A LONGITUDINAL STUDY OF THE GROWTH AND DEVELOPMENT OF PREMATURELY AND MATURELY BORN CHILDREN

PART V. PATIERNES OF MATERNAL CARE (A STUDY OF CHILD REARING IN SCOTLAND)

BY

CECIL MARY DRILLIEN

From the Department of Child Life and Health, University of Edinburgh

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In previous papers in this series (Drillien, 1958, 1959a, b) reference has been made to maternal efficiency and maternal grading in relation to physical and mental development and morbidity. In this final paper, dealing with the progress of prematurely and maturely born children in the first two years of life, patterns of maternal care in different types of home are described for 368 singleton children. Working class mothers, who form 90% of the total, are divided into superior working class, with husbands mainly in the Registrar General's Social Class III, where standards of child care and household management approximate closely to those found in homes with fathers in Social Classes I and II, average and poor working class. In the last group there is a predominance of mothers of low intelligence and fathers who are sporadically employed on labouring work. In the subsequent discussion, mothers with husbands included in the Registrar General's Social Classes I and II are described as maternal grade 1. Superior working class are described as grade 2, average and poor working class, 3 and 4. The numbers included in these four groups are shown in Table 1. The social

class distribution of the sample does not differ significantly from that of all singleton children born in Edinburgh during the same period. The patterns of care described in this paper probably give a reasonably accurate picture of child care in the general population of this city.

Table 2 gives the maternal grading for working

TABLE 2
MATERNAL GRADING BY REGISTRAR GENERAL'S SOCIAL CLASSIFICATION

Maternal Grade	Registrar General's Social Classification					
	3			4 and 5		
	Birthweight (lb. oz.)			Birthweight (lb. oz.)		
	<4·1	4·1-5·8	>5·8	<4·1	4·1-5·8	>5·8
	(%)	(%)	(%)	(%)	(%)	(%)
2	36·4	37·9	62·1	7·2	12·0	14·8
3	50·0	47·4	31·8	35·7	39·7	63·0
4	13·6	14·7	6·1	57·1	48·3	22·2
Total	100·0	100·0	100·0	100·0	100·0	100·0

TABLE 1
COMPOSITION OF SAMPLE BY MATERNAL GRADE

Maternal Grade	Birthweight (lb. oz.)				Total	
	5·8 and under		5·9 and over			
	No.	%	No.	%	No.	%
1	16	6·4	22	18·5	38	10·3
2	70	28·1	47	39·5	117	31·8
3	107	43·0	40	33·6	147	39·9
4	56	22·5	10	8·4	66	18·0
Total	249	100·0	119	100·0	368	100·0

class mothers in the survey by the Registrar General's social classification, for different birthweight groups. In the mature control group there are more better type mothers of like social class than in the premature groups. Assuming that children included in the survey are a fair sample of all children born during the same period of like birthweight and social class, it is possible to estimate the incidence of maternal grade for all children born in Edinburgh during the same period, using basic data previously published (Drillien, 1956). The figures are set out in Table 3. The birthweight distribution of legitimate singletons in the general population was

TABLE 3
ESTIMATED MATERNAL GRADING FOR ALL SINGLETON
LEGITIMATE BIRTHS IN EDINBURGH (1953-55)

Maternal Grade	Birthweight (lb. oz.)			All Births
	< 4·1	4·1-5·8	> 5·8	
1	(%) 20·5	(%) 11·6	(%) 22·4	(%) 21·8
2	20·5	26·0	37·5	36·7
3	37·2	39·6	31·7	32·2
4	21·8	22·8	8·4	9·3
Total	100·0	100·0	100·0	100·0

4 lb. or less at birth, 1·2%; 4 to 5½ lb., 5·2%; and over 5½ lb., 93·6%. There is probably an under-estimate of the poorer types of mothers, as the survey contains an excess of first births in the mature control group, and it has been shown in the discussion on morbidity that standard of maternal care is highly correlated with parity (Drillien, 1959a, b).

Reference will be made to over-anxious and over-protective mothers. A mother was not classified as over-anxious when her fears arose as a result of failure to thrive or other difficulties in the child's progress, but only when anxiety was present from the earliest months in the absence of any obvious reason.

Feeding and Diet

Breast Feeding. As would be expected, the incidence of breast feeding varies with birthweight. Of the mature controls, 70% were discharged from hospital partially or fully breast fed. Only 53% continued with breast feeding for longer than two weeks after discharge. By 3 months of age, 30% of the total were still on the breast and 24% were fully breast fed for six months or longer. Of those who were 4 lb. or less at birth, only one was breast fed on discharge from hospital. Of those between 4 and 5 lb., 40% were discharged on breast feeding, 25% continued to breast feed for longer than two weeks, 17% continued for three months and 13% for six months or longer. The reasons given by the mothers for changing to bottle feeding are set out in Table 4.

TABLE 4
REASONS GIVEN FOR DISCONTINUING BREAST FEEDING

Reason for Stopping	Duration of Breast Feeding (mth.)		
	<1	1-3	3-6
	(%)	(%)	(%)
Insufficient lactation	70·3	80·5	62·4
Mastitis or breast abscess	18·5	11·1	—
Illness of mother	5·6	5·6	18·8
Other causes	5·6	2·8	18·8
Total	100·0	100·0	100·0

The commonest reason given was that the baby was not satisfied on the breast, but it was apparent that in many cases the mother had no real desire to breast feed, and gave this as a suitable excuse. The incidence of breast feeding varied with maternal grade, as is shown in Fig. 1. Of those who were

FIG. 1.—Duration of breast feeding, by maternal grade.

discharged from hospital as full breast feeding, more than one-half of mothers in maternal grade 1 continued for three months or longer, whereas two-thirds of poor working class mothers had changed to the bottle within two weeks.

In general, it was observed that breast fed babies suffered from less illness and were easier to manage than bottle fed babies, but this would be expected, owing to the predominance of better type mothers in the breast fed group. Table 5 gives mean weight

TABLE 5
AVERAGE WEIGHT INCREMENT (OZ.) AT 1 YEAR FOR
BREAST AND BOTTLE FED BABIES, BY MATERNAL GRADE

Breast Feeding	Maternal Grade		
	1 and 2	3	4
	(oz.)	(oz.)	(oz.)
Six months or longer	239	230	176
Less than one month	258	245	236

increments at 1 year for those babies who were breast fed for six months or longer, compared with those who were breast fed for less than one month, by grade of mother. In each maternal grade group weight increment at 1 year is greater for bottle fed babies.

Table 6 gives the incidence of infective illness

TABLE 6
INFECTIVE ILLNESS IN FIRST YEAR FOR BREAST AND BOTTLE FED BABIES, BY MATERNAL GRADE AND FAMILY PLACING

Breast Feeding	Infective Illness in First Year					
	Little or None		Some		Frequent	
	6 months	<1 month	6 months	<1 month	6 months	<1 month
Maternal Grade	First born children:					
	(%)	(%)	(%)	(%)	(%)	(%)
1 and 2	78.3	74.2	21.7	22.6	0.0	3.2
3	61.5	57.6	23.1	27.3	15.4	15.2
4	—	42.9	—	28.6	—	28.6
	Later born children:					
	(%)	(%)	(%)	(%)	(%)	(%)
1 and 2	72.8	50.0	27.3	43.8	0.0	6.2
3	—	37.8	—	41.4	—	20.9
4	—	20.0	—	20.0	—	60.0

(classified as little or none, some, frequent) in the first year, by grade of mother, for those breast fed for six months or longer, and less than one month. Here the cases have been divided into first and later born. There is little evidence that first born breast fed babies are any less susceptible to infection than bottle fed babies from a similar environment. Where there are other children in the family the proportion of breast fed babies in maternal grades 1 and 2 having little or no infective illness in the first 12 months (72.7%) is significantly higher than the 50.0% for those on the bottle. However, it should not be assumed that this significant relationship is necessarily a causal one, although it is suggestive. So few poor working class mothers or average working class mothers with other children breast feed for as long as six months that comparisons cannot be made between the incidence of infection in bottle and breast fed babies in these groups.

The incidence of behaviour problems in the first two years was found to be significantly higher amongst breast fed babies but, as will be shown in a later section, these problems are related to anxiety in the mother. Over-anxious mothers were found more frequently in maternal grades 1 and 2. After the exclusion of these mothers, the percentages reporting no marked problem of behaviour in the first two years were 82% for breast fed and 88% for bottle fed babies in middle and superior working class homes, 63% for breast and 68% for bottle fed

babies in average working class homes. These small differences are not statistically significant.

In all there is not much concrete evidence from the experience of this sample that breast feeding carries any special advantages over bottle feeding when the type of home is taken into account.

Age of Weaning to Mixed Feeding. As would be expected, the age at which babies are first introduced to solid food and finally weaned from breast and bottle differs considerably in different types of home. Prematurely born children were usually later both in starting solids and in changing completely to spoon and cup feeding. There is an excess of prematurely born children in the poorest homes; therefore in Tables 7 and 8, which give the ages at which spoon

TABLE 7
AGE OF WEANING TO MIXED FEEDING, BY MATERNAL GRADE

Maternal Grade	Age of Weaning (mth.)				No. of Cases
	<7	7-9	10-12	13-15	
	(%)	(%)	(%)	(%)	
1 and 2	89.6	10.4	—	—	153
3	76.2	21.0	—	2.8	143
4	60.1	35.4	—	4.5	67

TABLE 8
AGE BY WHICH WEANING WAS COMPLETED, BY MATERNAL GRADE

Maternal Grade	Age Weaning Completed (mth.)			1-2 Bottles at 2 yr.	All Fluid by Bottle at 2 yr.	No. of Cases
	<13	13-18	19-24			
	(%)	(%)	(%)	(%)	(%)	
1 and 2	52.7	37.4	8.6	1.2	—	152
3	29.9	43.3	19.4	6.0	1.5	134
4	23.1	23.9	16.6	10.2	25.5	62

feeding commenced and bottle feeding ceased, the figures have been standardized to give the expected figures if birthweight composition was similar for all maternal grade groups. In maternal grades 1 and 2 there was little difference in the average age of weaning for babies of different birthweights. In the poorest homes the average age of weaning for maturely born babies did not differ significantly from that for the higher maternal grades, but in two-thirds of the cases of those prematurely born, no solids were given until the eighth month or later. When solids were introduced, cereal and pudding predominated often well into the second year.

In maternal grades 1 and 2, 90% of children were completely weaned by 18 months, whereas in maternal grade 4 one-quarter of the children were

still taking all fluids by the bottle at the age of 2 years.

Diet at 1 Year. Table 9 shows the proportion of children considered to be receiving a restricted diet

TABLE 9
RESTRICTED DIET AT 1 YEAR, BY MATERNAL GRADE
AND BIRTHWEIGHT

Maternal Grade	Percentage Receiving Restricted Diet		
	Birthweight (lb. oz.)		
	< 4·9	4·9-5·8	> 5·8
1 and 2	11·1	13·7	10·1
3	62·5	36·2	26·3
4	63·2	47·1	40·0

at 1 year, by maternal grade and birthweight. Apart from bottle feeds, these children were receiving mainly starchy foods, such as baby cereal and puddings, with some soup or strained vegetables and sometimes a taste of egg. Tinned baby foods were given frequently in maternal grades 1 and 2. In the best maternal grade the incidence of restricted diet is very low and is much the same for all birthweight groups. In average and poor working class homes the proportion of children receiving an inadequate diet is much higher for prematurely born children, especially those who were 4½ lb. or less at birth. This may be part of the explanation of a previous finding (Drillien, 1958) that a low standard of maternal efficiency had a more marked effect on the growth of premature than of maturely born children.

Diet at 18 Months. When the children reached the age of 18 months a number of mothers were asked to keep a detailed diary for seven days of everything which the child was given to eat or drink, including main meals and all in-between meal snacks. Mothers were selected whose husbands were in employment, who had not more than one other child, who were in good health and not pregnant, and who occupied their own house. Mothers who had asked for advice on diet at 1 year were excluded. Of the 110 mothers who satisfied these requirements, 99 completed and returned the diaries. All were kept in considerable detail. Table 10 gives the average weekly score, by maternal

TABLE 10
DIET SCORES AT 18 MONTHS, BY MATERNAL GRADE

Maternal Grade	Average Weekly Score		
	Variety	Protein	Fruit and Vegetables
1	31	16	19
2	31	15	18
3	25	14	14
4	17	11	5

grade, for variety of diet (each different item of food being scored once) and for each occasion on which the child was given a first-class protein food (excluding milk) and fruit and vegetables (excluding potatoes). This Table does not include a number of children who had feeding problems at the time at which the diary was completed. In these cases diet was often quite severely restricted, more often as a result of refusal to eat what was proffered, than an inadequate diet being presented. It was found that in homes with mothers graded as 1 and 2, diets were very similar, the children being offered most of the normal adult diet with cereal for breakfast, a two- or three-course dinner and a cooked tea. Meat, eggs, fish and cheese were given twice daily as well as fresh and cooked fruit and vegetables. In homes where the mother was considered a poor working class type there was a noticeable lack of variety and lower intake of protein, fruit and vegetables apart from potatoes. In these homes the level of protein intake often seemed to depend on whether the child would take boiled eggs. If these are taken readily, the child may get one daily, thus compensating for the negligible quantities of other first-class protein offered. In these homes the typical diet consisted of cereal and a roll for breakfast, soup (often tinned or made with a meat cube) and custard pudding for dinner, and chips, beans or perhaps an egg for tea, with frequent sweets, ice-cream, biscuits and buns between meals.

Feeding Problems. Feeding problems are here defined as refusal to eat or excessive faddiness, usually accompanied by regular meal-time battles, lasting for three to six months or longer. Temporary difficulties in getting the child on to solids at the beginning of weaning or after some illness have not been included. Feeding difficulties were not associated with maternal grade or birthweight once allowance had been made for the excess of over-anxious mothers of prematurely born children and in maternal grades 1 and 2.

Of 59 mothers who were considered over-anxious, 30 children showed marked feeding problems (50·8%), mainly in the second year of life, compared with an incidence of 7·9% for children whose mothers were not over-anxious. No difference could be demonstrated in weight or height increments at 2 years between those who had and those who had not exhibited feeding problems, even when the refusal to eat had been prolonged for more than six months. Most of these children drank one and a half to two pints of milk daily and took fruit readily which seemed to compensate for the otherwise inadequate diet.

Vitamin Supplements. Table 11 gives the proportion of infants, by maternal grade, who were given vitamin supplements regularly during the first year.

TABLE 11

ADMINISTRATION OF VITAMIN SUPPLEMENTS IN FIRST YEAR, BY MATERNAL GRADE

Maternal Grade	Vitamin Supplements			
	Nil	A & D, C	A & D only	C only
1	(%) 6.7	(%) 93.3	(%) —	(%) —
2	11.7	79.3	4.5	4.5
3	30.4	59.4	7.2	2.9
4	68.8	25.0	6.2	—

The mothers' reports may not have been accurate, especially as regards regularity of administration, but care was taken in posing the question to avoid any implied criticism if the answer should be in the negative. As would be expected, those whose diet was most inadequate in other respects were least likely to be given vitamin supplements. In maternal grade 4, vitamin supplements were given only to prematurely born infants. In the other maternal grades there was no difference between premature and maturely born babies. No cases showing evidence of vitamin deficiency were found in this group. The majority of babies, especially in the poorer homes, were fed on National Dried Milk, which at that time contained a minimum of 280 i.u. per ounce of powder. The vitamin D level has now been dropped to an average of 100 i.u. per ounce.

Clinic Attendance

Table 12 gives the proportion of children, by

TABLE 12

CLINIC ATTENDANCE, BY MATERNAL GRADE AND FAMILY PLACING

Maternal Grade	Family Placing	Clinic Attendance			
		Never	Regularly to 6 mth.	Regularly to 12 mth.	Occasionally
1	First born	(%) 20.0	(%) 10.0	(%) 50.0	(%) 20.0
	Later born	30.8	7.7	46.2	15.4
2	First born	16.4	8.2	69.9	5.5
	Later born	36.6	7.3	46.3	9.8
3	First born	30.9	12.3	53.1	3.7
	Later born	45.5	10.9	38.2	5.5
4	First born	45.5	18.2	15.1	21.2
	Later born	75.8	3.0	6.1	15.2

maternal grade, reported as attending infant welfare clinics during the first year of life, divided into first and later born. There was little difference in the incidence of clinic attendance for premature and maturely born children. Again it appears that those

who are most in need of advice in bringing up their children are least likely to avail themselves of the facilities offered.

Protective Immunization

Table 13 gives the proportion of children, by

TABLE 13

PROTECTIVE IMMUNIZATION BEFORE SECOND BIRTHDAY, BY MATERNAL GRADE

Maternal Grade	Protective Immunization against			No. of Cases
	Smallpox	Diphtheria	Whooping Cough	
1	(%) 86.8	(%) 97.4	(%) 97.4	38
2	90.5	90.5	87.9	116
3	77.4	76.7	73.7	133
4	52.2	59.7	50.7	67

maternal grade, who were protected against smallpox, diphtheria and whooping cough before the second birthday, and shows the expected differences for maternal grade.

Toilet Training

As would be expected, habits of toilet training varied considerably according to the type of home. Table 14 gives the age of starting toilet training, by

TABLE 14

AGE OF STARTING REGULAR TOILET TRAINING, BY MATERNAL GRADE

Maternal Grade	Age at Start of Training (mth.)				No Training	No. of Cases
	1-6	7-12	13-18	19-24		
1 and 2	(%) 54.8	(%) 34.2	(%) 8.4	(%) 2.6	(%) —	155
3	25.7	40.7	21.4	7.9	4.3	140
4	1.6	25.0	29.6	17.2	26.6	64

maternal grade. Nearly 90% of mothers graded as middle or superior working class had instituted regular toilet training before the first birthday, whereas in the poorest homes no attempt at toilet training had been made by 2 years in over one-quarter of the total. The incidence of marked resistance to toilet training, lasting for six months or more, was the same for maternal grades 1, 2 and 3 (28%). A lower incidence of 20% in the poorest homes is accounted for by the fact that attempts at training were usually discontinued at once if the child resisted. A highly significant difference was found between the sexes, 33% of boys showing marked resistance compared with 20% of girls. Little difference was found in incidence of resistance by age at which training was first started, being 22% when training was instituted in the first six months

and 28% when delayed until after the first birthday. Regular potting from the early months does not appear to influence the incidence of toilet training problems later on. There was no appreciable difference in the incidence of toilet problems between the premature and maturely born children.

Excluding those cases where no toilet training had been attempted, 67% of girls and 49% of boys were reliable by day before the second birthday. At night 36% of girls were dry, compared with 23% of boys. These differences between the sexes are highly significant. There was no difference in the incidence of later feeding troubles or of other behaviour problems between those who were potted from an early age and those who did not begin regular training until after the first birthday, once the excess of over-anxious mothers, who begin training early, had been accounted for. The smaller premature infants of 4½ lb. or under were much later in acquiring bladder control, 36% being reliable by day at the age of 2 years and 16% at night, compared with 67% by day and 34% by night for those over 4½ lb. at birth. When these smaller premature infants had been excluded, little difference was found between the ages at which children became reliable in different types of home, where regular training had been started during the same period.

The age at which bladder control was acquired was compared for children over 4½ lb. at birth whose training had started at different ages, and the results are set out in Table 15. Regular potting from early

TABLE 15
ACQUISITION OF BLADDER CONTROL, BY AGE AT WHICH TRAINING STARTED

Age at Start of Training	Dry at 2 Years	
	By Day	By Night
Birth- 6	(%) 71	(%) 55
7-12	69	34
13-18	60	21
19-24	42	8

infancy does not appear to have any marked effect on the age at which the child becomes reliable by day, though more of these children are dry at night by 2 years. Very few children in the sample were dry at night at this age without being lifted, and mothers who had carried out energetic toilet training from an early age were the most likely to lift their children at night.

Sleeping Problems

It was not possible to estimate the sleep requirements of these children with any accuracy owing to

the absence of regular routine in many cases, especially in maternal grades 3 and 4 where the child's bed-time was often regulated by the social commitments of the family, and day-time sleep depended largely on the time at which the child had gone to bed the previous night.

Sleeping problems were relatively common in the second year of life, and took the form of refusal to settle when put to bed, often until 10 or 11 p.m. or later, or frequent waking and demanding attention throughout the night. Temporary disturbances of sleep, due to teething or illness, have not been included. Of a total of 344 children about whom a reliable history could be obtained, 91 exhibited sleeping problems lasting for six months or longer during the second year of life. In no case did there appear to be any deleterious effect on the child due to lack of sleep, although the effect on the mother was often marked. Sleeping problems were found to be associated with maternal grade and the presence of over-anxiety previously noted in the mother. It was surprising to find that the type of housing appeared to have little effect. Only in maternal grades 3 and 4 were there sufficient numbers living in poor accommodation to make comparisons. In maternal grade 3 the incidence of sleeping problems in good housing, where the child had a separate bedroom, was 25% compared with 31% for one-room houses. For maternal grade 4 the comparable figures were 33% and 36%. These small differences are not significant. After the exclusion of over-anxious mothers, the incidence of sleeping problems, by maternal grade, was: (1) 7.7%; (2) 7.7%; (3) 25.9% and (4) 35.3%. It seems likely that the much lower incidence of problems in the better homes is due to the regular routine practised at bed-time.

Where the mother had previously been noted as over-anxious, the incidence of sleeping problems was very much higher and similar for all maternal grades, being 46.2% for grade 1, 54.5% for grade 2 and 53.3% for grade 3.

The commonest solution of sleeping problems in the 1- to 2-year-old was to take the child into the parents' bed and, having once started, there was often considerable difficulty in stopping the habit. In maternal grades 1 and 2 no children other than those with sleeping problems slept with their parents, though in maternal grade 4 30% of those without problems and 45% of the total regularly slept with their parents, this being the case even when accommodation was adequate for separate beds. Of those with sleeping problems 48% in maternal grades 1 and 2 and 70% in maternal grades 3 and 4 either slept with their parents or were taken in regularly during the night.

Other Behaviour Problems

In the first two years of life a behaviour problem from the mother's point of view means a type of behaviour which she considers abnormal or which causes her anxiety and embarrassment. Many mothers, especially those with a first child, are worried about forms of behaviour which could be considered a phase of normal development, and these cases are not included in the subsequent discussion.

Apart from problems of feeding, sleeping and toilet training, two forms of behaviour were commonly encountered in the second year of life, which might be considered as problems, being temper tantrums and excessive timidity.

Temper Tantrums. Temper has been classified as excessive only in those cases where tantrums occurred several times a day and whenever the child did not immediately get his own way. The mother would state that when thwarted the child would throw himself on the floor, kicking and screaming, or hurl the nearest object that came to hand. Head banging and breath holding were common manifestations of temper, the latter causing great anxiety to the mother especially in the few cases in which it was carried to the extent of unconsciousness. Several children would induce vomiting when in a temper. Such manifestations were most common after the age of 15 months.

Excessive Timidity. In these cases the mother stated that she could never leave the child; he always cried and clung to her if strangers were present or if

spoken to in a shop. He could not be left, even with grandparents, and if she wished to go out at night she must wait until the child was sleeping.

Temper and timidity were often co-existent. The incidence of these problems was again related to the maternal grade and over-anxiety. Little difference was found in incidence in first or later born children or between those who were premature or mature at birth when over-anxious mothers, who predominated amongst those with a first or prematurely born child, had been excluded. There was a higher incidence, but not significantly so, in the smallest prematures (those of 3½ lb. or less at birth). Numbers in this group are small.

Fig. 2 shows the relative incidence of those who had no serious behaviour problems in the second year of life, by grade of mother and presence or absence of maternal anxiety, also of those who exhibited excessive temper or timidity for six months or longer during this period. In maternal grade 4 only three mothers were considered over-anxious and these have not been included. It will be seen that the incidence of excessive temper and timidity is much commoner in the poorer homes and also where the mother was considered over-anxious. The mother's anxiety, though aggravated by the child's behaviour, was not caused by it, as all these mothers had been noted as over-anxious from the first visit at 6 months, before any problems had arisen.

The decrease in proportion of children free from any marked behaviour problem with decreasing maternal standards is statistically highly significant, as is the increase in excessive temper and timidity in

FIG. 2.—Incidence of behaviour problems, by maternal grade and maternal over-anxiety.

the children of over-anxious mothers from the same type of home. It will be interesting to see whether these children, who have exhibited behaviour problems in early childhood, show other problems when they reach school age.

Summary and Discussion

This paper describes different patterns of child rearing in the first two years of life in an unselected group of premature and maturely born infants born in Edinburgh hospitals. Comparison with all births in Edinburgh during the same period suggests that of working class mothers nearly one-half observed standards of household management and child care which approximate closely to those found in middle class homes, and that in approximately one working class home in 10 standards appear to be definitely below the level required for good health and normal development of the young child. The incidence of prematurely born infants is highest in these poor homes and, as previous papers have shown (Drillien, 1958, 1959a, b), the proportion of undersized, retarded children, who suffer from frequent ill health, is also highest in this group.

Contrary to the findings of other investigators, which are summarized by Illingworth (1953), no striking advantage could be demonstrated for breast feeding, as opposed to bottle feeding, in similar types of home. The reported lower incidence of infection in breast fed babies (e.g. Robinson, 1951) is almost certainly due largely to the predominance of better type mothers in the breast fed group. Underfeeding appeared to be commoner in breast fed babies, especially in the poorer working class homes. National Dried Milk was the food of choice for the majority of bottle fed babies, and even in the poorest homes most mothers sterilized bottles and teats regularly, no doubt as a result of supervision and instruction from health visitors. The incidence of gastro-intestinal infection was low in all types of home in the first six months and reached a peak in the second half of the first year when the child was being introduced to solids.

There was no evidence that behaviour problems in the first two years were any less common in babies who had been breast fed. There was, however, a marked association between behaviour problems and over-anxiety in the mother. It seems likely that the contented baby is the satisfied baby, whether breast or bottle fed, and that the contented baby is more

likely to produce a contented, confident mother, who is calm in her handling. Hytten, Yorston and Thomson (1958) studied a group of 106 primiparae and found that mothers who continued to lactate for three months were more often unwell and worried than those who abandoned breast feeding soon after leaving hospital, and conclude that there is little justification for pressing the mother to continue when she is either unwilling or apparently unable to breast feed efficiently.

Apart from the incidence of breast feeding, the most marked differences in feeding habits in the best and worst homes were the later age of weaning to mixed feeding and finally stopping bottle feeds in the latter; a predominance of starchy foods at 1 year; lack of variety and lower intake of protein, fruit and vegetables in the second year of life.

No evidence could be obtained from the sample that early toilet training has an adverse effect on the child at a later date, once it is recognized that the rigid, over-conscientious and over-anxious mother is more likely to practise rigorous toilet training. Behaviour problems of all types were much commoner in the children of these mothers, whether or not there had been early toilet training. A significantly higher incidence of resistance to potting was found in boys, who also were significantly later in acquiring sphincter control.

The incidence of prolonged feeding battles and sleeping problems was five times as high in the children of mothers previously noted as being over-anxious. Sleeping problems were also much more common in poorer homes and seemed to be associated with the lack of regular routine at bed-time, rather than with inadequate accommodation.

Other behaviour problems, notably excessive temper and timidity, were also found most frequently in the poorest homes, and in good homes where the mother was over-anxious.

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