cubby-hole at an exceedingly high temperature falls an easy prey to tuberculosis. Constant attendance at the scene of employment, coupled with the irregularity of meals and uncertain hours, is responsible for the fact that many of the male artists become alcoholics. Taken all in all, the cheap moving picture theater artist has no easy task and sooner or later another victim is enrolled under the banner of the white plague.

The general practitioner is often consulted by a patient complaining of headache and burning eyes which run water as soon as they come in contact with strong light. After a thorough examination, including urinalysis, the patient is referred to an ophthalmologist in order that a refractive error may be corrected and the patient relieved of the headache and the visual irritation. In a great number of cases the ophthalmologist will report that there is no error of refraction and that he is unable to account for the headache and the running burning eyes. An inquiry into the habits of the patient will elicit the information that he is a devotee of the moving picture show. The constant gazing on a rapidly moving and scintillating film with every mental faculty alert to maintain the connection of the story is sufficient to produce an eyestrain of great severity and thus cause headache and burning eyes. The only remedy is rest and cessation from this form of amusement. After a few weeks vision becomes normal or nearly so and no ill results are experienced unless the patient resumes his former habits. In many cases the eye trouble assumes a severity that calls for long and persistent treatment on the part of the ophthalmologist.

Moving picture shows in tenement districts and labor settlements should exhibit pictures that tend to elevate the mind and improve the moral condition of their audiences. Pictures portraying scandal, illicit amours and criminal cupidity very often have a debasing effect on a mind that is already morally warped through environment and surroundings, thereby bringing to the surface a latent criminality. If the moving picture shows are to remain, radical changes must be made.

Rigid inspection by the health authorities is absolutely necessary. Proper ventilation by means of exhaust air fans, airifiers and other ventilating appliances and numerous apertures with sufficient air intake must be provided. The number of cubic feet of air necessary for health should be determined by the seating capacity. The flooring should be oiled, not carpeted or covered with dust-gathering material. Plush-covered and velvet-covered seats should also be prohibited for obvious reasons. Suspension of the performance at the end of every five hours, when the orchestra or seating hall should undergo a thorough cleaning, is of urgent necessity. The cleaning could be accomplished within forty-five minutes by the aid of the vacuum cleaner and should be followed by a draught of pure air throughout the place, if possible. At the termination of the day's performance the whole resort should be given the proper sanitary attention. Signs should be conspicuously posted as to the evils of spitting.

CONCLUSIONS

That a great deal of eye trouble is due to moving picture shows can not be denied. The singers, musicians and film operators of these resorts fall an easy prey to tuberculosis through excessive vocal efforts, constant confinement, irregular habits and long hours. As a disseminator of tuberculosis the moving picture theater ranks high and it will become necessary to enact special health laws to remedy the evil.

2131 Baronne Street.

HELP THE MOTHER NURSE HER CHILD

A PLEA TO PHYSICIANS NOT TO BEGIN ARTIFICIAL FEEDING WITHOUT FIRST TRYING TO HELP THE MOTHER MAINTAIN HER MILK SUPPLY *

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That no artificial food can take the place of breast-milk has always been admitted, even by those who have had the most success with artificial feeding, men like Holt¹ and Rotch.² In some parts of this country, however, it is uncommon to see any attempt made to induce a mother to nurse her child, even when her breast-milk has not been examined to see whether it was abnormal or not. Is this not chiefly our fault—that is, the fault of the physicians?

Not only are no efforts made three to four days after birth, but later, when the child is between three and six months old, breast-feeding is often stopped for no apparent cause, here again without examination of the milk to find out its composition. Would it not be more just to the infant first to try to help the mother so improve her supply of breast-milk that there may be enough for the child, for some months longer, at any rate?

Baginsky³ states that any other food than woman's milk requires considerable work from the infant. Chapin⁴ declares that "normal maternal milk supplies the necessary quantities of fat, proteids, carbohydrates, etc., for proper structural development and maintenance of the vital processes, in forms that automatically adapt themselves so as to develop the digestive functions of the growing animal." Rotch,⁵ with interesting detail, gives the principles, diet and exercise chiefly, which produce variations in mothers' milk, basing his results on frequent examination of the breast-milk in question. Holt⁶ also discusses the value of food, drink and exercise in bringing about changes in breast-milk. He lays stress on examinations of the mother's milk also. Griffith⁷ says:

The possibility of improving the quality or quantity of breast-milk must never be forgotten before weaning is advised. An alteration in the diet, in the quantity of liquids taken and in the amount of exercise employed will often attain the result desired.

Morse,⁸ in a most interesting article, says:

The nursing woman ought to lead her usual life and not be treated as an invalid. . . . She should take her usual food, but more of it. . . . She must have light and air and must not be shut up in the house. . . . The best method of increasing the quantity of breast milk is the use of the breasts. . . . Within reasonable limits, the more taken, the more there is produced. Other methods are entirely subordinate. Among them may be mentioned, first, improvement of the general condition; second, a liberal diet.

Jaschke,⁹ in his excellent monograph on the importance of breast feeding in the struggle against infant mortality, ridicules any special article of diet or

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixtieth Annual Session, held at Atlantic City, June, 1909.

1. Holt, L. E.: Diseases of Infancy and Childhood, 1897, p. 126.

2. Rotch, T. M.: Pediatrics, 1901, p. 116.

3. Baginsky, A.: Berl. klin. Wchnschr., 1900, No. 17.

4. Chapin, H. D.: New York Med. Rec., Dec. 12, 1903.

5. Rotch, T. M.: Pediatrics, 1901, p. 141.

6. Holt, L. E.: Diseases of Infancy and Childhood, 1897, p. 164.

xxviii, 271.

7. Griffith, J. P. Crozer: Am. Med., May 3, 1902.

8. Morse, J. L.: Phys. and Surg., March, 1907.

9. Jaschke, R. T.: Monatschr. f. Geburtsh. u. Gynack., 1908,

drugs, referring to Finkler's list,¹⁰ and states that the best galactagogue is the nursing infant. He insists only that the nursing mother be well nourished. Schlossmann¹¹ and Engel¹² believe that the nursing mother may eat whatever she pleases.

Notwithstanding these and other unquoted opinions, it has been my lot to find that much could be accomplished in every case by persuasion, encouragement, advice and perseverance, even though the mother dislikes the idea of nursing her child and decides not to do so. Later, when the baby is several months old and the mother believes her milk no longer to be as nourishing or as plentiful as it had formerly been, much can again be accomplished if directions are correctly carried out.

Old as is the recognition of the fact that every well woman ought to nurse her baby (and only recently Walcher¹³ has shown that no actual diminution in the ability of women to nurse their offspring can be demonstrated anatomically) it was never so important as at present when the success following the use of cows' milk mixtures (and, unfortunately, the popularity of the proprietary infant foods) have made the use of the infants' bottle seem almost a necessity. That one or two bottles daily, given when the baby takes his nap, or to allow the mother time for fresh air and exercise, can do no harm has been shown by many careful observers, provided the mother follows other directions rigidly.

Since the appearance of Dr. Southworth's article¹⁴ on this subject, in 1902, I have urged all those with whom I have come in contact, socially as well as professionally, to continue breast-feeding until the baby is at least eight or nine months old. In contrast to the subjects observed by many in cities, the mothers I have treated have been normal women or nearly so, and on this account, perhaps, my directions have resulted successfully.

During the last few months of pregnancy, not only should the nipples receive daily attention, but every pregnant woman should cultivate the excellent habit of drinking water. It is well to have a pitcher of drinking-water always near at hand so that she may drink frequently. She should learn to drink without discomfort three quarts or more every day. The value of large amounts of drinking-water during pregnancy has also been urged by Holloway¹⁵ as tending to prevent the toxemias that so readily occur from retained products of metabolism. Other rules of decided importance during pregnancy are: exercise in the open air, a walk or drive, or in bad weather a walk on a piazza or in a room with windows open; sufficient sleep, not only eight to ten hours at night, but also a nap of two or three hours every afternoon; correct, wholesome, plain food and enough of it (red meats to be taken sparingly); and the regular daily evacuation of the bowels, brought about by regulating the food, water and exercise, although it is sometimes advisable to add some mineral water, besides.

After delivery it is most important that the mother take daily three or four quarts of water, some with meals and a great deal between meals. This is not difficult if the woman has grown accustomed to drinking large amounts of water daily during pregnancy. Tea

and coffee should be absolutely prohibited during lactation. Next in importance should come the thin corn-meal gruel advocated so strongly by Dr. Southworth. This is easily made, boiling one or two tablespoonfuls of yellow corn-meal in a quart of water for five hours, in a double boiler, with the lid on. It may be flavored by putting in ten or fifteen large raisins, a little salt, wine or nutmeg. It is kept on ice and drunk between meals, poured on ice in a bowl or glass, at 10, 4 and bedtime. The taste is not bad and most women like it. For those few women who like milk and are used to drinking it, a quart or more may be allowed daily; but milk should never be urged on those who dislike it or believe that it disagrees with them. In such cases cocoa prepared with milk may be substituted.

In many women with a tendency to anemia during lactation, the use of one-third or one fourth of a bottle of brown stout (imported), not more, taken with the midday meal occasionally seems of value. Ale, beer and malt extracts are not good, as they tend to obesity, without affecting the milk or the general condition of the woman. In a few of these anemic mothers some iron preparation, such as the phosphates, glycerophosphates or hypophosphites, has seemed of decided benefit. As before delivery, exercise, fresh air, sufficient sleep, enough food, regular bowel movements and a routine existence are to be insisted on. It should not be overlooked, however, that an active cathartic will greatly, though temporarily, diminish the amount of milk secreted. Great stress must also be laid on the regular care of the breasts, washing them both before and after nursing.

Though Jaschke¹⁶ says there is no absolute contraindication to nursing, most medical men prefer not to allow a mother with advanced tuberculosis to nurse her child; and other conditions in the mother may rarely exist which would make nursing injudicious for her. There is a group of nervous women found in cities especially in whom all efforts are apparently wasted, the women growing stout without any improvement in the milk-supply being noticeable. Dr. Southworth's suggestion¹⁴ to give the child both breasts temporarily, alternating with one or two bottles a day, when the mother first begins treatment, will be of value in some serious cases. By this means the mother's supply of breast-milk may be saved.

My notes cover 73 cases, including private and hospital patients during six years. In 24 of these my directions were not followed, or they were carried out incorrectly or for only a short time. In 6 of these cases the mothers were neurotic and grew stouter without any noticeable improvement in the milk. The mothers have carried out directions in 49 cases and have been able to nurse their children to between six and eight months. Directions were given before the birth of the child in 21 cases; in 14 cases the infants were under three months of age when treatment of the mother began; in 9 cases they were from three to four months old; in 5 cases, over four months of age. In only 6 cases was one bottle allowed daily; in 2 cases two bottles were given daily.

At some time between six and eight months the great majority of mothers noticed that their babies cried more than formerly and they soon realized that this was due to hunger. When this occurred, in spite of having conscientiously carried out directions, weaning was first considered. By this time most babies were being nursed

10. Finkler: Zentralbl. f. allg. Gsundhspfig., 1907.

11. Schlossmann, A.: Arch. f. Kinderh., 1900, xxx.

12. Engel, S.: Diseases of Children, by Pfaunder and Schlossmann, Am. trans., 1, 351.

13. Walcher: München. med. Wchnschr., 1908, p. 2440.

14. Southworth, T. S.: The Improvement of Breast Milk and the Prolongation of Lactation, THE JOURNAL A. M. A., 1902, xxxix, 249.

15. Holloway, T. C.: Kentucky Med. Jour., April, 1908.

16. Jaschke, R. T.: Monatschr. f. Geburtsh. u. Gynäk., 1908, xxxiii, 191.

at 6, 9, 12, 3 and 6; or possibly at 6, 10, 2 and 6, with one night feeding. A cows' milk mixture was first substituted for the afternoon feeding, as most infants appear to take least at that feeding. The first mixture given was composed of 1 ounce of boiled water (or barley-water), 1 ounce of lime-water and 2 ounces of milk (4 per cent. certified, from which the upper 6 ounces from a quart bottle had previously been removed by dipper). After heating the mixture, it was in most cases given with a spoon; in a few cases, those used to bottles, the baby's bottle was again used. For colicky infants the bottle is to be preferred; and a hot-water bag may be applied to the abdomen during and after feeding. A few days later, when the infant learned to take the entire 4 ounces, the amount given was increased to 5 ounces; then gradually to 6, 7 and 8 ounces, still using one-half milk, with the upper 6 ounces dipped off a quart. By the time the baby took 6 or 8 ounces at each feeding, the milk mixture was substituted for the breast twice daily; in a few more days, for three feedings, and by the end of three weeks the infant was weaned. Then, instead of removing the upper 6 ounces from the quart, only 5 ounces were dipped off; later only 4 ounces.

The baby has now learned to digest the proteid of cows' milk and is learning to tolerate the fat; the strength of the mixture is gradually raised, although it is unwise to exceed 6 ounces of 4 per cent. certified milk (still with the upper two ounces dipped off each quart bottle) in an 8-ounce mixture, 7 ounces in a 9-ounce mixture, or 8 ounces in a 10-ounce mixture, until the child is one year old. Then orange juice and a cereal, such as strained oatmeal, well cooked, may be begun; later, junket, custards, dry toast, soft-boiled egg, etc., may be added. Well-baked potato and baked apples are favorites with some babies.

While special stress has been laid on the feeding, ordinary hygiene should by no means be neglected. The child, as well as its mother, needs fresh air, baths, drinking-water, regular habits of sleep, defecation, etc.

The object of this paper has been simply to reiterate the immense importance of breast-feeding and to report my results, achieved by persuasion, advice, encouragement and perseverance in the overcoming of difficulties, few of which are found on investigation to be as real as young mothers think them. That this experience may help others to obtain like results is my hope, so that every woman may try, for a time at least, to nurse her offspring, an act which is sure to be followed by a generation of stronger individuals and by a great decrease in infant mortality.

118 South Twenty-second Street.

ABSTRACT OF DISCUSSION

DR. H. M. McCLANAHAN, Omaha: As the school question is of importance after the child is brought into the world, and reaches school age, this question is of importance in saving the child to enable it to live to school age. Recently I have been asking mothers why they weaned their babies, and when they weaned them. Sixty per cent. of the mothers replied that the family physician had told them to do so. Many weaned them within the first two weeks of life because the child cried. Without knowing why it cried it was put on the bottle. I am an advocate of mixed feeding rather than leaving the child without breast milk altogether. If a child is given the breast part of the time, I think the mother is entitled to give it the bottle a part of the time. Breast milk makes the baby more resistant to infections, but our knowledge of mixed milk makes it easier to have a baby partly on the breast and

partly on the bottle. The mother should be taught that nothing but organic disease justifies a mother in weaning a baby. If necessary she may give it the bottle as a supplement to the breast feeding if the child does not get enough milk. In text-books on the diseases of children ten pages are given to the subject of artificial feeding and almost nothing to breast feeding and how it may be brought about. Frequently mothers will say to me: "I understand that it is just as well to feed the baby on the bottle." Recently I saw a baby on the fifth day of life. It had a temperature of 105 F. The mother was a primipara. She told me she was sorry she could not feed the baby. By keeping the baby persistently at the breast she is now able to nurse the baby. Those are the questions that lie at the very foundation of the supply of human beings. Seventy-three per cent. of the children in the large cities are foreign born and are nursed by their mothers.

DR. J. P. SEDGWICK, Minneapolis: It is gratifying to see that we are coming out of a state of pessimism in regard to mothers nursing their babies. I have kept a record of private cases I have had since I began practice, as to whether the mother nursed her child and, if she stopped, why, and when she stopped. Some of the answers are so ridiculous that it would surprise most of us if we kept such a record. In the first place, we are led to believe that it is very frequent that breast milk does not agree with the baby. That I believe is a rare condition. I think it is usually a quantitative question rather than a qualitative one. Let me recite one example. A baby had been taken from the breast and put on the bottle on the advice of a physician who had examined the mother's milk, reckoning the amount of cream and protein. The physician found 4 per cent. of protein and for that reason thought that the baby could not be kept at the breast. He got doubtful results when the baby was put on the bottle and very soon the baby and its mother came to me. I could see no reason why the child should not be nursed by its mother; I examined the milk and I got 1.4 per cent. protein in two samples, showing how much harm can be done by inaccurate examinations, and then basing our therapy on such examinations. I am so convinced that it is a general quantitative question that I have scales not only in my office, but other scales that are sent from house to house, allowing the mother to see for herself what the child gets. We should have very accurate data before we take a child from the breast.

DR. L. DUNCAN BULKLEY, New York: For years I have fought for mothers nursing their children. I have not used the scales and I have not analyzed the milk. I am an old-fashioned practitioner, but I am positive that attention to the mother has accomplished results that could not be secured otherwise. Over and over again a mother comes to me and tells me she can not nurse her child. I analyze the urine and examine the mother carefully, and find metabolic or other errors which I correct, and in nearly every instance the mother is given iron. In eczema in small infants I give the mother arsenic and iron and seldom give the child anything internally. Time and again people have spoken of the fact that when I stopped the mother from taking tea the child's eczema stopped. I have seen so many cases of eczema in children in which the mother was given stout, and in which the eczema was cured when the stout was stopped, that I can not help believing that the stout has something to do with the eruption. I believe mothers can be educated to drink milk, but I never give milk with the meals. The mother drinks the milk like water, one hour before her meals. I think the milk should be warm, so I commonly dilute it with one-third of boiling water. The mother's appetite is increased thereby, and the milk does not to my belief, go through the stomach in the usual way: I believe it is absorbed. My directions are that the moment the mother awakens in the morning she should drink eight ounces of milk, with one-third hot water, and that she repeat this one hour before each meal. She should let four or five hours pass after the ordinary meal before taking it. The idea is to supply the mother with milk which she gives the baby.

DR. A. F. FURRER, Cleveland: The frequency with which the mother should nurse her baby is important. It is common experience that mothers nurse their babies too often. "Every time it cries" is the admission (during the day and

all night long). At the Babies' Dispensary and Hospital in Cleveland, the four-hour intervals, after the German method, is in vogue and works very nicely. I believe that if we as physicians instruct the mothers to nurse infrequently more mothers would be willing to nurse their babies.

DR. CHARLES DOUGLAS, Detroit: A little confusion has arisen by not drawing the line between the normal child and a delicate child. Those of us who give most of our time to correcting the damaging results due to our feeding, realize that success depends on recognizing that the digestive power is only so great for each meal and we have to get in enough nutrition within twenty-four hours to meet the needs of the child. We must give the child at each feeding the amount it can digest perfectly and get a proper stool. Then when it becomes hungry we must feed it again regardless of the time since last meal. To be successful we must recognize that fact. I did not notice whether or not the essayist had made any provision for the dilution of the food. I am in the habit of weaning children by gradually introducing a starchy diet. Dr. Ostheimer's plan would certainly appeal to any one doing this work.

DR. JOHN LOVETT MORSE, Boston: Dr. Ostheimer has read his paper before the wrong audience. He should have read it before obstetricians or nurses. The pediatricists are now all awake to the necessity for breast feeding.

DR. FRANK P. GENGENBACH, Denver: Every day, every week, every month, that the child receives breast milk increases its resistance in the battle for existence which no other feeding method makes possible. This is the teaching of Salge, the professor of pediatrics at Göttingen. The Germans try in every way to give breast milk. They would no more have an infant hospital without wet nurses than they would think of having such a hospital without the infants themselves, because they have so many babies who can not be fed in any other way. Some babies will only get along with bottle feeding if that is supplemented with breast feeding, and others can only get along on the breast. The Germans recognize only one contraindication to breast feeding and that is tuberculosis on the part of the mother. Even in cases of mastitis they do not consider it a contraindication, even if a slight amount of pus is present. They believe that so long as the mucous membrane of the throat and mouth are intact there is no danger of infection. For that reason they object to mouth washing because they believe more harm results from the abrading of the mucous membrane than good can come of the mouth washing.

DR. THOMAS S. SOUTHWORTH, New York: In the diet of the nursing mother I believe that milk as a milk maker stands first. Second to that, I place cornmeal gruel. I do not use the latter in such large quantities as formerly. I find that about four tumblers of an equal mixture of gruel and milk are enough, giving the rest of a quart of milk at other times. This gruel should be cooked long to take off the raw taste, and salted to prevent a flat taste; then it should be mixed with milk and it is for most people fairly palatable. When the supply of breast milk is small and weighing shows that the child does not receive enough milk to satisfy it, much good is done by nursing it each time at both breasts. Again, if the fat is high there is less fat from the first milk of breasts than if one breast is stripped. When the number of breast feedings and supplementary feedings are equal, it is imperative that each nursing be from both breasts or else the amount of milk decreases. I am not in accord with one writer who claims that the giving of one or two supplementary feedings to a nursing infant involves a diminution of the breast milk. On the contrary, I think that it often tends to build up the breast milk rather than to decrease it.

DR. MAURICE OSTHEIMER, Philadelphia: I appreciate Dr. Morse's suggestion, for I think the obstetricians are largely to blame. While I realize the value of milk as a food, there is no doubt in my mind that it will cause indigestion in many women, even a very little of it. I have never tried Dr. Bulkley's method, but will do so.

Playground Space.—The London school authorities have determined that fifty square feet is the minimum playground space for each child.—*Hygiene and Physical Education.*

MIDDLE MILK MIXTURES *

ALFRED F. HESS, M.D.
NEW YORK CITY

It is some years since it was shown that when milk is allowed to stand the bacteria are carried upward with the fat globules so that the cream layer contains a far greater number of micro-organisms than the underlying skim milk.

This teaching has been corroborated many times, although it has been frequently forgotten in practice and in experiment. In a study published about one year ago,¹ from the Research Laboratory of the New York Board of Health, I went somewhat deeper into this question, in which by chance I had become interested. As some of those present are acquainted with this investigation, I shall not review the experiments which I undertook in this work. Briefly stated, they resulted in establishing a fact which had not, I believe, been previously noted, namely, that the bacteria which the cream is known to harbor, are not homogeneously distributed throughout its depth, but are present in far greater numbers in the surface cream than in its lower strata. In other words, it is incorrect to regard the cream as a unit when we are considering its bacterial content. It was frequently evident from a glance at the Petri plates that the uppermost two ounces of the bottle contained decidedly more bacteria per cubic centimeter than the succeeding two ounces, and these, in turn, more than the lowest portion of the cream or milk (Table 1). This

TABLE 1.—BACTERIA PER C.C. IN LAYERS OF BOTTLED MILK.

1st 2oz.	2nd 2oz.	Remainder.
93,500	49,000	
86,500	14,000	
235,000	96,000	40,000
115,000	36,000	6,000
102,000	57,000	
1,383,000		160,000

was true even when the milk was simply poured from the bottle. Tubercle bacilli also were shown to be carried to the surface, for the animals inoculated with the upper two ounces of cream developed tuberculosis oftener than those inoculated with the lower ounces. As typhoid fever of late has been frequently traced to the milk supply, I took the opportunity recently of inoculating with typhoid bacilli two bottles of a certified milk, which at times is almost sterile, and, after allowing them to stand over night, made bacterial counts from the various layers. As was to be expected the result was the same; the greatest number of typhoid bacilli were found in the upper two ounces of the cream (Table 2). This result preaches its own remedy.

TABLE 2.—TYPHOID BACTERIA PER C.C. IN INOCULATED BOTTLED MILK

1st 2oz.	2nd 2oz.	Remainder.
320,000	103,000	43,000
1,200,000	395,000	155,000

In the paper to which I have referred I suggested a way of taking advantage of this physical principle and adapting it to the practices of infant-feeding. This new modification of preparing milk was not complex and did not clash with the accepted method of estimating top-milk mixtures, for, after discarding the upper two ounces of cream, it was ascertained by quantitative analyses how many ounces should be removed to obtain 12 per cent., 10 per cent., or 7 per cent. cream; in other words, the different strengths of cream which are used as a basis for preparing top-milk mixtures.

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixtieth Annual Session, held at Atlantic City, June, 1909.

1. The Distribution of Bacteria in Bottled Milk, and its application to Infant Feeding. Arch. Pediat., August, 1908.