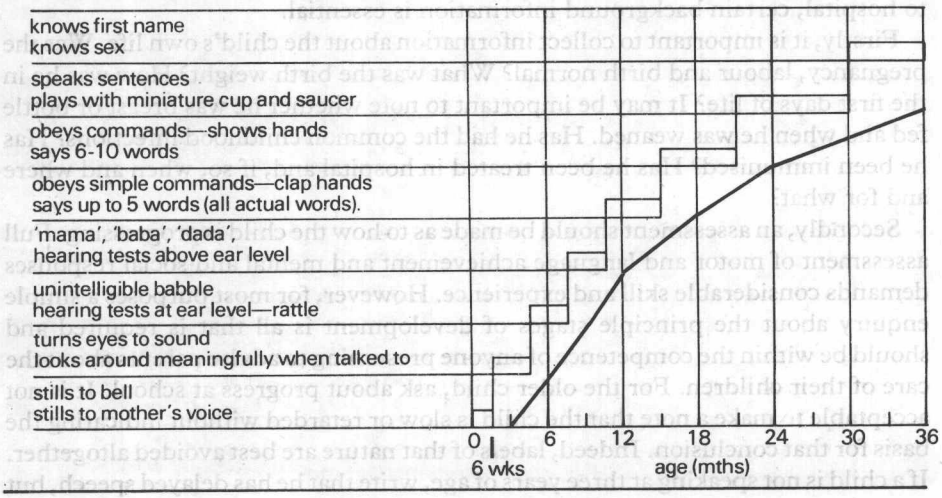
do not guess at the likely cause, even if, for instance, his mother appears not to understand even your simplest questions.

The charts in this section highlight early development. Each step gives the approximate age range for the item listed. The infant is placed on the top line of the step if he achieves both items in each step, and on the bottom line if he achieves only one item. Three infants are illustrated in the first chart: The infant age 6 months achieved one item of Step 3 and is average; the infant age 14 months achieved both items of Step 6 and is advanced; the infant age 18 months achieved one item of Step 4 and is delayed. Further enquiries should be made about any child who scores below the line (modified from Barber *et al.*, 1976).

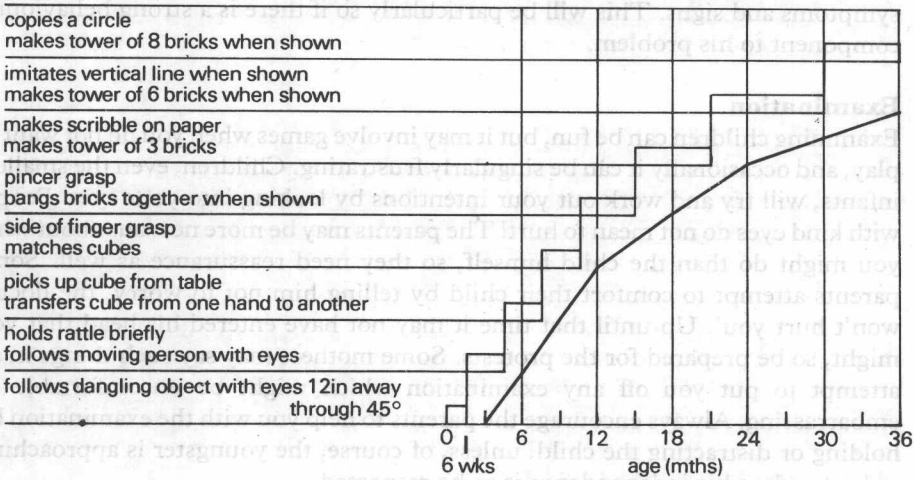
Eight steps in motor development



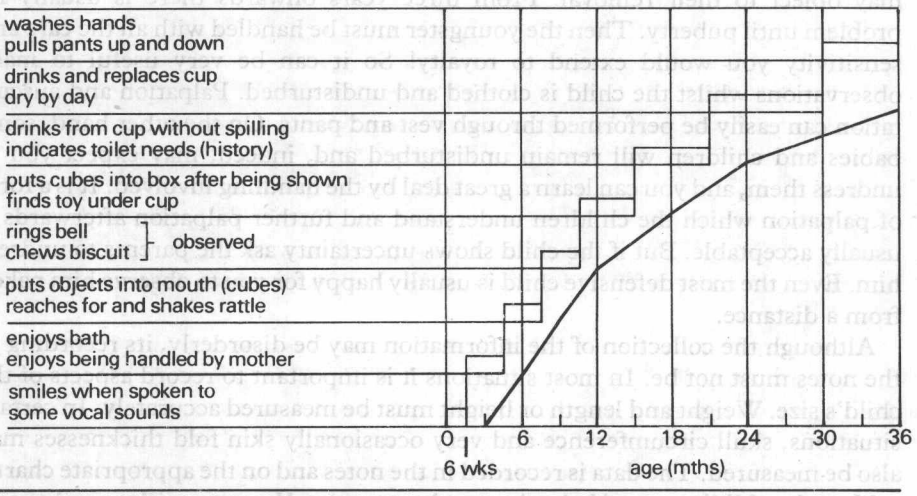
Eight steps in language development



Eight steps in vision and fine motor development



Eight steps in social development



Always ask about the health of the rest of the family. This is important for a variety of reasons. The first, and perhaps the most obvious, is that the child might have an inherited disorder. Collect the information carefully and record it using accepted symbols and notation (see Ch. 2). Secondly, if environmental factors are important, then other members of the family may also be affected. This might include anything from respiratory infections to the inhalation of lead. Thirdly, the presence of chronic illness in other members of the family may be the reason why the parents are concerned about the child before you. It may be that the family's stress has helped precipitate the child's problems. The fourth, though not the most important, is probably the most interesting reason. There are often family

complaints, headaches, stomach aches, weariness, which determine the family language of disease and colour the way the child and his parents interpret his symptoms and signs. This will be particularly so if there is a strong behavioural component to his problem.

Examination

Examining children can be fun, but it may involve games when you do not want to play, and occasionally it can be singularly frustrating. Children, even the smallest infants, will try and work out your intentions by looking into your eyes. People with kind eyes do not mean to hurt! The parents may be more nervous about what you might do than the child himself, so they need reassurance as well. Some parents attempt to comfort their child by telling him not to worry 'the doctor won't hurt you'. Up until that time it may not have entered his head that you might, so be prepared for the protests. Some mothers may say such things in an attempt to put you off any examination which might be uncomfortable or embarrassing. Always encourage the parents to help you with the examination by holding or distracting the child, unless, of course, the youngster is approaching puberty when his independence is to be respected.

Clinicians have different practices about clothes. Undressing disturbs babies and they do not like it. Older infants hold onto their clothes as a protection, so they may object to their removal. From three years onwards there is usually no problem until puberty. Then the youngster must be handled with all the care and sensitivity you would extend to royalty! So it can be very useful to make observations whilst the child is clothed and undisturbed. Palpation and auscultation can easily be performed through vest and pants. On the other hand, some babies and children will remain undisturbed and, indeed, may expect you to undress them, and you can learn a great deal by the handling involved. It is a form of palpation which the children understand and further palpation afterwards is usually acceptable. But if the child shows uncertainty ask the parents to undress him. Even the most defensive child is usually happy for you to observe him naked from a distance.

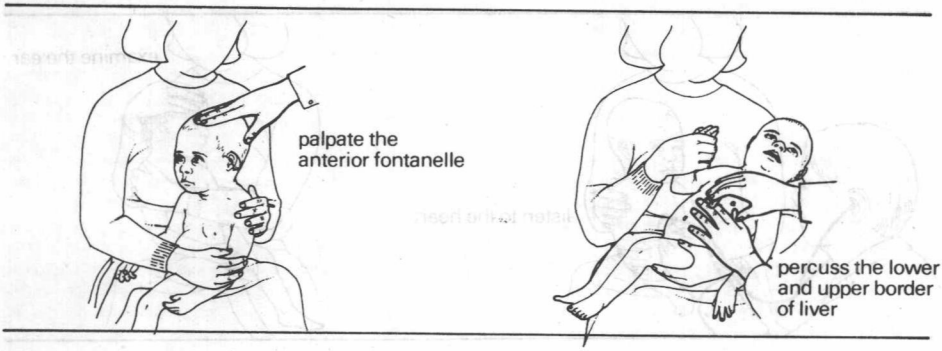
Although the collection of the information may be disorderly, its recording in the notes must not be. In most situations it is important to record aspects of the child's size. Weight and length or height must be measured accurately. In certain situations, skull circumference and very occasionally skin fold thicknesses may also be measured. The data is recorded in the notes and on the appropriate charts.

Note the child's general behaviour and awareness. You may wish to make your own evaluation of the child's capabilities and record them with the parents reports of his achievements.

Next, observe the child. Much of the information you seek may be obtained by careful observation. In general terms, is his appearance at all unusual? If so, try to define why, is it the shape of his head, the mould of his ears, the position of his eyes, his bodily proportions or the posture? Does he look like his parents? Has he got any of the recognised major or minor anomalies?

Then specifically assess his general size, proportions and nutritional state. Note the nature and distribution of any skin lesions or rashes. Then examine the system or systems that are the source of the complaint.

Examination



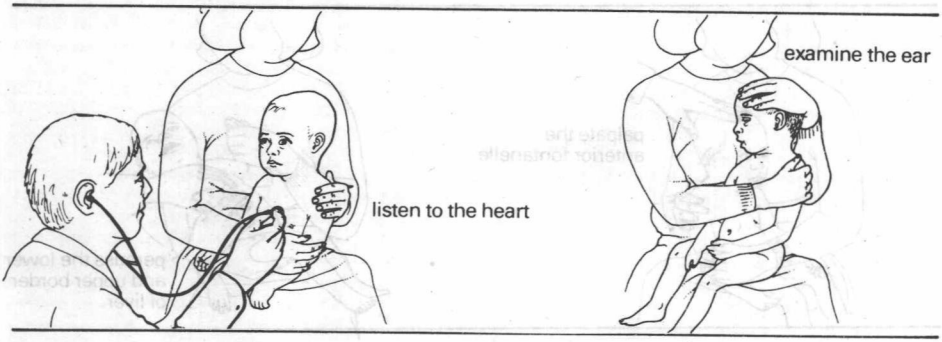
Respiratory disorders are often most easily observed. Avoid percussion or auscultation until you have noted the respiratory rate and the movement of the diaphragm and chest wall with quiet breathing and the effect of an stronger respiratory effort performed on request in an older child, or with a cry in a baby. Determine whether or not the lung is over-inflated by percussion of the upper edge of the liver.

Interpretation of breath sounds and additional noises can be difficult in the very young. Fine crackling noises on inspiration (crepitations) may be heard on careful auscultation in apparently normal babies. If they are persistent and bilateral in a distressed toddler they usually indicate bronchiolitis or, very rarely, left heart failure. Coarse intermittent noises during both inspiration and expiration (rales) usually signify liquid debris in the larger airways. They may be transmitted from the back of the throat. Harsh and more persistent noises superadded on the breath sounds (rhonchi), indicating a more persistent obstruction, are less fequently heard in children. Continuous noises, hardening and extending the breath sounds (bronchial breathing) may be heard in babies over most of the upper back, and usually are transmitted sounds from the main airway. When the airway is partially obstructed the noise becomes harsher and more vibrant and is called a stridor. This term covers a wide range of sounds, some fine and high pitched, some low and coarse. The character depends on the site, the nature of the obstruction and the narrowness of the aperture. Wheezing is heard when the mid airways are narrowed; always check if it is bilateral.

Examination of the cardiovascular system begins by recording the rate, rhythm, strength and character of the peripheral pulses. Palpate and percuss the anterior chest wall to determine the heart size, the site and nature of the apex beat and to detect the presence, if any, of a thrill. Then listen to the first heart sound, then the second, then the sounds in between and then the murmurs between the heart sounds. For each murmur you will wish to know its timing, character, loudness, site and distribution. Check if it is transmitted into the neck.

Always observe the abdomen before you palpate. Look for swellings and movements. Ask if anywhere is tender, and if you can, watch the child's face and not his abdomen whilst you palpate. After general palpation in the four quadrants, systematically determine the position and size of the liver, spleen, kidneys and bladder. If an organ is enlarged, note its position, size, surface and texture, the

Examination



character of the edge if it has one, and whether or not it is tender. When examining the back of the chest, look at the spine, particularly the lower end.

Again, examination of the locomotor and nervous systems is more by observation than manipulation. In babies and infants always palpate the anterior fontanelle or head 'soft spot'. It usually closes in the middle of the second year. Note if it is pulsating: it usually does. You can record the heart rate from it. The fontanelle may be full or flat. Ask yourself the following questions: Can the child see? Can he hear? Does he move his eyes and head well and in all directions? Does he move all limbs, is the movement normal and full? Is the contour and position of each limb normal? Is the power good? When you handle the infant, note the tone on passive movement of the limb. Is there any limitation in the movement at any joint? Are the joints unduly lax and hyperextendable? Again, watch the child's face whilst you move his limbs. Eliciting the reflex responses rarely adds useful information in children but it is as well to keep up the habit for the odd occasion when it does. In the infant the percussing finger can be used as the hammer.

Finally, examine with the light. If necessary, check the eyes and then the ear drums and finally the throat. Never force yourself upon the child. Never force his mouth open against his will: be patient. Ask yourself, is the information you wish to gather as important as all that? Why use a nasty dry stick to depress the tongue when a smooth tea-spoon handle will do just as well, and spoons are meant to go into mouths anyway.

Before you finish, should you bother to record the blood pressure? If disease of the kidney or heart is suspected, the answer is yes.

This completes the general examination. During it you may have included specific observations or examinations, for example, to see if the testes are in the scrotum, femoral pulses are present, the hips in joint, the characteristic of unusual lumps, the presence of the signs of puberty, etcetera.

Once the clinical enquiry is complete the next step is to re-examine the initial list of problems, some may be easily dealt with by appropriate advice, on the other hand new problems may have arisen. Draw up a new list and indicate what steps by way of further enquiry, investigation or treatment you propose to follow, and discuss these with the parents and to the extent that he may understand it, with your patient.

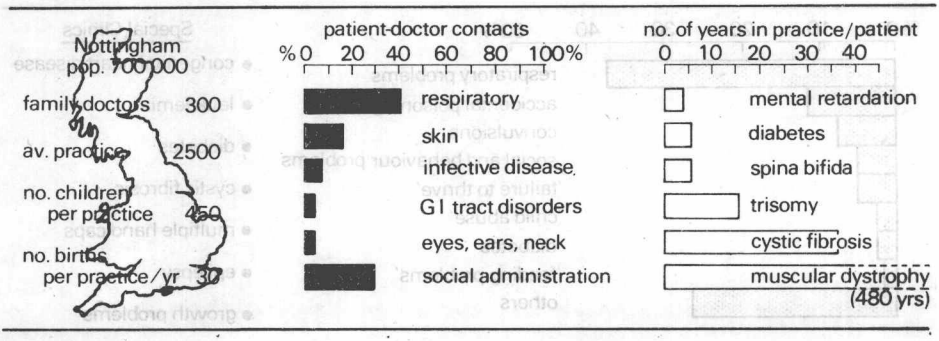
THE PROBLEMS

Every week a practising paediatrician sees a condition, anomaly, or a sign that he has never seen before and in such a situation his actions depend on his basic scientific knowledge. Every month he will treat a condition which is known but rare, then he relies on colleagues who have reported their observations in the medical literature. However, the substance of a doctor's practice is with diseases he has seen before, and his management of these problems will be influenced as much by his own previous experience and by his knowledge of his own patients and their community, as it is by therapies recommended in text books. What are these common problems? Obviously, this will vary from place to place and from community to community. The following is a description of the experience in one town in the centre of England in 1978.

The child may be seen by his family doctor, by a medical officer at a child health clinic or by a hospital doctor in the local district hospital. Each family doctor has about 2500 people in his practice. This means that with a birth rate running at 12.0 births per 1000 population, there will be 30 births in the practice each year and 450 child patients spread between 0 and 15 years of age. Between 15 and 20 per cent of the family doctor's work is with children. Disorders of the respiratory system are by far the commonest, followed by skin conditions, infectious diseases, gastrointestinal disorders, problems with eyes, ears and teeth. Social and administrative problems form the bulk of the remainder. Only 10 per cent of children's disorders are judged to be serious and in need of specific therapy, though it is likely that medicine will be prescribed in over half the cases.

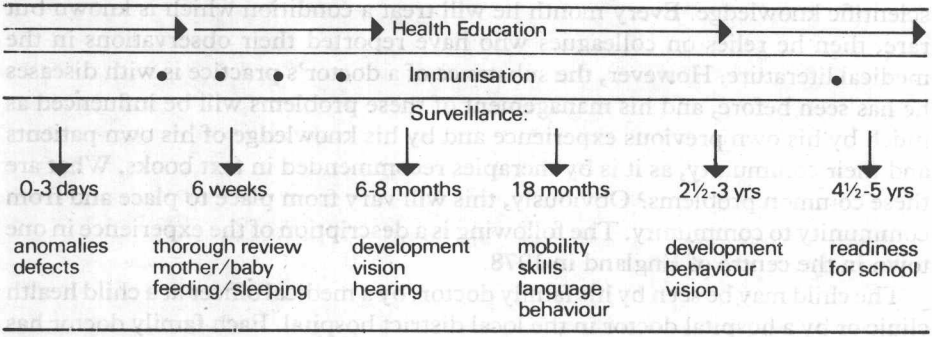
Many family doctors work in group practices in health centres. Working with them in the primary care team are health visitors. In some centres one doctor in the group, with the health visitors, holds regular child health clinics in order to examine routinely every child and provide a preventive health service. In others a special clinical medical officer attends the clinic. Healthy babies are examined routinely at six weeks of age and then at regular intervals afterwards. The predominant problems in the early months are related to feeding, nutrition, bowels and general growth and development. Hearing is assessed at 6 to 9 months of age. The infants are examined for vision abnormalities and the development of squints. The clinics also have responsibilities for the immunisation programme

Paediatric experience in general practice



and health education. After the age of five years surveillance is continued by the school health services.

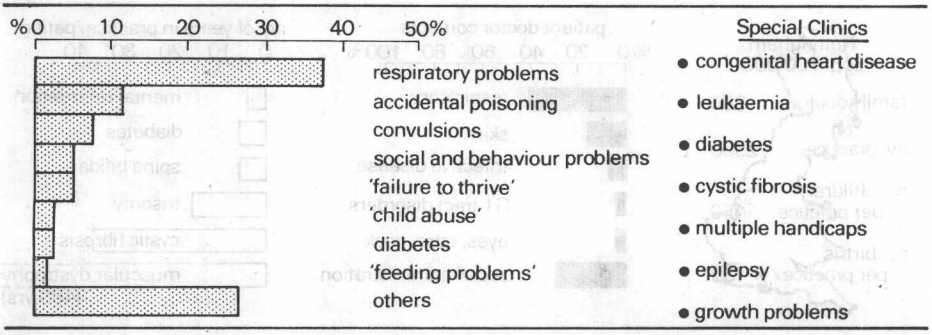
The preventive role of the child health clinic



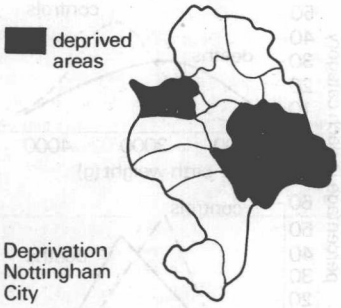
Children who fall ill suddenly are usually brought directly to the hospital emergency and accident department. Over half of the children admitted to hospital are brought by their parents directly to hospital. Here the conditions commonly seen are home and road accidents, accidental poisoning, acute respiratory illness, fevers, convulsions and acute bowel upsets.

Patients referred to the Paediatric consultancy service usually have less acute conditions. The commoner problems include recurrent respiratory infections, asthma, failure to thrive, small size, suspected developmental delay, convulsions or suspected convulsions, nocturnal enuresis and constipation. There are special clinics for children with chronic illnesses, for example for children with diabetes, leukaemia, epilepsy, short stature, cystic fibrosis and renal disorders. Children with physical and mental handicaps are assessed in a special developmental assessment unit by a team which includes physiotherapists, occupational therapists, psychologists, teachers, audiometricians as well as doctors from various disciplines.

Paediatric experience in hospital. For a population of 750 000, special out-patient clinics are needed for a variety of chronic illnesses



About half the people of Nottingham live within the old city boundary. Within that boundary are the deprived inner city areas. The children living in these areas are at greater risk to most health hazards from conception



	Deprived areas	Average
admitted to Neonatal Unit/100 births	27.8	12.2
admitted to Hospital in 1st Year of life/100 births	55	27
on Child Abuse Register/1000 children	4.5	1.5
infant deaths 0-1 yr/1000 children	40	15.8

The distribution of health problems differs across the town. Certain inner city areas, deprived by most material and social standards, have a higher incidence of most medical problems and the children who live there are, in general, less physically, mentally and socially able. At a disadvantage from birth, these children 'born to fail', are less able to form the secure relationships and thus are themselves less likely to establish a strong family environment for the own children. Breaking this circle of events is one of the major tasks of community paediatric care. It is a challenge that the health service staff share with social workers and teachers.

Mortality

Happily, infant and child mortality rates continue to fall. The rates are highest for the very young. In over 40 per cent of neonatal deaths, the infant has a congenital abnormality incompatible with independent life, and over 40 per cent are very immature and even with artificial respiratory and nutritional support do not survive the first few days after birth. Improvements in general health, antenatal care, and appropriate genetic counselling may accelerate the fall in the perinatal mortality rate.

Mortality rates in England and Wales, and the causes of neonatal deaths in Nottingham 1976-1977