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INTERNATIONAL HEALTH EXHIBITION

LECTURES.

THE REARING OF HAND-FED INFANTS.

A Lecture delivered in the Lecture Room of the Exhibition, August 1st, 1884.

BY

EDMUND OWEN, M.B., F.R.C.S.,

SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET.

With an Introduction by CHARLES WEST, M.D., F.R.C.P.
(Founder of the Hospital for Sick Children.)

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A LECTURE ON THE REARING OF HAND-FED INFANTS.

By EDMUND OWEN, M.B., F.R.C.S.,

Surgeon to the Hospital for Sick Children, Great Ormond Street.

CHARLES WEST, M.D., F.R.C.P., Founder of the Hospital for Sick Children, in the chair.

INTRODUCTION.

THE CHAIRMAN, in introducing the lecturer, said the lecture was intended to serve as a help to those mothers who, from accident, illness, or the claims of some great duty, were unable themselves to nurse their infants, or were compelled to wean them prematurely. It was not intended for any who, from motives no higher than those which vanity, indolence, or frivolity could suggest, abstained from doing that which was a mother's paramount duty. Still, though he had used those hard words he was sure many who neglected that duty did so from having but a very imperfect sense of the importance of its fulfilment.

With whatever care an infant might be surrounded it was a fact never to be forgotten, that the chances of a hand-fed child reaching the age of one year, were one-third less than those of a child nursed by a healthy mother. It was impossible to give proofs of this from experience derived in

ordinary life, and evidence of it had to be sought from the results obtained at large institutions such as the Foundling Hospitals in France. He would not wish the figures he was giving to be taken as representing anything else than the comparative results of the two methods of attempting to bring up children. The average mortality of children in this country under one year was 14 per cent., while that of the children admitted into the Foundling Hospital at Lyons, in which institution they were not detained even for a day, but were sent immediately into the country for wet-nursing, was 33 per cent. under one year. But the mortality of children admitted into the Foundling Hospital at Rheims, where they were attended with equal care, and were quite as speedily sent into the country, but where they were brought up by hand and were not wet-nursed was 63 per cent., a difference which it imported all to lay well to heart. Not only so, but it must be remembered that when hand-fed children fell sick and died, they died not of any of the ordinary diseases which befell babyhood, but of a purely artificial disease, presenting special symptoms, leaving special appearances after death. A distinguished French physician who was, unfortunately, recently dead, the late physician to the Foundling Hospital in Paris, investigated this subject with the minutest care, and he gave to the condition, which he ascertained was produced by artificial feeding when carried out unsuccessfully, a name derived from two Greek words signifying non-nutrition, unnourished, or, in other words, starvation.

It had been his painful lot, and not very rarely, to hear from broken-hearted mothers who had lost their hand-fed children a confession, not precisely perhaps in the words, but to the effect, that God had given them children which they had starved because they would not break through their habits of indolence, or because they would not for a few months give up that society in which they were admired. That was a grievous confession to be made to one's heart, even if it were not made aloud; and perhaps the mother whose child was thus taken from

her never had another, and lived on to a childless old age when she would want the comforter that child would have been to her if, in its infancy, she had done a mother's duty. It might be said by some "That may be all very true, but why should we live anxious days and spend laborious nights, for the sake of nursing our infants, when we can get wet-nurses for them, and when with a good one a child would thrive just as well as if they nursed it themselves?" But even if that were the case, and he very much doubted it, what was their duty to their neighbour where the wet-nurse herself had a child? Were they not bound to think of the poor woman whose child might be her only pleasure, and who came to them often with an anxious heart and many misgivings to nurse their children? Were they doing right, unless they were compelled by some over-powering necessity in doing this; and if they were com-pelled to do it, were they not bound (which he was afraid many ladies did not do) to look after that poor woman and that poor woman's child which, perhaps, was being sacrificed, or at any rate endangered, for the sake of theirs?

He supposed most of them knew the story, and it was a true one, of one of the great ladies of the Court of Louis XV., Madame de Tanson, who, when her son, for whom she had never cared in childhood, had risen to fame as the great mathematician and philosopher, D'Alembert, sought to claim him, but he refused to recognise her as his mother, telling her, "Nay, you are not my mother, my real mother is this poor carpenter's wife who nursed me at her breast and tended and cared for me in my infancy." And was not that indeed the case? Were they not, in giving up the nursing of their infants, renouncing not only their mothers' duties but a great part of what should make a mother's joys?

There was one point of remarkable difference between the lower animals and man, and that was that with the greater number of the lower animals dentition takes place early, and the young creature is soon able to dispense with its mother's care, as though it were the object of an all-wise Providence that it should, as soon as possible,

be able to gain its own subsistence and live for its only object, that of perpetuating its species. But in the case of the human being it was far different; the infant had to be trained with care into a man, whose future was not bounded by this world's horizon; his moral as well as his physical qualities had to be developed, and it was for that purpose, no doubt, that an all-wise Providence had decreed that the infant should be dependent for a considerable period upon its mother, in order that the child might learn to cling to her through life with an affection which surpasses all others; she, on her part, caring for her child with an affection which made her, during all its early years, the child's best guide, companion, guardian, and friend. A high duty that! A great privilege! A source of purest joys! And would they abandon those duties and renounce those golden joys for any meaner thing which this world could give them?

Poets had described, painters had depicted, and the very ballad singers in olden times were wont to sing the joys which Mary felt when the blessed Babe was lying in her bosom; and he was sure the ladies present would not prove her degenerate daughters. They would not renounce those great privileges; they would not give up those joys in manner like to hers, for they all must love the highest.

THE LECTURE.

A SHORT lecture on such an important subject as that of the Rearing of Hand-fed Infants will of necessity run the risk of being considered tedious, if only from the amount of dry detail which its consideration must involve; but, what is of greater moment, it will be found unsatisfactory because it must needs be left incomplete.

Boyle remarked that the dim and bounded intellect of man seldom prosperously adventures to be dogmatical about things that approach to infinite, whether in vastness

or littleness. The importance of this my adventure must be characterised by vastness, though it consists of littlenesses which have been too generally deemed unworthy of deliberate consideration or of practical instruction. Whether this my adventure shall completely fail, or, as I will dare to hope, be partially prosperous, will not be absolutely known. This much only is certain, that the lecturer will not feel aggrieved if, on its conclusion, the adjectives "dim" and "bounded" be used to qualify his intellect. With this admission on the threshold, it will be clearly understood, I trust, that I am not prepared to maintain that he who holds views which happen to be in antagonism to those which experience has compelled me to adopt, is of necessity in error. Indeed, I should not be surprised if, at the end of my discourse, several provokingly healthy children were gleefully exhibited who had been reared by hand on plans directly opposed to those on the importance of which I am about to insist. At any rate, my plans shall be found unusually simple and they will be calculated, if carried out with ordinary intelligence, to insure the extension of the greatest good to the greatest numbers of these unlucky infants.

Lastly, by way of preface, I would like to submit this assurance, that my opinions have not found origin and maturity, like certain histories of personal adventure and foreign travel, in the Reading-Room of the British Museum; they are the results of years of interesting work in the Out-patient rooms of a neighbouring institution, in Great Ormond Street, where ill-taught mothers and sickly children much do congregate.

The rearing of hand-fed infants unfortunately is not a matter that can be altogether regulated by definite rules or conducted with mathematical precision; it is an art requiring more sense and science, skill and delicacy than even that of orchid-growing; nevertheless, almost every woman, utterly regardless of antecedents and general qualification, considers herself specially adapted for its successful prosecution, and to the manner born.

Possibly as time rolls on, and women are fully occupied with the cares of office and the affairs of state, men may find this, a new field, opened to them ; but in the meanwhile women must be left in undisputed charge of the business which hitherto has not been carried on in a thoroughly successful manner. May I delicately hint, without risk of giving needless pain, that amongst those least suited for the work may often be found the experienced monthly nurse (so called), and the infant's grandmother ?

Though my object to-day will specially be an endeavour to improve the surroundings of our vast army of hand-fed babes who are being yearly sacrificed upon the altar of ignorance and incapacity, still, much of my remarks will be found to apply with equal force to those infants who are brought up partially or entirely on the breast.

To show the importance of the subject in question, and its unsatisfactory condition, I may remark that it has been computed that more than two-thirds of those who are brought up by hand perish in infancy or childhood ; and, from what I have seen, I am almost prepared to accept the figures. Quaintly, but truly, has it been remarked, that very many little children who should be playing amongst the daisies are sleeping beneath them on account of errors committed in their bringing up.

Probably every one here will admit the truth of this general proposition :—that for the first half year of infancy the mother's milk should be the *only* food. But when this natural supply falls short of the demand, or entirely fails to makes its appearance ; or in those cases where the poor woman is compelled to leave her home and her infant, for more than half the day, in order that she may earn money for the support of her husband ; or when a lady of fashion discovers that the demands of a Society, in which she is, perhaps, a bright luminary, take up so much of her time and attention as to overshadow and efface the sweet duties of mother-hood, this question must be answered—"*How should the babe be fed ?*"

To this the analytical chemist and physiological theorist promptly hands in a solution:—Having taken a specimen of human milk into his laboratory, and found to a decimal the proportions in which its constituents are arranged, he sets to work to build up a food upon the lines of this analysis, which, in its power of supporting infant life, he deems must be at least equal to, if not better than the original article. Then his scheme is accepted by a trading-firm; the food is boldly and attractively advertised; manufactured by the ton, and kept in stock "by every respectable chemist."

As I pass by the street-hoardings, or travel by rail, I cannot but wonder if in those dark days when fresh cow's milk, properly prepared, formed the basis of artificial food, infantile scurvy, rickets, and wasting diseases generally were not less widely spread than they are at the present time.

Specially on this matter would I like to hear an opinion expressed by such an authority as he who has done me the honour of occupying this chair to-day. Than he, no physician can speak from more extensive observation, or greater knowledge; whilst his presence here, may be taken as evidence that his personal interest in the welfare of those little ones for whom he has already accomplished so much continues in undiminished activity.

It is not my desire to tax your indulgent attention by reference to any table of percentage composition of human milk, or of any of its ordinary substitutes; but I must pointedly remark that in human milk there is found no trace whatever of the starchy element of foods, there is nothing like bread, rice, corn-flour, oatmeal or biscuit powder. And surely a recognition of this fact ought to suggest that the young infant has neither the need for such aliment, nor the power of digesting it: such inference would be correct. But the chemist, who is not at the same time a common-sense physiologist, pays no heed to this matter, and even works on as if there must be some error; for in the preparation of his patent food for infants, he often

uses plenty of starch in one form or other. He might almost as well put in so much fine saw-dust.

The proper infant's-diet is animal, not vegetable. Let me briefly call to mind the ingredients which invariably, and alone, are found in human milk, which, for want, at present of a better standard, I find it convenient to take as the model food for babes. These, then, are the elements :— butter, represented by the cream ; cheese, which is represented by the curds, which appear in the ordinary course of digestion, or at other times when milk turns sour ; sugar, salts, and nearly 90 per cent. of water.

ARTIFICIAL MILK.

The best substitute for human milk is obtained by mixing perfectly fresh cow's milk, with an equal quantity of quite warm water, in which a lump of white sugar, and a small pinch of salt have been dissolved. The water is added because cow's milk is, compared with human milk, too rich both in cream and curds, whilst a little sugar and salt are wanted to bring it up to the standard. But even after this dilution there may be trouble with the massive curds which form in the stomach. In such cases the proportion of the water may be still further increased ; and at times, when I have been assured that cow's milk and water will not "agree," I have proved to the contrary by having in the mixture *twice as much water as milk.* Some nurses, when using either cow's milk or condensed milk, appear imbued with the belief that the stronger the mixture given to the babe the more he must necessarily flourish ; and carrying the theory to apparently its ultimate limit, I have known a woman give her tender babe meat and beer. The fact of this particular woman's husband being employed in a public-house can hardly excuse her unphysiological conduct. When, in further addition to their routine studies, all school-board children shall be taught chemistry and physiology, such a display of ignorance will be quite exceptional. At least it should be so.

As the infant grows, less and less water will be wanted,

but until the sixth month no other food should be given. Baked flour and oatmeal cannot be digested, so they cause sickness and diarrhœa.

From two to three pints of the prepared food will be required in the course of the twenty-four hours, and it should be given in small quantities, and at the temperature of the body. To secure this last point the nurse should always put a spoonful of it to her own lips to see that it is "about right;" she need not be armed with a thermometer.

The idea of getting the milk always from the same cow, I have abandoned as impracticable, at least in towns; indeed, if the supply of one dairy do not seem to agree with the infant, it is a good plan to change to a fresh establishment, as there may have been something in the feeding of the cows which rendered that particular sample unassimilable.

At six months the babe may be allowed, in addition to the milk, boiled bread-and-milk, beef-tea, oat-meal, baker's rusks, or Chapman's wheat flour.

Hitherto I have but once spoken of condensed milk in the feeding of infants, but holding strong views upon the inadvisability of its usurping the place of fresh cow's milk in the nursery, I must now speak plainly on the matter. Theoretically, as well as in practice, I am quite unable to see how it is that cow's milk, which has been evaporated almost to dryness, mixed with much sugar to prevent its going bad, soldered down in tin pots, sent on a long journey, and then stored for an indefinite time in the shop-window of an oil and colour-man, can form a *better* basis for the nourishment of hand-fed infants than fresh cow's milk just prepared as I have directed. It appears to me to be a fallacy—a manifest fallacy—that this preserved article can ever afford more genuinely healthy nourishment than the fresh milk. I could as soon believe it as that an intelligent man will thrive better on tinned American beef than on fresh si loin; and surely the analogy is not over-strained.

Certainly my experience of hand-fed infants is that the

worst-nourished are almost invariably those which have been brought up on the patent foods and preserved milk; even though they may be big, they are generally flabby; the wrist-bones are swollen, and the legs apt to bend; they are often backward too, and are apt to yield themselves a ready prey to the sequels of those illnesses to which the goddess Hygeia is only just beginning to teach us, that we should no longer consider them necessarily heir.

The sailor in the Arctic circle, who subsists on a diet which is perfectly physiological, except for its want of fresh animal juices and fresh vegetables, sickens and dies of scurvy. And so it is exactly, though in rare instances, with certain children in our midst who are being reared without due regard to the need of fresh milk—they may fail and perish of typical arctic scurvy. Fortunately the distress usually stops short of this, for every physiologist has learnt that new milk is a princely anti-scorbutic.

I dare say that all kinds of preserved milk are not equally unsatisfactory as accessories in diet, for some have not had any of the cream removed before condensation. Unfortunate, indeed, are the infants whose lot it is to languish on the condensed skim-milk! How they must long for the fat cream; how grateful to them must be the little dose of cod-liver oil which the mother often prescribes on her own responsibility!

Not many years ago a traveller brought into England a water-weed from foreign parts, as a curiosity; and it has since flourished in our rivers to such an extent as almost to completely choke them in places. So it is with condensed milk; we have got it into our households and are now being overwhelmed with it. Still it must, I suppose, be used; and I see from an article in a journal * of last week that there may yet be a great and profitable future for it.

I read the paragraph as it stands:—

"Condensed milk has been lately extensively employed in connection with what may be called a new industry, that of 'milk-blending,' or, in other words, letting down rich

* *Health;* a weekly journal, July 25, 1884.

dairy milk, so that the analytical results agree with the figures for solids not fat prescribed by the Society of Public Analysts. Large quantities are daily consumed in this way by milkmen, and to such an extent has the trade increased, that condensed milk is imported in churns, especially manufactured for the convenience of dairymen; these churns being returned to the factory for a further supply."

My only hope is that children will not get too much of this ingeniously prepared mixture; far better was the old one of watered milk.

FEEDING BOTTLES.

A most important matter in the hand-feeding of infants is the kind of feeding bottle used. I hold in my hand the old-fashioned and excellent slipper-shaped bottle. And what a good thing it would be, if, in their search for the antique, mothers would revert to the use of this ancient feeder. I feel sure of this, that if a Hogarth of to-day were to paint the idle and the industrious dry-nurse, he would place this bottle in the hand of the industrious one. Whilst the infant of the idle one would be represented as asleep, with one end of a slender india-rubber tube in its mouth, the other end losing itself in an empty feeder, such as this.

The advantages of the old bottle are that the infant can be fed only when the nurse is holding the bottle, when, if the food seems to be coming too quickly, the supply can be remitted for a few seconds. Thus, throughout the feeding, the infant is certain to be receiving the undivided attention of the nurse, so that the supply is always likely to be given at regular intervals and in proper quantity.

There should be two feeding bottles in constant work, one for day and one for night; and after use the bottle and nipple should be thoroughly washed in a little warm water and soda, and then well rinsed in cold water. Till next wanted they should be kept in a basin of clean, cold water.

With this old-fashioned bottle there is nothing to get out of order; no tube to get twisted, or to be tied in a knot, and nothing that cannot be easily kept perfectly clean.

Regularity in the use of the feeder is a most important matter; in the first month it will be wanted every two hours, and then, by gradually increasing the interval, every three, and eventually every four hours.

If the infant is sick after his bottle he should be fed at shorter intervals, and with much less food at a time. Need I say that he should not be fed every time he cries? True it is that the infant has "no language but a cry;" but often the cry means, "I feel already uncomfortably distended," or "I am damp, or cold." Again, we are told that "an infant crying in the night" may merely want "a light." Some mothers have no other way of attempting to allay a cry than by thrusting the nozzle between the lips. Fortunately this measure will often succeed, for all that the infant has been wanting was the necessary stimulus for freeing its stomach of an indigestible load. If he is a good sleeper he may be woke up two or three times in the night, but never then allowed to over-feed.

But to return for a moment to the question of feeding-bottles:—The nurse having filled this long tubed bottle, is apt to put it into the cot by the infant's side, and to go about her business while the meal is being consumed. Often she deposits it in the perambulator, and allows the infant to help himself as he is being wheeled along; and, then, "just to keep him quiet," he is allowed to suck away at the empty bottle, and to take in wind. Indeed, he becomes "a slave to the bottle," and refuses to go to sleep without it. This is in every way demoralizing. Weaning from this bottle is apt to be long delayed, and perhaps not accomplished by the time that the apparatus is wanted to serve for a fresh addition to the family. I have known the weaning delayed until the child has been able politely to ask the mother for his solace. Certainly, well before the expiration of the first year the infant should be entirely weaned, and should be receiving, in addition to the foods

recommended a short while ago, a little under-cooked meat, pounded up and mixed with gravy and salt, or potato similarly treated; and this diet may be varied with an egg, or a milk-pudding. But on no account should he be allowed any wine, beer, tea or coffee, though he may have cocoa-and-milk. Nor should he be allowed to "pick" at bread-and-butter, cakes and sweet-stuff in the short intervals of his regular meals.

WARMTH

One of the chief uses of food is for keeping up the animal heat; and a weak digestion may be spared considerable unnecessary work if the infant be kept always warm; truly it may be starved with cold. He should be clothed all over in soft flannels, and if of a chilly or feeble nature, his cot should be placed near the fire, or at least in a warm room; and, if possible, where the sun can shine about it. Without fresh air and sun-light children, like flowers, pine and droop. The nursery, therefore, should be near the top of the house, at any rate so in towns, for this will be the lightest and most airy situation. And, if practicable, it should have a South aspect, so as to entrap as many as possible of Apollo's life-giving beams. His glorious beams love children's faces; they search them out like peaches on a sunny wall, penetrate the tender skin, and store both in and beneath it a boundless wealth of health and happiness. Whenever I am tending a sick child I make it one of my first cares to get his cot into a sunny corner of the room, for a change in this way often appears to be almost as beneficial as the breath of sea-side air.

I trust that in this I am clearly understood. I do not mean that it is good for an infant to be tied down in a perambulator and wheeled along with its face turned up to a blazing mid-day sun. What I mean is that in England we do not seem to understand the true value and charm of sun-shine (possibly because we have so little personal acquaintance with it). In Italy it is different, and the common saying runs to the effect that where the sun does

not go the doctor does. The sun's rays rob suspicious gases of their evil power; but from all such vapours infants should be jealously guarded; they quickly fade beneath them. Therefore the utmost care should be taken that no sink or closet is breathing near the nursery. Harrowing stories without number may be told of how little innocents have fallen victims to the neglect of these first laws of sanitation. Every thing near babies should be sweet and fresh, and there should be no carpets, bed or window-hangings to interfere with the free circulation of air.

The bed should be warm before the infant is put in it, and a warm bottle wrapped in flannel may, in the cold weather, be tucked beneath the clothes. But by no means should the infant be taken for the sake of warmth to sleep in the mother's bed; it is a highly dangerous practice. The coroner for Central Middlesex informs me that, in his district alone, 120 inquests are held annually on children who, sliding under their mother's body, or creeping thither for warmth, have been fatally overlaid. He also tells me that in Germany, it is criminal to allow the young child to sleep with the adult.

In the American edition of Æsop's Fables one reads of a kind-hearted she-elephant, who heedlessly set foot on a partridge, which she crushed to death within a few inches of the nest containing its callow brood. "Poor little things," said the generous Mammoth. "I have been a mother myself, and my affection shall atone for the fatal consequences of my neglect." So saying she sat down upon the orphaned birds.

The moral which Mr. George Washington Æsop draws from this affecting anecdote is, that it is not every person who should be intrusted with the care of an orphan asylum; but personally I venture to think that all the moral has not thus by any means been exhausted.

DRESS.

Taste in the dress of infants, as in all things else, should be in subservience to utility. Surely in this case the first

use of dress should be warmth; but unfortunately the converse of this proposition seems generally to hold good.

Look at the infant who has just emerged from long clothes; on the most treacherous day in March or November, you will probably find him in a cold-looking white cotton frock, which is cut low in the shoulders and high in the arms; whilst the little strip of sleeve is made narrower yet by being tied up with ribbon; so the arms, neck, and much of the delicate chest are left bare and chilled. His thin cotton socks fall down from his ankles, and his legs and thighs are left exposed to every change of temperature. The effects of this wicked—I had almost said—foolish fashion, must be baneful enough in the upper classes, whence probably, it took origin; but with the poor, whose children are constantly in the way of draughts and exposure to cold, the results must be much more disastrous. A child's clothes should be warm and loose, and should not, after the first few weeks at any rate, include that strange vestment which is wound round and round the trunk. Warm woollen stockings should reach well up the thighs, and drawers should over-lap them; and if the latter be of linen or calico, flannel may, in cold weather at any rate, be worn beneath them. The cinglet of merino or flannel should reach right up to the neck, and should have long sleeves, as should also the frock.

The more delicate an infant the more the need for all this tender care; in Canada and America generally this important matter of clothing is far better understood than it is with us. Thus to dress a child is not to coddle it; it is but to carry out a scheme which is practically illustrated in the case of the bird, who lines her nest with down, and spreads her feathers over her young, until Nature has had time to fledge them, and so to enable them to generate warmth for themselves, and exercise their growing limbs in flight.

It would be interesting to know how this present style of infants' dress was evolved; and I would venture to

commend the subject to the attention of the Hon. Lewis Wingfield.

If a surgeon wishes to inspect a little arm or leg he finds the part all too readily exposed ; but if he would examine the base of the infant's chest, hooks and eyes, tapes, buttons and safety-pins have to be undone, one after another. Garments are thus loosened layer on layer, endless bands of girth are unwound, and at last the skin is reached.

The middle part of the body has been converted, as Mr. Treves remarks, into a torrid zone, whilst its poles have been left frigid. The amount of clothes which have been thus heaped upon the infant should, in bulk, be amply sufficient ; no scheme of extension of investment is demanded, but rather one of redistribution.

Fashion has been likened, I dare say, to Juggernaut's car : and surely in the matter of the feeding and clothing of infants many thousands of victims are yearly cast beneath its heavy wheels ! But the huge sacrifice attracts no remark ; the great black image is dragged onwards.

WASHING.

A necessary health measure is the washing of the babe in warm water at a regular hour in the morning and evening. He should be washed all over with soap, except, I should perhaps add, his eyes. Thus the pores of the skin are kept free and sweet. It should be clearly understood that an infant cannot be hardened by being bathed in coldish water. From a carrying out of this harmful idea the weakly ones are cut off, whilst only the fittest for existence can survive. The mother, who happens to have reared one of these survivals, shows it as an example of what cold baths can do, whilst envious neighbours miserably fail in their ill-advised attempts at rivalry.

For insuring appetite, digestion, and sleep, the infant should be taken out of doors each day that the weather is fine; and every day, unless a bitter wind is blowing, or it is foggy, the window should be thrown wide open for a while, as fresh air in the house is absolutely needful.

SLEEP.

And now it is time, I think, to get this healthy, happy hand-fed infant to sleep. And for this purpose, let me beg that he is not swayed about in the nurse's arms, rocked in a cradle, or patted on the back. Though a resort to one of these popular nursery measures may not, after he has grown accustomed to it, make him actually sea-sick, still the habit has nothing more than custom to recommend it. It is, or should be, quite superfluous; sleep should come naturally, and, like the meals, at regular intervals. A well-brought-up infant should close its eyes like a mechanical wax doll as soon as it is laid down for sleep.

Cradle-songs and lullabys may be left entirely for poets and musicians, to whom, indeed, they seem indispensable. Never more should the small hours of the night (nor the wearied father) be disturbed by them.

It was, I believe, only a home-sick sugar-planter who cried "Rock me to sleep, mother." And I do not imagine that if a babe could speak he would ever be heard repeating that request.

And here, in ending my discourse, let me compare it to an ill-made net, in which the irregularly-sized meshes are represented by the many faults of omission and commission. Some threads will be found unduly loose, whilst others are, perhaps, drawn too tight; still I have little fear of the net breaking under the test of practical experience. Indeed, the greater the strain that it may be thus called upon to bear, the more productive shall be reckoned this my cast.

And I will further add, that if this grand Health Exhibition accomplished no other work than that of directing some measure of public attention to the unsatisfactory environment of our thousands of hand-fed infants, history would still have ample justification in regarding it as one of the most important national successes of the 19th century.

Dr. DANIEL said they had not only to acknowledge their indebtedness for an extremely interesting paper, but to

congratulate themselves on the presence of so distinguished a children's physician as their chairman, to whose observations they must all have listened with the greatest interest. Mr. Owen had alluded to the fallacy, so prevalent in London, of getting milk from one cow. It fell to his lot some years ago to visit the cowsheds of Kensington, and he went with a committee to one of them which was most beautifully fitted up, and where there were 8 or 10 cows. The man was asking for a license for another shed on the other side of the road, where he had a single cow ; and on being asked what on earth he wanted with it when he already had so many in the other establishment, he replied that he "wanted to shew the ladies that all the milk came from one cow." No greater fallacy could exist than that all the milk sent out in London in sealed cans, as it was, could by any possibility come from one cow. Many of the London parishes unfortunately did not possess analysts, because the Act only said that the Local Boards "might," not that they must, appoint them, and consequently much of the milk that was supplied to the poorer classes was not analysed at all; and even in Kensington, which was supposed to be one of the best managed parishes in the world, samples of milk were constantly being brought in which were distinctly adulterated with water. Unfortunately a sufficiently high standard for milk was not fixed by the authorities at Somerset House; they admitted too high a percentage of water, though the adulteration of milk by the addition of water was not so objectionable as other forms of adulteration. He was an ardent advocate for the use of the mother's milk in the first place; secondly, of good cow's milk, fresh, pure and unadulterated; and thirdly, if *neither could be got*, he must say he had seen very good results from the use of condensed milk. The lecturer had most happily pointed out the evils of the patent feeding bottles which could be bought for 1*s.* or 1*s.* 6*d.*, and if ever there was a curse of civilisation it was that form of bottle. The old-fashioned bottle was much the best, and he believed more children died from the use of those patent bottles

than from anything else, because, no matter how careful a nurse might be, it was physically impossible for her to keep them clean and sweet. Of course too great care could not be taken in the general sanitation of houses from this and every other point of view. He did not quite agree in what the lecturer had said about clothing children; he was not in favour of coddling them, and he must say he liked to see their arms and legs bare. With regard to mothers sleeping with their babies, that was a very difficult question to deal with. As to the question of sleep, children should be trained up in the way they should go, and then there would be no difficulty in getting them to bed and at once to sleep.

Mr. Owen thanked the audience for their attention, and Dr. Daniel for his kindly criticisms.

The CHAIRMAN commended Mr. Owen's remarks to the consideration of every one who had to do with infants, and one great lesson to be learned from them was the great importance of attention to small things. They all remembered what Solomon said, "He that despiseth small things shall perish little by little;" and in nothing was a disregard for small things more speedily or more severely punished than in the rearing of children. Mr. Owen had been good enough to ask him to say from his experience whether within recent years rickets and other forms of children's diseases had not increased greatly; but he must be pardoned for suggesting that he was not Methuselah, and before one could say anything on that point, one would require an experience, not merely of 20 or 30, but of some hundreds of years, and he could hardly, therefore, give a positive answer to the question. They knew, however, that on the whole the life-rate had increased, and that infant mortality had diminished, but it would be a wide question to go into, to discuss all the causes which had brought about that happy result. He was quite certain that it was a matter of great importance that in dealing with

young children they should, as far as possible, be brought up on milk food in their earlier months, and that great care should be used in the addition, even after six months, of any kind of farinaceous food, which should be given carefully and experimentally. Sometimes one form of such food suited children and sometimes another, and a positive rule could not be laid down as to which kinds of food were the best or least mischievous; but his advice would be to eschew them all until the baby was six months old.

As regarded the use of condensed milk no doubt one of the reasons why it was so much used was the dearness of cow's milk, and they must bear in mind, not merely the condition of those who were fairly-off in the world, but that of the very poor. He agreed most heartily with what Mr. Owen had said with reference to the old-fashioned and the new-fangled feeding bottles, and if anything that had passed should tend to throw the latter into disuse the meeting would certainly have done good. Much depended in bringing up young children upon the degree in which poorer mothers were taught, and in that direction he had much faith in the efforts of those ladies who in recent years, and quite within his own recollection, had carried out the system of mother's meetings which were a blessing wherever they were instituted. Let their object be, as he believed it was, not simply teaching their poorer sisters the highest rules of conduct, but also their more domestic duties, and the proper methods of managing their infants which had so much to do with the increase of morality and happiness, and the propagation of true religion.