arrangements for taking the census the subject of the diseases of the living occupied our attention, and preparations were accordingly made for procuring returns of all those persons who laboured under disease either at their homes or in public institutions upon the night of March 30, 1851."[12a] The purpose of the inquiry was thus described on the Sick Returns (schedules) that were used: "The alleviation of human suffering arising from bodily infirmity is a work in which every member of the community should naturally feel an interest: and one important step in this direction is to ascertain the extent and character of the evils to be contended with; towards these most desirable objects the Commissioners hope to assist by means of this Return."[12b]

The results of this pioneer inquiry, published in a volume entitled *Report on the Status of Disease*, might not, by modern standards, be regarded as giving very sound evidence upon the prevalence of disease; nevertheless the inquiry was not without value, and was repeated at each census of Ireland until 1911. Out of a total population of some 6½ million persons, 104,000, or 1 in 62½, were returned as "labouring under disease" on the chosen night; 9,000 of these in hospitals, asylums, and gaols, 47,000 in workhouses, and 48,000 in their own homes. One-third of the sick were returned as suffering from an infectious disease, one-quarter from disease of the nervous system, and one-tenth from respiratory disease including consumption. Circulatory disease was infrequent, afflicting only 0.5% of those sick. Coronary disease, of course, was not mentioned, but the following passage in connexion with the 266 cases of heart disease (out of over 6 million persons) reported by people in their own homes contains matter for pondering upon: "As, however, a diagnosis of cardiac affection could not well be made except by professional persons, and as the peasantry of Ireland popularly term several other affections chiefly of dyspeptic character 'diseases of the heart,' *from the distress experienced being, for the most part, referred to the precordial region*, we think it likely that the number returned as labouring under disease of the heart at their own homes is somewhat exaggerated."[12c]

Apart from blindness, deaf-mutism, and mental impairment, no attempt has been made at the censuses of England and Wales to ascertain the prevalence of disease, but, as has been emphasized earlier, the census enumeration of the population has been a necessity in order that the prevalence of disease, as determined by other methods, can be meaningfully related to the numbers at risk. The census, however, is more than an enumeration of the people by sex, age, and occupation. It is a periodic social survey embracing every individual in the country, determining not only the number but also the condition of the people in relation to their social environment, their homes, and their families. As such it not only provides the means for recording the results of medical progress in the past but also points out some of the directions in which further efforts are needed to achieve still greater progress in the future.

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SLEEP PROBLEMS IN THE FIRST THREE YEARS

BY

R. S. ILLINGWORTH, M.D., F.R.C.P., D.P.H., D.C.H.

Professor of Child Health, University of Sheffield

The extreme frequency of sleep problems in young children might suggest that the abundance of material would have led to an extensive literature on the subject. A search, however, of the last 50 volumes of the *Index Medicus*, covering the world's literature of the past 25 years, revealed a mere 18 papers. Four of these were British and one was American. In contrast, the last 20 volumes of the *Index* listed 53 papers on lipochondrodystrophy (gargoylism). Only two of the ten papers which I was able to obtain gave practical hints of value in treatment—those by Wallgren (1937) and Spock (1949). Bakwin (1948) discussed the psychological aspect of sleep disorders.

Perusal of numerous volumes on child psychology showed that they too failed to discuss the practical management of a child with sleep refusal, Cameron (1946) and Kanner (1948) alone discussing the problem in detail. Cameron regarded the problem as one of the nervous highly strung child. Gesell and Ilg (1934), however, in an excellent discussion of the normal development of sleeping behaviour, emphasize that these sleep difficulties are not due to "nervousness" but that they arise in perfectly normal children, without any mismanagement, as part of the normal course of the evolution of their character and behaviour.

I have attempted to present the problem and to discuss those questions to which I do not know the answer, in the hope that others with more experience will be stimulated to put it into words and express their views.

Normal Sleep Patterns

This section is based on the work of Arnold Gesell, supplemented by my own experience.

Sleep problems are extremely common at one time or another in young children. The extent of the problem depends chiefly on two factors—the innate character of the child and his management by his parents. Few today believe that the character and the behaviour of a child are entirely engendered by his environment. The environment may modify but never completely change the character traits with which he is born. It is a mistake to suppose that sleep problems arise only as a result of mismanagement, spoiling, or unhappiness. Some particularly placid children present practically no problem. As infants they sleep a large part of the day in the "pram" with nothing to do, little to see, and without company. They are willing to be left in the pram long after the more active child has refused to have anything to do with it. A rigid bedtime schedule suits them well, while their more active determined brothers may not

tolerate absolute rigidity of method, demanding elasticity adapted to their needs. From a few weeks of life the more interested active child refuses to be left alone during the day, demanding to see everything that is going on, constantly wanting to practise his newly acquired skills of manipulation, sitting, standing, creeping, and walking. He requires very much less sleep than his more placid brother. He changes from two naps to one nap a day and then discards the daytime nap very much sooner. He has a great deal more determination and persistence, and in the resistive phase from 15 months to 3 years he has to be handled carefully to avoid sleep refusal.

The newborn baby sleeps for the greater part of the 24 hours, and it may be practically impossible to awaken him. As he matures, the duration and depth of his sleep decrease. At the age of 3 months the average child may have four or five sleep periods in the 24 hours. At 12 months he has two or three sleep periods, and at some time between 2 and 4 years he discards the daytime nap.

In the first few weeks of life the infant cannot help going to sleep, especially after a good feed. The older child, from 18 months onwards, finds it difficult to let himself fall asleep, sleep release having become largely a voluntary process, and sleep resistance may therefore develop. Between 9 and 21 months the child is particularly apt to suck his fingers when going to sleep, and head-rolling or head-banging is apt to occur. They disappear in time without treatment.

A young baby who is constantly rocked to sleep may associate rocking with sleep and later refuse to sleep without rocking. An infant learns to associate sleep with a particular doll, teddy bear, or rag, so that he becomes unable to go to sleep without it. At about 2½ the child is apt to develop a sleep ritual, demanding a drink, the pot, and other things before he will go to sleep, and often demanding his mother's continued presence. This is a form of filibustering, but it is also a kind of association between sleep and other objects or acts, as in the younger child.

Another aspect of development which has considerable bearing on the sleep problem is the normal period of development of the ego between 1 and 3 years. A child at this age is a nonconformist. Gesell terms it the "period of disequilibrium." He wants to assert his powers and attract attention. He likes a fuss and a display of parental anxiety. He enjoys a fight, particularly as a fight almost always ends in victory for him. He is extremely likely to repeat any performance which causes such a response, and so readily develops bad habits. If offered one toy he wants a different one. If asked to go out he wants to stay in. He demands to go upstairs when his mother goes down, to turn left when she turns right, to sit down when she wants him to walk. Whatever she wants him to do he wants to do the opposite. If she tries to persuade him to eat more food, and certainly if she tries to force him, he will develop the commonest of all behaviour problems—food refusal. If she tries to compel him to sit on the pot against his will until he has passed urine or faeces, he will rebel against the pot, sphincter control will be delayed, and constipation may result.

It is not surprising that the same traits pervade his sleep behaviour. He can maintain surprisingly prolonged opposition to bed and sleep if the parent tries forcible methods of compelling him to lie down or sleep, makes a fuss, and displays anxiety. It is a great mistake to regard this as due to naughtiness or nervousness. It is part of his normal development. Marked negativism and determination in the absence of mismanagement is likely to be a preview of strength of mind and qualities of leadership in an adult. Such character traits must not be broken or cowed.

The risk of habit formation is a vital one in the consideration of sleep problems. It is difficult to say when it begins. It is present at 6 months of age, and often earlier. Spock (1949) describes the frequency with which sleep refusal dates from colic in the first three months, for which the child had to be picked up in the evenings, when colic is most likely to occur. The baby then develops the habit of crying to be picked up when placed in its cot. The risk increases with the increasing maturity of the child. At the age of 2 to 3 a child very rapidly develops habits, good or bad, and every effort must be made to avoid the development of bad ones.

Another relevant phase of development is the increased dependence on the parents between the ages of 18 months and 3 years, a greater reluctance to be left alone or to be left with anyone but the parents. The intensity of this trait depends partly on the nature of the child. The more affectionate and sociable he is the more he demands his mother's company. Crying in any part of the night or morning may be largely due to this. The basic needs of the child are love and security, and every effort must be made to supply them.

Between 2½ and 4 years of age children commonly develop inexplicable fears, such as fear of the dark.

It is important to remember that the normal child acquires sphincter control between the ages of 15 months and 3 years. Most children become dry by night between the ages of 2 and 3, and they may wake crying at night because they want to pass urine. Failure to answer the child's needs is extremely likely to delay the acquisition of sphincter control. Such crying is apt to be wrongly ascribed to naughtiness.

In the first two or three years it is wise in cold weather to look in on the child when asleep to make sure that he is properly covered up. Shortly after the second birthday he discovers how to cover himself up in bed. The mother has to get used to the sight of the child lying asleep in extraordinary positions, transversely across the bed, or with his feet, instead of his head, on the pillow.

The best guide to the adequacy of sleep is lack of fatigue during the day. There are considerable variations in the amount of sleep required by children, and, provided that no undue fatigue results in the daytime, it does not matter in the least if the child lies awake for two or three hours (without crying) after going to bed, or awakens at 1 or 2 a.m. and talks and sings, or awakens at 5 a.m. to talk, sing, or play with a sibling. Nor does it matter if he temporarily goes to bed later than his usual bedtime. The rhythm of sleep varies greatly from child to child and from time to time in the same child.

The difficulty experienced by the toddler on waking from a nap, and the crying and irritability which often result from wakening him too suddenly, are of no importance.

Preparing for Sleep

The first essential is intelligent management of the child based on love and a thorough understanding of the normal.

Full realization of the child's normal negativism between 15 months and 3 years is essential. Much trouble can be avoided by adoption of a wise pre-bed routine. It is a good thing for the child to get used to the idea that he goes to bed after some books have been read to him. The stories should not be too exciting. Every effort should be made to avoid snatching toys from him in impatience or anger because he is slow to put them down or away. He should not have too exciting a game before he goes to bed. It is important to avoid tears and arguments at any stage in a child who is apt to cause trouble when put to bed. If the child will not set off upstairs on his own after waving "bye-bye" he should be led or carried up, but there should be no discussion about whether it is time for him to go. He should be allowed to help in the preparation for the bath —undressing, turning on the tap, throwing the sponge into the bath. A child who is learning the use of his hands may be very annoyed if he is not allowed to take part in undressing and putting the nightie on. Almost all children enjoy the bath, and this should be encouraged. He can splash, "swim," and help to wash himself. If he wishes he should walk to bed instead of being carried.

To the adult these may seem to be trivial matters, but if they are ignored because the mother is in a hurry, is impatient, or is irritable, the child may respond by tears, and if he is in a resistive phase this may be quite enough to make him refuse bed. In winter the bed should be warmed by a bottle, which is removed when the child is put in. He should find his favourite doll awaiting him. Particularly in his second and third years, he likes to have a variety of toys in bed with him—his favourite tin with dried peas in it, the coloured clothes-pegs, and books. It is no use expecting the bed to be neat and tidy. He may dislike being tucked in excessively, and if so it can be avoided. The room should be properly darkened, unless he is afraid of the dark, in which case there is no harm in supplying a night-light, for it would be foolish and cruel to leave him crying for fear in a totally darkened room. The room must be properly ventilated and not stuffy, and overclothing must be avoided.

He should be put into bed with an air of certainty and confidence. It is disastrous to show doubt or anxiety whether he will lie down. The child is extraordinarily prompt to recognize such doubts and to take advantage of them. He must not be told to go to sleep, or to be a good boy and not to cry. That is a certain way of keeping him awake.

The mother and father should, if possible, share in putting the child to bed. The child who has never been bathed and put to bed by anyone but his mother may very well cause a disturbance when someone else has to do it.

All threats to use bed as punishment must be avoided, for a child readily develops unpleasant associations with bed. All conversation about his appalling bedtime behaviour must be absolutely avoided in his presence, for it merely focuses attention on the problem. One has only to listen to the toddler's conversation with his dolls during a phase of sleep resistance to realize how much the child thinks of his night-time experiences, and further attention must not be drawn to them.

Most people advocate absolute rigidity about bedtime. The desirability of this is a matter of opinion. It may be reasonable in later years of childhood, but it is doubtful whether it is always right in the difficult age of from 1 to 3. Rigid bedtime schedules, like rigid feeding schedules, suit many children, but not others. A determined child in the resistant phase is very apt to cause trouble if put to bed before he is tired, and some elasticity would seem desirable in his management, his bedtime being postponed a little until reasonable fatigue indicates his readiness for bed. Clearly overfatigue must be avoided, for excessive tiredness may cause restlessness and delay sleep.

Many make the mistake of giving the child too long an afternoon nap. A child of 2 who has a three-hour nap in the early afternoon cannot be expected to be tired or ready for bed at 6 p.m. The best course is to shorten the afternoon nap. The only alternative would be to postpone his bedtime to a correspondingly later hour. The transition stage between two sleep periods and one sleep period in the 24 hours is difficult to manage. If he has the afternoon nap he is not ready for sleep at the usual time in the evening, and may refuse to go to bed. If he refuses the nap he is unduly tired and bad-tempered in the late afternoon. Adjustment occurs as he gets older so long as elasticity is allowed and no forcing methods are adopted. When he refuses to go to bed in the afternon he may be perfectly willing to sleep on the sofa, or on blankets placed on the floor elsewhere but in the bedroom, provided that no mention is made of the abominated words "sleep" or "rest."

An essential prophylactic measure is the avoidance of tension and fights during the day. They set up a vicious circle—tension and temper tantrums leading in turn to increased irritability and tension by day. The resultant tension in the mother, together with the child's disturbed nights, keep the mother awake, and her irritability next day considerably worsens the child's behaviour. The child who during the day receives all the love and security which he needs, and who is subjected to wise discipline with a minimum of thwarting, is unlikely to present anything but temporary problems at night. The child who sees little of his mother by day because she is working in industry or goes out shopping and visiting friends without him may be very reluctant to leave her at night. Persistent sleep problems are usually only part of a general disturbance of behaviour due to mismanagement.

A common cause of the mother's anxiety is the proximity of neighbours, or the presence in the house of a critical mother-in-law. This is a social problem for which it is difficult to find the answer, but the mother must be led to understand that her efforts to make the child go to bed and sleep are having the reverse of the effect desired. There is no better preparation for a good night's sleep than physical exercise in the open air.

Sleep Problems

When sleep problems arise, the essential thing is to do one's best to discover the cause, trying to see things from the child's point of view as well as from that of the parents. Many parents complain that "they have had a bad night with their child." Others complain that "their child has had a bad night." Both the child's and the parents' points of view must be considered. Every effort must be made to discover the reason for possible underlying tension. In the period of negativism the most trivial things may upset the child and cause bed refusal. Teething, a slight cold, a change of room, a change from a cot to a bed, may be enough to cause temporary trouble. In many cases the cause remains undiscovered.

Children have phases for which no explanation can be found. Properly managed, these phases do not last long; badly managed, they readily persist. It is essential that the parents should lose any sense of guilt of having failed the child by mismanaging it, or of anxiety about his mental state or happiness. They must realize that his behaviour is not just naughtiness. They must be told about the normal development of the child so that their anxieties may be allayed. It may be necessary to treat the mother with a sedative, such as phenobarbitone, to break the vicious circle mentioned above. They must not think that these problems arise only in the nervous child, as Cameron (1946) suggests. The parents must know what is normal and be guided accordingly, so that the child rapidly grows out of his difficulties.

For convenience the following discussion is divided into four parts—bed refusal, sleep refusal, night waking, and early morning waking. A child may show any of these alone or in combination. One problem often leads to another.

Bed Refusal

The child may either cry and scream when taken to bed or lie down quietly and get out of bed and cry as soon as the parent's back is turned. The "crying" often begins as mere shouting, and without tears. It is of necessity not a problem of the first year of life. It occurs particularly in the period of negativism from 15 months to 3 years.

There is no one method which will cure the problem. Provided that the child is reasonably fatigued the trouble is likely to be in the main an attention-getting mechanism, a way of asserting his power, together with his desire for company. I was asked to see a child of 17 months because the mother feared that he had gone wrong in his head. When she had put him to bed and gone downstairs he immediately began to cry, and every time she went back to him he was standing on his head. Fear of the dark and of strange shadows on the wall may cause trouble in the older child. In other cases no cause can be found.

The chief essential in the management of the problem is to avoid having a fight with the child, for in a fight over any matter, day or night, the child almost invariably wins. It is futile to compel a child time after time to lie down. Once such a scene has occurred it is very likely to recur, the child expecting the fun and being fully prepared to demonstrate his powers. If he refuses to stay in bed and lie down it is wise to talk to him, tell him some nursery rhymes, and quietly but firmly try again. If he refuses again, he should be left to get out of bed and find his own way back. If there is a danger that he will climb out of his cot (at about 2 years) he should graduate to a bed. When he discovers how to open the door (between 2 and 3 years), it will have to be locked or have a catch on it so that he cannot get out and perhaps fall downstairs. It is thoroughly undesirable, however, except during this short period and under these circumstances, to lock a child in his room. Above all, no anxiety must be shown about his behaviour. The mother must convince the child that she does not care if he does not lie down. It is futile to argue with him. He will almost inevitably do the opposite of what he is asked to do. It is disastrous to lose one's temper or become impatient or cross. The worst thing that the mother can do is to smack him. The child wants love, and love and patience alone will soothe him. It is stupid to smack a child for wanting the company of the parents he loves. He should not be left crying at the door of his room indefinitely. Just how long he should be left in an attempt to break the habit it is difficult to say. Some claim that any child will yield if left to cry it out for two or three consecutive days. It might even take longer to break a well-established habit. It is not easy to persuade a loving mother to adopt such a course, but she may be persuaded if brought to realize that it is in the child's own interest. The mother or father should certainly go in at not too frequent intervals, and only for a minute or two at a time, to see that no ill has befallen him and to try to soothe him. If they stay longer the child will again cry for their return. If he is apparently not tired, it may be right to take him downstairs for a while, but clearly this should be done only very occasionally, for it very rapidly leads to habit formation.

Whatever is done, it is essential to be consistent, using only one method at a time, until an adequate period has elapsed for its effectiveness to be assessed. It would be wrong, for instance, to sit with the child until he goes to sleep on one night, on the next to leave him to cry it out, and on the next to take him downstairs the moment he cries.

Occasionally a child refuses to go to bed for his mother, but lies down meekly for his father or someone else. This is only a temporary phase if properly managed. If he expects a fight with either parent the best thing is to let the other parent put him to bed for several nights, and then let the first try again with an air of confidence and certainty.

Wallgren (1937) suggests a change of surroundings in severe cases—placing the bed in a different position or in a different room.

Sleep Refusal

Sleep refusal is essentially the same. An infant only a few months old may show surprising resistance to sleep, and at the age of 2 or 3 a child can resist sleep for two or three hours, even though tired. As with bed refusal, the first essential is to determine the cause. In an infant it may be hunger, thirst, wind, inability to move arms or legs because of the bedclothes, a wet nappie or a napkin rash, overclothing, teething, or loneliness. In an older child the causes are the same as those of bed refusal, to which it is closely related. If he lies awake without crying no treatment is necessary, because it is harmless.

In the first year of life it is rarely justifiable to leave him to cry it out. The infant only cries himself into a state of hysteria, and the longer he is left the more difficult it is to soothe him, for he continues to cry a long time after being picked up. The crying then gradually stops, but the jerky respirations of sobbing persist much longer. The longer he is left to cry the more likely he is to do it again on subsequent nights. If, however, the infant has developed a habit of sleep refusal, through frequent picking up as a result of colic in earlier weeks, the habit must be broken by leaving him to cry—at least for half an hour or so. It must be remembered, when this is done, that even a small baby can make himself vomit by crying, and it is no use leaving him if he is becoming hysterical.

Though it is impossible to prove that persistent crying day after day has a deleterious influence on his psychological development, it is at least reasonable to suppose that it would have. All would agree that discipline is essential to his upbringing, and that no child should have

all his own way. The mother, however, may be unable to discover what the child wants, and may form a wrong conclusion that his crying is mere naughtiness, while the child knows perfectly well that what he wants is love. It is disastrous to try to compel him to do without it. It is a very common practice for parents to leave a child crying for fear of spoiling him, because they have read about the evil results of "overstimulation." This is always wrong. No mother spoils her child by giving him love and by picking him up when he feels lonely.

There is no harm in singing or rocking an infant to sleep on occasion, provided it is not done so often that habit formation occurs, and the child gets to associate sleep with singing and rocking and is therefore unable to go to sleep without it. It is a matter of opinion whether it is right in a difficult phase for the mother to stay in the room with the child until he falls asleep. If she does, she should not talk to him, and it certainly should not be allowed to become a habit, as it rapidly will. It is always wrong to stay in the room and play games with the child, read to him, and adopt other measures to make him go to sleep. I recently saw a child who was being held down by all four limbs so that he would go to sleep. Another common practice is to lie down at the side of the child until he goes to sleep, or else to take him into the parents' bed. Both practices are bad ones, because they inevitably cause habit formation.

The more complicated sleep rituals of the 2½-year-old child have already been mentioned. The danger is that the child will keep adding to the ritual. First he demands a drink before he will go to sleep; then he demands to be placed on the pot; then a few days later he demands a drink after the pot; and so a complicated ritual is allowed to develop. Once developed, it is difficult to break; but it must be broken, even though a sedative drug has to be given to help in the process.

A common cause of the child's sleep refusal is the constant visiting of the overanxious mother, who looks in on her child every few minutes to see if he is asleep. Her anxiety is largely due to a wrong idea of the child's sleep requirements, of the individual variations in the amount of sleep actually taken by normal children. She does not realize how normal it is for a child to lie awake for an hour or two after going to bed. The child expects the visits and so deliberately stays awake and may cry for his mother. If he lies awake without crying he should be left strictly alone, for it is normal behaviour, and there is no need to do anything about it. It is perfectly legitimate for the mother to look in on the child in cold weather after he has gone to sleep, to ensure that he is reasonably covered up.

Many parents are reduced to giving their children drugs to make them sleep. Drugs should be used only as a last resort, and for a particular reason such as the breaking of an especially difficult habit due to mismanagement. They should never be given for more than a few days. It is useless to treat the sleep refusal without treating its cause, for this merely evades the issue. Drugs are useful to help break the vicious circle of sleeplessness leading to irritability, exaggerated negativism, and sleep refusal. Drugs should be given, not after resistance has occurred, but to prevent resistance and to get the child out of the habit. They should therefore be given at bathtime. A safe and convenient drug to use is chloral, in a dose of 2 gr. (0.13 g.) at 1 year, or 4 gr. (0.26 g.) at 3 years. The regular use of drugs is an admission of defeat, a confession of one's inability to handle the problem.

Waking at Night

The problem of night waking is in some ways rather different. In the first six or eight weeks of life the average baby wakes up for two feeds. Very many mothers, on instruction from nurses and doctors, refuse these on the grounds that it will "spoil" the child and lead to habit formation. It does no such thing. By three or four weeks the average child drops one of these two feeds, and by six to twelve weeks drops the other and sleeps through the night. Refusal to give these feeds inevitably causes prolonged crying.

In most ways the causes of night waking are similar to those which cause sleep refusal. After the first ten weeks the infant who is given enough food by day rarely wakes as a result of hunger, but he may wake from thirst in hot weather. The older child, like adults, is apt to sleep badly on a hot night. More often the infant wakes up as a result of a wet napkin. He may be disturbed by a painful tooth, and require consolation. After the age of 3 months or so children often wake with a sudden scream, as if they have had a bad dream or nightmare. It is found that the nappie is dry, and there seems to be no obvious explanation. Other children have phases of night waking for which no explanation is discoverable. When properly managed those phases disappear in a few days. The child of 2 to 3 years very commonly wakes and sings or talks. There is no need to go and see him or do anything about it, for it is a normal and harmless practice. The child who goes to bed early, or who has too long an afternoon nap, or who goes to sleep immediately he is put to bed and sleeps throughout the evening, is particularly liable to wake up during the night.

Between the ages of 2 and 3 most children acquire sphincter control at night. The only method they have of announcing their desire to pass urine is to cry. Once awakened and given the opportunity of passing urine they may cry again for company. Such waking may sometimes be prevented by lifting the child out to pass urine when the parents go to bed. There is little point in regularly lifting a child out at night before he shows signs that he is acquiring sphincter control.

Another common cause of night waking is disturbance by parents sleeping in the same room. The older the child the less sound is his sleep likely to be, and he is readily awakened by his parents' snoring, coughing, talking, or turning over in bed and making the springs squeak. He knows his parents are there, and so cries for them. Furthermore, the mother, hearing her child wake, gets up to look at him, and so he cries when she leaves him. If he had been in another room his waking would not have been known to the mother, and she would not therefore have gone to see him. He would then have probably gone off to sleep without crying. Every effort should be made to let the child sleep away from his parents after the first few weeks, even if the cot has to be transferred from the only bedroom to the kitchen when the parents go to bed.

It is unwise to leave the child crying when he wakes up. It has already been pointed out that the longer the child is left crying the longer it takes to stop him when finally the mother goes in to see him. The wise parent who goes in to see the child immediately after crying starts, especially after the first 18 months, is likely to

find that she needs to stay in his room for only a minute or two to calm him so that he goes to sleep. He seems to be afraid, and her presence immediately quiets him and gives him a feeling of security.

It is important to remember that sudden crying may be due to the child's being in difficulty owing to strangling by a cord round the neck, to vomiting, or to an acute illness, such as an inflamed throat or ear. Some children vomit through excessive crying. Persistent failure to help a child who has reached the stage of acquiring sphincter control, and is crying because he wants to pass urine, will seriously delay control. It is essential, therefore, to go in and see the child and determine the cause of his crying. The napkin should be changed if necessary, and the older child may be given a drink, but he should be left as soon as he has quieted. It may be necessary to sing the younger child to sleep. It is unwise to take the older child into the parents' bed, for reasons stated. Some children who go to bed tired out show an astonishing faculty of recuperation after a mere hour's nap, and it may be desirable on occasion to take such a child downstairs for a while, there to stay until he gets reasonably tired. If this is done on odd nights only, habit formation will not develop. If it is often repeated a habit will rapidly develop which it will be difficult to break. Anger, impatience, and rough handling seriously disturb the child who is wanting nothing but love, and they do nothing but harm. It is not easy to avoid showing anger when the child wakes and cries at a particularly inconvenient time, such as a dinner party, or when the parents are going out to a theatre.

A very difficult problem arises when the child wakes up in the middle of the night and refuses to settle when put back to bed, or settles for a few minutes and then cries again for the parents. The problem is apt to arise in the child who habitually wakes early in the morning, at 5 or 6 o'clock, and demands company, being taken as a result into the parents' room. Such a child cannot distinguish 3 a.m. from 6 a.m., and he cannot understand why he is taken into the parents' room at one time and not at another. I do not know the answer to the problem. I certainly think that the parent should try a second time to quiet him and perhaps a third time, but the process cannot be repeated indefinitely. Love and patience do not always win. I recently saw a child who had his mother going in to see him 12 to 15 times every night after midnight. This habit must be broken. It is difficult to agree with many psychologists who say that the child should never be left to cry it out. I feel that he must be left. It is unusual for such a child to cry prolongedly, and certainly prolonged crying on more than two or three nights must be avoided. Each case must be decided on its merits. A scheme which will work in one child will not work in another.

Early Morning Waking

In the infant this usually presents no difficulty. It is particularly common in the first eight weeks, and as a rule is due to hunger, which is easily allayed by a feed.

The common age at which early morning waking occurs is from 2 to 5 years. The child wakes up at any time after 4 a.m. quite rested, and feels full of life. If he does not cry, but lies awake reading his books or playing, then no treatment is necessary. Up to the age of 2, children who wake early often play quietly without crying. In the stage of increased dependence on the parents, after the age of 2, they are apt to cry for company. The problem hardly arises when there are two or more children over the age of 2, for they can play together. The child should be given plenty of toys and books in the room, in the hope that he will play quietly with them when he wakes. Between the ages of 2 and 3 waking in the early morning is very apt to cause the child to be unduly tired during the day, but this will be largely avoided if he still has his afternoon nap. It is essential for parents to recognize the normality of this behaviour, but that is only slight solace to the weary parent who longs for sleep while his offspring is overflowing with energy.

It is often futile merely to change the nappie, put the child on the pot, and give a drink, thereafter leaving him —though this should certainly be tried in the first place. He wants company, and, feeling wide awake, will not be left alone. It is one matter to leave the tired child to cry it out, and another to leave a child when wide awake. He is likely to go on crying until the parents get up themselves, and if left in this way he is apt to develop such a distaste for bed and bedroom that he refuses to go to bed at night. It is often necessary to allow the child into the parents' room. It is a common practice to take him into the parents' bed, but many children feel so energetic at this time that they are unwilling to stay there. In either case it is bound to become a habit, but there seems to be no alternative. The child is delighted to be with his parents, and he is quite unable to understand why his parents are not equally delighted to see him. It is impossible to explain to him that they are worn out by his behaviour. I do not know any answer to the problem. Adjustment of the time of going to bed does not seem to help. Lifting the child out late at night to pass urine may postpone his time of waking. One can only hope that he will wake later when the capacity of the bladder increases, and that the phase of early waking will be a short one.

Conclusion

Enough has been said to indicate the difficulties and complexities of the problem. He who says that he knows all the answers, or suggests that one particular method is infallible, has little experience of children. No one method suits all children. The placid easygoing child presents no difficulty. The active determined child may tax one's ingenuity to the utmost; and each child, each phase, may demand its own special treatment.

It is not enough merely to instruct the parents to discipline the child, to put him to bed at a fixed time, and, if he objects, to leave him to cry or to drug him. The treatment of sleep problems is not nearly so simple. It is essential to treat the attitudes of the parents and to remove their anxieties. They must be given more understanding of their child, of the way in which the child's mind works, and of the stages of development through which children pass. This necessarily involves the taking of a most careful history of the management of the child not only at night but in the daytime as well.

There is little doubt that the more love and security the child receives during the day, the wiser the parental management, and the nearer the mother's patience approaches that of Job, the less likely it is that the child will be awkward at night. The essential thing at night is to give the child love and security, to avoid a fight at all costs, to be entirely consistent, to prevent the formation of bad habits, and to break those which have already formed. The child must be handled tactfully and lovingly, with full understanding of his needs,

without ever losing one's patience or temper. The problem is not then likely to be long-lasting. It will disappear—only to be replaced by a completely different problem which, one hopes, will be more easy of solution.

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TREATMENT OF HYDROFLUORIC ACID BURNS

BY

R. H. DALE, M.B., B.Chir., F.R.C.S.Ed.

Senior Registrar, Queen Victoria Hospital, East Grinstead

Burns caused by hydrofluoric acid are largely confined to workers in special industries, and it is unusual for a case to appear in a burns unit which is not near an industrial area. Knowledge of hydrofluoric acid burns, and their treatment, thus tends to be restricted to industrial medical officers. Nearly all the work published on the subject has appeared in industrial medical journals, and little in the more widely read medical press. The effects of such burns, however, are of so peculiar a severity that it may be worth while to give an account here of my own experience of a single case, and in that connexion to discuss what is known of their nature and their treatment.

Chemistry of Hydrofluoric Acid

Hydrofluoric acid is an inorganic compound of hydrogen and the element fluorine. Fluorine occurs in nature as fluorspar (Derbyshire spar, blue-john), which is a crystalline fluoride of calcium. Agricola described it in 1530 and named it "fluor," from the Latin verb "to flow," as it melts at red heat. The crystals exhibit a bluish glow when light falls upon them. This effect has led to the more general description of the phenomenon as "fluorescence."

Crude hydofluoric acid was first prepared about 1720 by an unknown English glass-worker. Priestley and Scheele in 1771 discovered that fluorspar was a salt of lime and a peculiar acid. They distilled fluorspar with strong sulphuric acid in a glass vessel, and obtained a vapour which corroded the flask. Meyer in 1781 and Wenzel in 1783 distilled fluorspar with strong sulphuric acid in iron and lead vessels, and obtained what must have been fairly pure hydrofluoric acid. Ampère in 1810 was the first to suggest that the acid was a compound of hydrogen with an unknown element, which he called "fluorine." Fluorine itself, a member of the halogen group of elements, was first isolated by Moissan in 1886 by electrolysis of potassium fluoride in an excess of anhydrous HF.

Hydrofluoric acid is chemically a weak acid; its degree of dissociation is small compared with that of the strong mineral acids; but its power to attack silica and silicates makes it of great industrial importance.

The fluorides, or salts of hydrofluoric acid, differ strikingly from the salts of the other halogens. Whereas silver bromide and silver chloride are very insoluble, silver fluoride dissolves readily in water. On the other hand, calcium fluoride and magnesium fluoride are insoluble salts, and this fact plays a vital part in the treatment of fluoride toxaemia and hydrofluoric acid burns. Fluorides also tend to form complex compounds such as silicofluorides and fluoraluminates. Sodium fluoraluminate, or cryolite, is important in the extraction of aluminium from the ore (Partington, 1946).

Hydrofluoric Acid in Industry

Hydrofluoric acid has many uses in industry. Its capacity to dissolve silica is used (1) in foundries, for removing sand from castings; (2) in glass works, for etching and frosting glass and removing tool marks from cut glass; (3) in the pottery and china industries, for removing spots in the glaze; (4) in the graphite industry, for removing siliceous impurities; (5) in the manufacture of ashless filter paper. In breweries it is used for cleaning pipes, as it destroys yeasts and thus restrains secondary fermentation. It is used as a bleaching agent in the manufacture of cane chair-seats. Hydrofluoric acid fumes are given off in the manufacture of superphosphates for fertilizers.

Toxicity of Fluorine Compounds

The toxic actions of fluorine compounds fall into three groups—acute poisoning, chronic poisoning, and local effects. Acute and chronic poisoning have been reviewed extensively by Roholm (1937), Greenwood (1940), and others. The present paper is concerned with the local effects. A few fatal cases of fluoride burns have been reported, but in these there was no evidence of fluoride absorption.

Many fluorine compounds have corrosive action on the skin. The HF molecule would appear to be the active agent, and any acid-reacting solution of fluorides, bifluorides, or fluosilicates is corrosive (Roholm, 1937). Most of the published cases of burns are due to hydrofluoric acid itself.

Hydrofluoric Acid Burns

Ever since its discovery hydrofluoric acid has been known to cause deep, slow-healing, painful burns. Lesions may be produced by exposure to the acid vapour or to its aqueous solution in various strengths. Repeated exposure to the vapour may lead to ulceration of nasal and oral mucosa, bronchopneumonia, and oedema of the lungs; there may be conjunctivitis; the cuticles may be attacked, causing suppuration and loss of the finger-nails (Eulenburg, 1876; quoted by Prosser White. 1934). The concentrated vapour may burn the skin (Schuermann, 1937).

The aqueous solution causes burns, the severity of which depends on the strength of the solution and the length of time it is in contact with the tissues. One outstanding feature of burns by hydrofluoric acid is the excruciating pain which they cause. When the acid is in weak solution the onset of pain may be delayed for an hour or more. A burn from anhydrous hydrofluoric acid is felt immediately (Gehrmann, 1948).

Exposure of the skin for a minute or two to a weak solution of the acid, or momentarily to a strong solution, produces a blanched slightly oedematous weal, with subsequent crust formation in about four days. The crust separates in a week, when the subjacent area will be found to have healed (Paley and Seifter, 1941; Gehrmann, 1948; Thelwall Jones, 1939).