

DISEASE IN INFANCY AND CHILDHOOD

BY

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DISEASE IN INFANCY AND CHILDHOOD

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PREFACE TO THE SECOND EDITION

IN undertaking a full revision of the text, it has been borne in mind that the past few years have seen not only important advances in therapy and diagnosis, but also a significant reorientation towards the whole field of paediatrics. The continued fall in the infantile mortality rate in most Western countries has focussed increasing attention on the hard core of perinatal mortality which remains; the more effective control of infection, despite the emergence of drug-resistant strains of organisms, has rendered congenital abnormalities of even greater relative importance; the waning severity or virtual disappearance of many childhood diseases previously common in temperate climates has called for a fresh assessment of those that remain. At the same time, the picture of disease in infancy and childhood would be unrealistic without some detailed consideration of the disorders of nutrition which still form its background in many countries of the world today, where increased food-production shows little evidence of keeping pace with increasing population.

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R. W. B. E.

Edinburgh, 1956

PREFACE TO THE FIRST EDITION

WITH the general acceptance of paediatrics as a separate field of study within and beyond the undergraduate medical curriculum, it is salutary to keep in mind the close correlation which the subject must continue to bear to obstetrics and antenatal care, to general medicine and therapeutics, and to the more philosophical approach of social medicine. But whilst the study of the child in health and disease cannot be carried out in isolation, there are many factors which render the child, and more particularly the infant, one for whose investigation special techniques must be applied and whose care involves an appreciation of his physical and emotional immaturity. This book is intended primarily to emphasize those features of the young and growing individual which will determine his response to the impact of disease processes, and distinguish this response from the behaviour of the adult whose development is complete or whose organs are already suffering degeneration.

As far as practicable, the classification of disease by systems has been subjugated to the consideration of disease occurring in particular age-periods, of the reaction of the immature host to different stimuli, or of the results of interference with function. Thus congenital malformations of all systems have been discussed in a single chapter. This subject has been considered in some detail, owing to the particular importance of congenital malformations in paediatric practice and to the recent advances made in both treatment and understanding of their etiology. Chapters III, IV, V, and VI together serve to emphasize the variety of diseases established before birth or within the first month of life. Tuberculosis, on the other hand, has been considered primarily as a general infection having various modes of entry and spread, in order to stress the importance of primary infection in early life and the risk of dissemination, rather than the localization in individual systems. Although some of the rarer manifestations of disease have been included when it was felt that these would serve to illuminate the subject, this book is not intended as an inclusive work of reference, but rather as an introduction to clinical paediatrics for those who are already familiar with the natural history of disease processes in adult life.

R. W. B. E.

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CHAPTER I

HISTORY-TAKING AND EXAMINATION

THE taking of a careful history and its interpretation have much of the interest of skilled detection ; the enquiry demands not only patience and tact but also judgement in deciding what is and is not irrelevant and assessment of the reliability of witnesses. The hostile witness has to be coaxed, the garrulous witness kept to the point, and the memory of the forgetful witness stimulated without too many leading questions being asked. Whenever possible the history should be taken from the mother or from whoever is in direct charge of the child. In a school medical examination, for instance, it is highly desirable that the mother should be present, since the school teacher can provide only half the picture of the child's life. A common mistake is to discard as irrelevant the observation of a careful mother as to character or behaviour change in her child, which may be the first evidence of some serious disorder such as tuberculous meningitis or emotional maladjustment. On the other hand, a clear distinction should be kept in mind between what the mother has herself observed (which she is well qualified to do) and the interpretation she offers (which is commonly based on no specialist knowledge). 'A fall' or 'teething' will very commonly be offered as the explanation of a wide variety of unrelated symptoms in young children, since falls are frequent and teeth cut over a long period.

It is always useful to take down the presenting symptom or complaint in the informant's own words, and if one only learns that the child is 'felled and crabbit' whereas he 'used to bawl like a linty', the information will at least be woven into the final picture of pleural effusion, leukaemia, or whatever it may be. In other instances it will be instructive to learn what a wide variety of childhood disorders may present with 'growing pains' or vomiting or loss of weight. The last complaint, however, requires more careful assessment, since a child is often thought (wrongly) to have lost weight or to be getting thin when he is in fact growing rapidly and passing from the rounded contours of later infancy to the more longilinear proportions of childhood. Here it is useful to note whether the child has in fact been weighed regularly or whether the mother's statement is based on clinical impression.

Particularly in the case of infants and young children, it is

important to take a detailed routine history on first examination, including a number of particulars which may at first sight appear irrelevant. The following scheme for case-taking will provide most of the information generally required, though it will need supplementing in individual cases :

GENERAL INFORMATION

Name :	Date of birth :
Address :	By whom recommended :
Date of first attendance (or admission) :	Date of discharge :
Father's occupation :	Mother's occupation (if employed) :
Informant :	

HISTORY

Complaint (in informant's own words) :
Duration :

PRESENT ILLNESS. Mode of onset and dates of onset of the symptoms. Health immediately before illness. Supposed and possible causes, *e.g.* injury. Progress of the disease and note of fresh symptoms in their order of onset. State of appetite, bowels, sleep, changes in temperament, *e.g.* irritability, drowsiness, before and during illness. Enquiry as to specific physical signs and symptoms if information is not volunteered, *e.g.* wasting or loss of weight, with reference to weight-card if available, oedema, cough, convulsions, enuresis.

PREVIOUS HEALTH

Antenatal. Health of mother during pregnancy (medical supervision, diet, etc.). Rubella or other infection. Vomiting. Toxaemia. (Supplement from antenatal records if indicated, *e.g.* Wassermann reaction, Rhesus constitution.)

Natal. Maturity. Birth weight. Nature of labour. Whether infant born at home or in hospital. (If the latter, supplement from hospital record if indicated.)

Neonatal. Whether colour, cry and respiration normal ; jaundice ; difficulty or otherwise in fixing at breast ; rashes, twitching, flaccidity. Snuffles, haemorrhage, or any other abnormalities noted.

Later Life. Exact details of feeding in early months ; whether breast-fed, and if so, for how long ; type of artificial feeding used ; whether vitamin supplements given, and if so, preparation, amount, and duration. Weaning—breast to bottle, or milk to solids : age and ease with which carried out. Appetite in infancy and subsequently.

History of convulsions, skin rashes, diarrhoea, infection, or other illnesses. Enquire specifically *re* measles, rubella, pertussis, mumps, chicken-pox, diphtheria, and scarlet fever. Vaccination, inoculations, etc. Operations.

DEVELOPMENT. Ages of raising head, sitting alone, standing, walking, talking (words and sentences), reading.

Ages at which continent of urine (*a*) during day, (*b*) at night ; control of faeces.

Whether child can feed and dress himself, and if so, how early he began to do so.

School progress, *e.g.* average age of class and place in class ; school report if indicated. Special aptitudes.

Social adjustment with other children at home and at school.

FAMILY HISTORY. Father's age. Mother's age. Health of parents and whether any consanguinity. (In familial conditions, include genealogical tree showing affected members, any cousin marriages, etc.) Health of near relatives and home contacts (tuberculosis, syphilis, rheumatism, nervous and mental disease). The children in their order, with details of age, health, or disease, neonatal jaundice, and including deaths, stillbirths, and miscarriages.

SOCIAL HISTORY. Approximate weekly income of household. Size of house, rental, situation, sanitation, ventilation, lighting, access to playground or open air.

The above is based on the assumption that the history is taken from a well-informed adult who has had charge of the child since birth, and also covers the eventuality of the child requiring admission to hospital. In the latter case, it is additionally important that the history should be detailed, *e.g.* including particulars of previous exanthemata and feeding, since it is much more difficult to supplement the history in hospital when the patient is a child than in the case of an adult. Thus if a case of measles appears in the ward, it may be essential to know as promptly as possible which of the children in the ward have already had the disease, and to decide which should be protected against it.

The child himself, however, may prove a valuable additional witness, if certain limitations of his evidence are borne in mind. Firstly, young children are very seldom able to localize pain at all accurately, and their description of symptoms will be limited by their vocabulary and their previous experience. It is exceptional, for instance, for a child under six to complain of sore throat or to localize abdominal pain (as distinct from tenderness) more closely than by placing a hand on the umbilicus. Secondly, most children are even more suggestible than adults, and the answers to leading questions may be correspondingly unreliable. In common with adults, their complaints may be coloured by a desire for sympathy or alternatively by a desire to get out of hospital. But as a general rule children tend to be at least as truthful as adults.

The significance of most of the information included in the scheme of history-taking will be brought out in subsequent chapters : but some aspects of the history will be briefly illustrated here.

Present Illness. Whilst most acute infections, *e.g.* primary pneumonia, will have a clear-cut onset which may even be dated to within a few hours, determination of the duration of more chronic illness is likely to present considerable difficulty. There is often a period during which the child has failed to thrive before the presenting symptoms have appeared, and the assessment of this period will depend on the mother's powers of observation and often on whether she is occupied with the one child or with a large family. Failure to gain weight has already been mentioned, whilst retardation

of growth is only likely to be noticed when the child has obviously begun to lag behind his contemporaries. This may not be noticed for six months or more after growth has ceased. Against the fact that the mother of an only child will probably observe him closely must be set the fact that the mother of a larger family will know what to expect and will be in a better position to judge what is a deviation from the normal.

The history of the present illness is often inextricably interwoven with the history of the child's previous development. Thus considerable importance may be attached to the fact that a child has passed a normal milestone of development, *e.g.* being dry at night, and has suddenly regressed to a more infantile phase (nocturnal enuresis). Again, in the case of a child who has learnt to walk at 1 year of age and has subsequently 'gone off his legs' at 18 months, active disease, such as rickets, should be suspected.

Thus symptoms directly attributable to the present illness will often only be elicited when the history of previous development is taken in detail, and routine questions asked as to feeding, appetite, bowel habits, behaviour, teething, sitting, standing, talking, walking, and performance. In older children, a school report is often valuable, though with the large classes commonly found in primary schools, observation of the individual child is often less detailed than might be desired.

Behaviour Problems. These represent such an important field of ill health in childhood that their elucidation requires special consideration. It must be realized from the outset that whilst certain behaviour problems may have a purely emotional basis, the association of physical and emotional ill health is commonly a very close one. Whilst the sick child is likely to behave abnormally as a direct result of physical illness, the child who is emotionally disturbed is equally likely to suffer in physical well-being. There can properly be no sharp division between Child Guidance, the service dealing primarily with the psychological and emotional difficulties of childhood, and paediatrics. The paediatrician, family doctor, or school medical officer will constantly encounter cases where the illness is psychosomatic, and should be able to judge whether the child requires expert psychotherapy or intelligence-testing, whether a physical defect is the basis of the behaviour disorder, and whether the problem is one within his competence to treat.

The psychological history taken in the Child Guidance Clinic or department of psychological medicine is naturally more detailed than the routine history taken by the paediatrician, but much of the relevant information can be obtained by him in cases in which physical and emotional disturbances co-exist. The following scheme is adapted from one designed for the use of psychiatric social workers :

Date of interview.

Name. Address. Date of birth.

School. (Including social status of family in relation to school, *e.g.* a poor child in a fee-paying school or a well-to-do child in a free school.)

Referred by. (Parent, school, youth organization, probation officer, welfare officer, etc.)

Reason for referral—as given on referral note.

Symptoms—as described by parent, *e.g.* bed-wetting, sleep—restless or otherwise, night-terrors or shouting or sleep-walking. Appetite—food-fads. Nail-biting and/or finger-sucking. General demeanour, *e.g.* ‘nervous’ (ready tears, apprehensiveness, etc.). Obstreperous, negativistic, destructive, insolent, solitary or sociable, tics, obsessional habits, *e.g.* hoarding, excessive tidiness or cleanliness. (*Note.*—There is frequently a striking discrepancy between the parent’s account and the reason given for the referral by other agencies.)

Informant. Relationship to patient; reliability or otherwise; any other relevant information.

GENERAL IMPRESSION OF PARENTS AND FAMILY

(*Note.*—The attitude of the parent to the child will depend on the parental type.)

Father. Age. Occupation. Type.

Mother. Age. Occupation. Type.

Marriage. Duration; financial state; marital relationships. (*Note.*—Little information as to marital relationships should be sought at first interview, and most information will be obtained indirectly.)

Family. Including miscarriages and deaths. Age range between children. (?) Planned family. Any problems in regard to each child, *e.g.* bed-wetting, attendance at special school. (*Note.*—It is rare to find that only the patient is disturbed.) Religion.

HOME CONDITIONS. *E.g.* settled home, crowded, furnished rooms, living with relatives, interference by neighbours.

PERSONAL HISTORY

Pregnancy. Conscious attitude of mother; unconscious attitude as gauged by sickness, etc. (Prolonged vomiting throughout pregnancy may indicate rejection.) Prematurity.

Labour. Duration; instruments; state of baby at birth.

Feeding. Breast and/or bottle, with reasons. Weaning (*a*) from breast, (*b*) from bottle, and methods, gradual or sudden. Reaction of baby to feeds—greedy, unduly slow, etc. Reaction of baby to weaning.

Teething. Age of commencement. *Walking. Talking.*

Convulsions. (*Note.*—If these have occurred, whether isolated or frequent; possible precipitating cause.)

Habits. Training and reaction of baby to training. Age at which control of bladder and bowel established.

Mother’s reaction to constipation, incontinence, and concern of mother with faeces.

General Behaviour of Child in First Year of Life. *E.g.* crying, smiling, solemn, etc.

1 to 5 Years. Timid or reasonably secure and adventurous. Clinging to mother or independent. Admiration by other adults, *e.g.* grandparents, aunts, neighbours. Reaction to birth of next child, and age of patient when this took place. Relationship with children of own age outside family. (?) Day or residential nursery, and if so, why.

School. Age at beginning. Reaction to first day. Reaction now. Mother's conception of progress (compare with school report at end of history). (Note.—A school visit may be desirable, to gain impression of teachers and teachers' impressions of child.)

Home. Sleeping arrangements. Participation in household duties and willingness or otherwise to be helpful. Relations between patient and siblings and parents. Separations from parents (e.g. hospital admissions, holidays). Relations with children outside home. Hobbies and leisure occupations. Membership of any youth organization. Pocket money.

Puberty. Age of onset. (?) Sex instruction.

Illnesses. With note on age, severity, hospitalization (and reactions to this).

School Report. In addition to the report furnished by the school, a school visit by a psychiatric social worker will provide the following information :

Impression made by head-master/mistress.

Impression made by child on head-master/mistress and teachers :

- (a) behaviour and social adjustment,
- (b) intellectual capacity,
- (c) achievements.

Subsequently—correlate intelligence and achievement.

Report from any other Agency concerned. E.g. youth organization, probation officer, welfare officer, etc.

It will be seen that whether the child's disability is primarily physical or primarily emotional (or psychological), emphasis is placed not only on the history of the present illness but also on antenatal and postnatal development, his previous illnesses, family history, and social background. This concept of the child as the product of his heredity and environment is essential for a proper understanding of disease processes when they occur. Unless the history taken is adequate in every particular, essential factors will be overlooked, and therapy undertaken with a misconception of the underlying causes which must be remedied. To take the simplest example, prolonged hospital treatment of a child with pulmonary tuberculosis will be largely wasted if he is sent back to the care of an aged grandmother who is expectorating tubercle bacilli about the house and cannot provide him with an adequate diet.

It is time well spent if a history taken at hospital can be followed up by a visit to the home. In this way the child can be seen as a member of a family unit, and the standard of living of the family assessed. Although in practice these home visits are usually delegated to an almoner or health visitor, the student will find it a very great advantage to make a number of such visits himself to homes of different social status, and write a brief report on the home as part of his case history. Two examples will illustrate some of the points to be noted :

A. An old, stone-built tenement dwelling on third floor. Common staircase in complete darkness at night, and stone steps badly worn, opening on to main street. Common lavatory on half-landing serving fourteen persons. No accommodation for perambulator on stairway or landing. House consists of

two rooms (approximately 12 × 10 ft. and 10 × 10 ft.), both facing south-east and well lighted; artificial lighting by gas. Cooking on open coal stove; cooking utensils, two saucepans and frying-pan, all dirty. Kitchen contains sink with drainage but no running water, which has to be carried from tap on landing. No bath or wash-basin. Laundry is taken to public wash-house, except napkins, etc., which are washed in sink and dried in kitchen, hung from ceiling. Food kept on open shelves in kitchen. Three wooden chairs and table; double bed in recess. Bedroom contains double bed and cot, clothes hung on nails. Bedding dirty and inadequate. Family consists of parents, who sleep in kitchen, three children aged 12, 10, and 6, who share double bed, and patient (aged 2), at present in hospital, who has separate cot. At time of visit, family was having dinner, which consisted of stew served from a common bowl, each member dipping in with own spoon. Pressing invitation to dinner from whole family tactfully refused. Mother's comment on children was that they were "all good bairns" and she "wouldn't mind four more". (*Note*.—Patient was admitted to hospital with Sonne dysentery. Mother states that the two older children have had diarrhoea "on and off for quite a while"; does not know if stools have shown blood or mucus. States that she and husband have been unaffected.)























Impression. Mother appears an amiable slut; father not seen, but children said "to think the world of him". He is in regular employment (unskilled labourer); older children cheerful and friendly and obviously on excellent terms with mother; do not appear under-nourished but are dirty (not verminous) and clothes are ragged. Household quite unfitted for any isolation precautions. Children to attend hospital for rectal swabs; mother refuses to do so herself; but parents might be persuaded if other children positive.

B. Ground-floor flat in new housing estate; main building is of three floors, designed around small open playground, and separated from pavement by 10-foot lawn. Four rooms and separate lavatory (kitchen-bathroom, living-room, two bedrooms). Pram kept in hall or out of doors (in front of living-room window). All rooms well lighted; electric light; running water (hot and cold) in kitchen and bath. Laundry done at home, dried out of doors or in kitchen. Utility furniture and carpets. Whole house clean and well cared for. Family consists of three children (the eldest in residential hostel for difficult boys, referred by juvenile court for continual truancy and thieving), younger children aged 6 years and 18 months have separate beds; clothing excellent; children continually scolded or smacked by mother during visit. Mother appears unstable, irritable, energetic, and house-proud, but quite unable to manage children; she is employed during half the day, the baby attending a day nursery and the second child having dinner at school. Father killed two years ago.

Impression. From material standpoint, an excellent working-class home, but death of father, and mother's personality, have already produced one 'behaviour-problem' child and promise to produce two more.

Family History. This may provide the clue to at least three different aspects of disease in childhood, viz. source of infection, genetic determination of abnormality, and the emotional impact of other members of the family on the individual child. It is usually best to take the family history after that of the present illness, since the informant may otherwise regard detailed questioning as irrelevant inquisitiveness. Whenever it is desired to indicate the distribution

of a disease-process or abnormality within a family group, a pedigree should be constructed, using the standard international symbols. Members of each generation appear on the same horizontal line, and the generations are given roman numerals. Arabic numerals can be used for individual members of each generation. The individual around whom the pedigree is constructed is known as the *propositus*, and is indicated by an arrow. The following are the symbols most commonly required; others are detailed by Crew (1947).

 unaffected male	 unaffected female	 sex unknown
 affected male	 affected female	 unknown whether individual affected.
 miscarriage	 or  stillbirth	 or  death in infancy.
 marriage coupling bar.		
 consanguineous marriage coupling bar.		
 brother and sister relationship (sibship coupling bar).		
 or  sibship of which details are unknown or only number is known.		
 or  identical twins.		
 or  non-identical twins.		
 examined personally.		
 examined competently but not personally.		

The standard symbols can be varied in particular instances if a key is given.

The paediatrician is in an exceptionally favourable position for obtaining information of genetic or epidemiological value. Since the informant is normally the mother, she will not only be able to provide equally reliable information with regard to other members of the sibship, but will usually be prepared to bring her other children for examination if the need is explained to her. She will often also be able to give at least some information with regard to the two previous generations (her own and her parents'). Parents will in addition usually be prepared to undergo examination themselves if they are convinced that it is relevant to the well-being of the child, or will help to assess the likelihood of healthy children being born subsequently.

In the case of a congenital abnormality, particular attention should be paid to the history of the pregnancy. The occurrence of infection, *e.g.* rubella, during the first three months may well be forgotten unless particular enquiry is made.

Source of Infection. The importance of determining this is obvious in such a condition as tuberculosis, and the family history will serve as the basis for the examination of immediate contacts. Whilst the family group is the most important source of infection in the case of the infant and young child, enquiry may have to extend

beyond it when there are lodgers or in the case of older children attending school. Thus an outbreak of erythema nodosum in a particular class may be found due to the teacher suffering from open tuberculosis.

Examples of other conditions in which there is likely to be a high familial incidence of infection within the home are dysentery, threadworm infestation, upper respiratory infection, and scabies. The occurrence of exanthemata in several members of a family will depend to a greater extent on the age of the children. In the case of anterior poliomyelitis, although familial infection was previously considered unusual in this country, recent epidemiological studies have shown that the virus can be found in the stools in a high proportion of home contacts when a case has occurred. Recognition of the protean nature of symptoms and the likelihood of many non-paralytic cases occurring in an epidemic have emphasized the importance of the family history in identifying sources of further infection.

Genetically Determined Abnormalities. A detailed family history and pedigree may serve to determine the mode of inheritance of a particular abnormality within a family group. When a single pedigree is insufficient to do so (as is frequently the case), the accumulation of pedigrees may subsequently throw light on the genetics of the condition. It should be emphasized that the interpretation of human pedigrees commonly requires expert knowledge, and it is significant that most of the examples quoted in text-books of human genetics, of conditions where the mode of inheritance is clearly understood, are ones which are either rare or of little clinical importance. A notable exception, however, is haemolytic disease of the newborn, where the comparatively recent recognition of Rhesus incompatibility and the possibility of genotyping parents have had practical applications of great importance.

Many of the older case reports of conditions of genetic interest are of little value owing to essential information being omitted. This applies particularly to such points as consanguineous (cousin) marriage of parents, which at once becomes obvious if an adequate pedigree is constructed. It is also advisable to record whether a family has been deliberately limited after the birth of an affected child, since this may affect the genetic assessment of a pedigree.

Emotional Impact of Family. Enough has been said of the child's reactions to other members of the family, and to the parents' marital relationship, to indicate the importance that these may have on his mental health. The eliciting of this part of the history often requires considerable tact, since the mother may be unwilling for various reasons to give an objective picture of the child's relationship to the father, grandparents, or to herself. It is often necessary to construct the background piecemeal by indirect questioning. Relationship of