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9. ABSTRACT

Introducing this annotated bibliography is a fairly brief discussion of infant feeding, citing and detailing four main patterns: a) traditional, pre-industrial (total breast feeder); b) recently urbanized poor (emerging bottle feeder); c) urban educated well-to-do (elite bottle feeder); and d) naturalist urban educated (neo-elite breast feeder). Practical programs promoting breast feeding in both developed and developing countries also are outlined.

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BREAST FEEDING AND WEANING FOODS

(An Annotated bibliography of recent publications)

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of State

**BREAST FEEDING
AND
WEANING FOODS**

**(AN ANNOTATED BIBLIOGRAPHY OF
RECENT PUBLICATIONS)**

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PREFACE

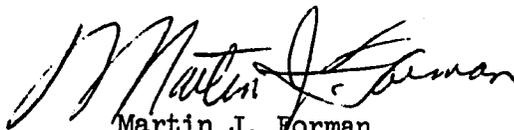
Deteriorating weaning practices and trends toward reduced breast-feeding are critical factors in the high incidence of infant malnutrition in low-income countries. More and more women in the developing world tend to breast-feed less than before. Their infants often move directly from maternal milk to adult or other fare which frequently lacks proper nutrients or may be hard to digest.

These practices derive from a poorly-understood complex of technological, economic and socio-cultural factors. Despite considerable concern within the international nutrition community, the problem continues to grow. With few exceptions, actions to change the worsening situation have met with only limited success. No simple or universal techniques yet exist to reverse the trends or to analyze their root causes.

Should nutrition planners and programmers assume that the modernization process, with greater employment for women and vigorous promotion of commercial weaning foods, will continue to erode breast-feeding and hamper good weaning practices? Hopefully, the answer is no; there appear to be ways of influencing mothers to carry out more nutritionally-sound breast-feeding and weaning practices.

The Agency for International Development (A.I.D.) is interested in helping developing countries to identify and apply such techniques. The first step in that process is to find out what has been tried and what has worked. Knowledge so gained will help the formulation of techniques for field trial and evaluation in low-income countries. The intended result is a refined model which developing countries can apply and adjust for effective use in their own specific settings.

This annotated bibliography by Derrick B. Jelliffe, Aaron E. Ifekwunigwe, and E.F. Patrice Jelliffe has been developed to guide the search for useful precedents. It also should be helpful to those interested in breast-feeding and weaning practices.



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Development

Patterns of infant feeding vary greatly in detail from culture to culture, and the precise use of terms in written accounts, such as "weaning" and "breast feeding" differ markedly and are often not defined. It is, therefore, difficult to draw too specific conclusions from the reports available.

Patterns of Infant Feeding

Nevertheless, in general terms, four main patterns of infant feeding* can be differentiated in the modern world in relation to lactation and weaning:

- (a) *traditional, pre-industrial* (total breast feeder)
- (b) *recently urbanized poor* (emerging bottle feeder)
- (c) *urban educated well-to-do* (elite bottle feeder)
- (d) *naturalist urban educated* (neo-elite breast feeder)

- (a) *Traditional, pre-industrial* (total breast feeder)

Basically, in this type of community, breast feeding is the norm and is prolonged for one to three years or more. Feedings are on demand, including the night, when the baby sleeps by the mother's side.

In some cultures, so-called prelacteal feeds are given in the early days of life, usually for a short period while colostrum is secreted prior to the coming in of "mature milk".

Apart from this, foods other than breast milk ("transitional" or weaning diet) are more usually introduced relatively late—that is, during the last

months of the first year of life, or during the second year (so-called "breast starvation", which can lead to "late marasmus"). The first foods tend to be gruels, pastes or paps made of diluted or pounded, largely carbohydrate staples—cereals or tubers. In a few less sophisticated communities, these may be prechewed by the mother. Also, in some places, the first foods offered may be often ill-cooked items from the adult diet with little modification. The danger period is often mainly the "transitional" second year of life, and kwashiorkor is the principal form of severe malnutrition, with mild-moderate protein-calorie malnutrition usually common.

On the whole, semi-solids are introduced late from a nutritional point of view, especially more nutritious items, such as animal products, legumes and dark green leafy vegetables. Large numbers of "cultural blocks" exist in many communities which tend to delay or limit the introduction of these foods.

- (b) *Recently urbanized poor* (emerging bottle feeder)

By contrast, in recently urbanized poor communities, such as shanty towns and slums all over the world, there is usually a rapid decline in prevalence of breast feeding. Breast feeding is often only undertaken for a short period of time, frequently for only a few weeks or months (± 3). This is sometimes followed by "mixed milk feeding"—in which breast feeding and cow's milk formula from a bottle are both employed.

*Modified from Raphael (1973)

For reasons of economics and home hygiene, dilute contaminated bottle feedings result, with an increase in marasmus and diarrheal disease, especially in the first year of life.

In some areas of the world, processed infant weaning foods in jars or cans have commenced to make an impact. While convenient and statusful, they usually have a high cost/nutrient value and cannot be used effectively, as they are beyond the families' means.

(c) *Urban educated well-to-do (elite bottle feeder)*

This has been the pattern in most of the Western world for the past two decades or so, and among the usually very small Westernized elite in developing countries. Breast feeding is carried out by a small, but varying minority. Bottle feeding with cow's milk-based formula has become the norm, either from birth or from a few weeks after birth.

The trend, especially in the U.S.A., has been from the use of evaporated or powdered milks to convenient, but costly, "ready-to-feed" liquid formulas. Likewise, the detailed composition of such formulas has been considerably modified in recent years, partly in attempts to emulate human milk, partly to add additional vitamins and minerals, and partly for economy. The final result may be surprisingly different from the "parent" cow's milk.

Likewise, there has been a move from the preparation of home-made infant weaning foods towards commercial processed infant foods of high convenience. For various reasons, including pressure of advertising and lack of nutritional knowledge by health workers, these processed infant foods have become used earlier and earlier, so that it is common for them to be introduced in the first few weeks of life.

Because of the infant feeding pattern of cow's milk formulas, with the volume and concentration under the mother's control, and the early introduction of semi-solids, a form of "double feeding" has developed, in which the most immediate nutritional risk is of developing infantile obesity.

Over-emphasis on cow's milk as an infant food has made iron deficiency anemia a considerable public health problem in some communities, and has drawn attention to the need to consider methods of increasing iron intake in

bottle-fed infants (placental transfusion, iron-fortified cow's milk-based formulas, iron-rich transitional foods).

The sugar and salt content of processed infant foods, geared to the mother's palate, have raised the possibility of their being related to the later development of such sugar-related diseases as dental caries and obesity, and of early habituation to a high level of dietary salt, with a possible link with hypertension in later life. Also, the excessive weight gain in infancy has been linked with possible persisting obesity into adult life, with the recognized associated risks of heart disease, diabetes, etc.

(d) *Naturalist urban educated (neo-elite breast)*

Partly in response to the overall striving for great degrees of "naturalism", an increasing percentage of more educated women in Western countries, including the U.S.A., Australia, Norway and the U.K., are becoming actively concerned with nursing their babies on the breast and with promoting breast feeding as an important aspect of mothering.

The pattern usually advocated is breast feeding *alone* for four to six months, with the introduction of semi-solids thereafter, especially in the form of home prepared food mixtures ("multimixes"). Breast feeding is advocated for one year or more.

It is of interest that the pattern of infant feeding advocated is protective against infantile obesity, neonatal hypocalcemia and cow's milk allergy in resource rich country and, at the same time, helps to protect against the marasmus-diarrhea syndrome and kwashiorkor in resource poor country.

Practical Programs

Recent awareness of the world significance of the nutritional, anti-infective and contraceptive functions of human lactation, and the deteriorating global food supplies have high-lighted the need to introduce practical preventive programs, especially (but not only) in technically developing regions, or more correctly RPC (resource poor countries).

Review of the literature concerning practical programs to promote lactation in communities

or health units (e.g. hospitals) was undertaken to analyze the methods and techniques employed and their effectiveness (Appendix p. 49).

Few such studies have been undertaken, particularly with statistical evaluation. There is an urgent need for modern investigations into the "epidemiology of lactation" in different ecologies, including psycho-social, cultural, technical and commercial influences involved, on which national promotional programs can be based.

Present information in the literature suggests that successful human lactation depends psycho-physiologically primarily on an *unimpaired let-down reflex* (inhibited by uncertainty and enhanced by confidence engendered by information and individual and group social support), on the *prolactin reflex* (related to maximal opportunity for suckling by neonate and infant), and on the *emptying of mammary alveoli*.

Current knowledge indicates that practical factors that influence the pattern of lactation, in peri-urban areas in less developed or "resource poor countries" (RPC), largely through the reflexes mentioned, include, in varying degrees, *striving for modern-seeming behavior change, ill-adapted health facilities* (unsuitable education of staff, and disruptive techniques and organization in maternity units), *high pressure promotion of commercial processed formulas*, and a *changing role of women* (usually a small percentage working outside the home in jobs where current Westernized culture make breast feeding not permitted or without facilities).

Conversely, moves to re-establish breast feeding in "resource rich countries" (RRC), such as the U.S.A. (La Leche League International), Norway (Ammehjelpen), Australia (Nursing Mothers Association of Australia) and the U.K. (Natural Childbirth Trust) have been grass-roots movements with little initial interest, and sometimes misunderstanding and hostility, from medical orthodoxy.

Basic motivations for such voluntary breast

feeding associations have been concerns for more natural and biologically-based methods of child rearing and mothering, with emphasis on the meotional advantages of this unique mother-infant interaction, as well as nutritional, economic, anti-allergic, contraceptive and anti-infective considerations.

Analysis indicates that *social support* (on an individual and group basis) and the *supply of information* are the key methods employed, exactly paralleling the effect of the *doula* (female assistant) of traditional societies.

The decline in breast feeding in RPC is one of the gravest present-day public health problems. Programs to combat this change are needed urgently. Studies are needed to analyze responsible factors in countries or regions which will permit rational programs to be devised and evaluated.

In the meantime, sufficient information is already available concerning the psycho-physiology of lactation and the need for information and social support, for general programs to be devised that are appropriate for particular regions. These will be based on changes in educational emphasis for health staff and on modification of antenatal and maternity unit procedures, on monitoring of advertising and promotion of commercial infant foods, and on consideration of the biological needs for working mothers with young infants, including creches, lactation bonuses, etc.

Macro-economic and agronomic considerations in relation to the availability and rapidly rising cost (in foreign currency) of imported foods (especially cow's milk) may be expected to influence the commercial distribution of processed formulas and to make necessary the reconsideration of import policies.

The prestige of breast feeding may be influenced by the development of overseas branches of voluntary organizations from "resource rich countries", as has already occurred with La Leche League International and with Ammehjelpen.

ALISON, F. & CORONE, J. Infant Feeding and Hygiene in a Rural Area. *Bulletin of Institute of Natural Hygiene*. 16:1065-1076, 1961 (France).

The infants studied were 999 born in 3 rural cantons in 1957, 1958 and early in 1959. Of these, 48% were never breast fed. By 1 month and 3 months, the percentages weaned from the breast were 60.5% and 78% respectively. At 9 months of age, 15% had not received vegetables and 45% had not been given meat. The percentages of infants who had not received fruit juice at 3, 6 and 12 months were 46.3%, 27.9% and 24.2%, respectively.

ANAND, D. & RAO, A.R. Feeding Practices of Infants and Toddlers in Majafgarh Area. *Indian Journal of Child Health*. 11:172-181, 1962.

The study was made at the township of Majafgarh and at the village of Mitraon. Nearly all the mothers, 84% in town and 90% in the village, gave their infants their first feed "ghutti", which was usually sugar and water; few gave reasons why except that it was customary. 24% of the mothers gave the first breast feed at 6 to 12 hours after birth, 38% did so on the 3rd day, and 3% on the 4th day. Feeding was usually irregular and on demand thereafter.

Supplementary feeding with diluted buffalo's, cow's or goat's milk or a combination was used by 66% of mothers in the town and 63% in the village. More than half the mothers in both places gave no solid food in the first year, but 42% started in the second 6 months. In the village, 75% of the mothers said that they preferred to start the child directly on adult foods rather than cook special dishes for them; of the others, most made special dishes only if the child was unwell. Fruit in season was given by 75% of mothers in Majafgarh and 71% in Mitraon.

ANDERSON, WILLIAM O. Breast Feeding in the Culture of the United States. *Quarterly Review of Pediatrics*. 13:203-211, 1958.

A complication of survey data and literature reviews in 1958, revealed that the incidence of breast feeding was decreasing in the United States. During 1958

approximately one-half of the mothers made no effort to breast feed and one-third to one-half of the mothers who did attempt to breast feed discontinued doing so in one month or less. Of the mothers who successfully breast fed, very few did so longer than six months.

This decline in breast feeding according to the author was due to mothers being physically unable to nurse, the conscious or unconscious distaste on the part of some women to breast feed and the lack of enthusiasm to encourage and instruct mothers in the nursing technique.

ANTROBUS, A.C.K. Child Growth and Related Factors in Rural Community in St. Vincent. *Journal of Tropical Pediatrics & Environmental Child Health*. 17:187-210, 1971.

In this survey, combined or "mixed" milk feeding was usual from early on (e.g. breast milk and cow's milk). Breast feeding was stopped between 4-15 months, with a median age of 9.6 months. The median age for the introduction of cow's milk was 2.5 months.

Semi-solids were introduced from 1-9 months (median 3 months), and consisted of arrowroot, Irish potatoes, starches and various proprietary cereals.

ARNEIL, G.C. Dietary Study of 4365 Scottish Infants - 1965. *Scottish Home and Health Service Studies*. No. 6, V-110, 1967.

Groups of 3, 6 and 12 months old infants in 9 areas of Scotland were randomly selected in 1965. Information was obtained for 3743 of the 4365 infants selected. In all, 85% of the infants were either never breast fed or were breast fed for less than 1 month. Dried cow's milk was most commonly used for artificial feeding. The age at which cereals and other solid foods were first given varied widely between areas.

ASHER, PATRICIA Fat Babies and Fat Children, The Prognosis of Obesity in the Very Young. *Archives of Disease in Childhood*. 41:472, 1966 (England).

269 obese children of which 174 were aged 18 months to 4 years, and 95 were 5 to 14 years, were

examined and treated by the author. Among the 269 children undergoing treatment for obesity, 118 (44%) had been overweight since infancy, and in this group dietetic treatment was particularly unsuccessful.

The author concludes, obesity in childhood is resistant to treatment, prevention is important. Over-feeding in infancy should be avoided.

AYKROYD, W.R. & HOSSAIN, M.A. Diet and State of Nutrition of Pakistani Infants in Bradford, Yorkshire. *British Medical Journal*. 1:42-45, 1967.

A study of the diet of 100 infants of Pakistani in Bradford, Yorkshire in 1965, found that immigrant mothers had adopted an "artificial" infant feeding regimen similar to that of English infants in Bradford. The highest percentages of abandonment of breast feeding occurred at 3 weeks of age and at 1 to 2 months of age. 21% of the infants studied were never breast fed. Had the mothers remained in Pakistan, their infants would have been breast fed for a year or longer. The basic reason for early weaning and resorting to artificial feeding was that these practices were part of the new environment. A cereal preparation was usually introduced into an infant's diet at 1 to 3 months of age. Eggs were given to approximately half of the infants from the third month onwards, and fresh fruits, soups and tinned baby foods were included in the diet of a smaller proportion at various points after the third month.

BAERLOCHER, C. & BERGER, H. Breast Feeding of Infants in the Area of the Cantonal City of Basle in the Year 1957. *Annals of Paediatrics*. 199:250-388, 1962.

In 1959 a questionnaire was presented to all mothers in Basle who had given birth to infants in 1957. On the second day after delivery 808 of 1103 women who provided information were breast feeding, 169 others were partly breast feeding and 126 were not: by the 8th day, the respective numbers were 618, 286 and 199. Lactation failed by the 7th day in 190, 25.3% of the women who sought to breast feed. Feeding was considered wholly successful only if the infant was fully breast fed for at least 4 months; the number still fully breast fed at that time was only 100, 9.1% of the total, and infants getting no breast milk numbered 876 or 79.4%. The main reason for failure to feed or for weaning was lack of milk, reported by 66% of the 1066 women who replied. Social circumstances were blamed by 21.7% and illness of the mother or a sick or difficult baby by only 23.7%. Breast feeding was abandoned much more on the advice given from the gynecologist than from the pediatrician.

Only 18 women had negative feelings in regards to the importance of breast feeding. A number of women blamed hospital routine or too little positive advice and the easy solution of weaning was too often adopted.

BAILEY, K.V. & WHITEMAN, J. Dietary Studies in the Chimbu, New Guinea Highlands. *Tropical Geographical Medicine*. 15:377-388, 1963.

Infants are entirely breast fed in the Chimbu area until the eruption of the first teeth. Breast feeding is continued until the age of 3 years. The first solid food offered was usually *pit-pit* (*Setaria palmaefolia*, the white inner stem) when two or four teeth had erupted (8-12 months of age). Baked sweet potato was the next food introduced, followed (usually beyond 12 months) by other staples like taro, banana, leafy greens and finally beans.

BAIN, KATHERINE The Incidence of Breast Feeding in Hospitals in the United States. *Pediatrics*. 2:313-319, 1948.

A nation-wide survey was conducted on the incidence of breast feeding in hospitals of 25 beds or more in the United States from 1946-1947. It was found that one-third of the infants were weaned at the time of discharge from the hospital and two-thirds were on breast or mixed feedings. A smaller percentage of breast feeding occurred in hospitals in or near metropolitan areas, as contrasted with areas removed from metropolitan centers. A lower percentage of breast feeding occurred in medium sized hospitals as contrasted with small or large hospitals. Among infants discharged from a hospital under eight days of age, the incidence of breast feeding was higher than among those who remained longer. The survey also indicated striking regional differences in the Northeast—the percent of infants on bottle feeding only, at time of discharge, being 61% as contrasted with an incidence of 18% in the Southwest and Southeast.

BALDERRAMA-GUZMAN, V. & TANTENGCO, V.O. Effect of Nutrition and Illness on the Growth and Development of Filipino Children (0-4 years) in a Rural Setting. *Journal of the Philippine Medical Association*. 47:323-336, 1971.

The diet of 589 children of the town of Victoria, Laguno, from the ages of 1-4 years were studied. Of the children, 75% were breast fed to 6 months of age, 20% were given mixed diet and 5% were bottle fed. Most babies were weaned at 12 to 18 months. Within 3 days after birth, over 70% of babies had their diet supplemented with a rice bran extract. Solid foods were given only occasionally. The usual diet of the children was rice mixed with fish broth and a little fish.

BARTRAM, J.B. Infant Feeding. In: Nelson's Textbook of Pediatrics (7th Edition). W.B. Saunders & Co., Philadelphia & London, 1959.

The author suggested that semi-solid foods such as cereal, strained fruits and vegetables and sometimes egg

yolk or meal can be added one at a time and initially in small amounts during the second three months of life.

BEAL, VIRGINIA Breast and Formula Feeding of Infants. *Journal of the American Dietetic Association*. Vol. 55:31-37, 1969.

Nutritional histories taken on ninety-five infants enrolled in the Child Research Council (University of Colorado) between 1946 and 1966 were used for analysis of feeding patterns in the first two years of life. 68% of the group (64 infants) were started on the breast and only 34 infants were still breast fed at one month of age. Of the 30 who discontinued, their reasons were either inadequate milk supply, bleeding or cracked nipples, and persistent diarrhea in infants. The remaining 22 infants were weaned after a period of supplementation with formula. In the second month, ten more infants were weaned.

Approximately one-third of the mothers who successfully nursed more than two months found it necessary to supplement breast milk for a few days late in the first or early in the second month. Breast feeding continued beyond six months in nine cases (10%). The longest period of lactation was forty-one months, for a prematurely born baby. Though the type of food was not mentioned, the writer mentions that in the sixth month, the nursing infant was obtaining a median of 420 calories and 17 gm. protein daily from foods other than breast milk.

BECROFT, THELMA C. Child-Rearing Practices in the Highlands of New Guinea: A Longitudinal Study of Breast Feeding. *The Medical Journal of Australia*. 2:598-601, 1967

A survey of 125 children of the Engas of Baiyer River, New Guinea Highlands was done in 1962-65 to study child rearing practices. Surviving children are spaced five years apart. If a child dies, the interval is 1 year 5 months. A child is weaned at about 4 years 6 months. Ten percent of the group studied were still on the breast at 5 years 6 months. Solid food is not given until the first teeth are cut, or later

BELAVADY, BHAVANI Nutrition in Pregnancy and Lactation. *Indian Journal of Medical Research*. 57:63-74, August Supplement, 1969.

A survey was done covering different parts of South India, tracing the patterns of breast feeding and weaning. It was found that breast feeding was usually started within 2 or 3 days after delivery and was continued into the second or third year after birth. Among poorer communities, it was found that 92% of the infants were breast fed at the age of six months and one child in every five was at the breast beyond 2 years of age. In a study of the hill tribes of South India, it was found that the majority of mothers continued breast feeding until at least the end of the second year. A study of some

rural communities found that more than 50% of the children were at the breast at the age of 3 years.

Weaning was mostly determined by the onset of a next pregnancy and there were no traditional beliefs or ideas regarding the time of weaning. Breast feeding was done on demand. Supplementary feeding was started around 6 months in most areas.

BERG, A. The Nutrition Factor: Its Role in National Development. The Brookings Institution: Washington, D.C., 1973.

A chapter in this book is entitled "The Crisis in Infant Feeding Practices". It is mainly concerned with summarizing the situation with regard to breast feeding in developing countries and in the USA. The decline in urban communities in developing countries is noted, together with health consequences (marasmus and diarrheal disease) and economic significance on a family and National level. In the USA, the resurgence in breast feeding is noted as a phenomenon that to-date has involved the well-to-do and educated.

BIERMAN, JESSIE M. Infant Feeding in the U.S.S.R. *Quarterly Review of Pediatrics*. 12:137-138, 1957.

Breast feeding is the rule in the Soviet Union. The majority of infants are breast fed from 9-10 months. The official policy of the government is in favor of breast feeding and it is enforced by the Ministry of Health. The efforts of all professional personnel are consistently employed in behalf of breast feeding. Feedings are usually scheduled. Usually, working mothers are given time to nurse their child every three hours. The first supplemental food is given at the beginning of the sixth month in the form of a semolina gruel. An egg yolk is soon added to the gruel, followed during the seventh month by apple and potato purie. From the eighth to the tenth month ground meat is given. Cow's milk particularly in the form of kefir (an effervescent sour milk) is introduced by eight months. Weaning is usually completed by the end of the first year.

BLACK, ALISON Infant Feeding Patterns and Social Class. *Ministry of health (Reports Public Health Medical Subjects, London)*. 99:31A, 1956.

Sixty-four families from three general medical practices in Newcastle, representing a wide socio-economic range and containing babies initially aged 2-4 months, were visited monthly and notes made of the infant feeding habits. The families were divided into white collar (NM-non-manual) and manual (M) groups. Breast feeding was started with 25 infants but was abandoned for 20 of these in 4 months. Five infants were fully breast fed for 6-7 months in the NM groups. Full or partial bottle feeding was used with 59 infants. Two infants were completely weaned from the bottle at 6 months and 19 were receiving at least one bottle daily at over 18 months. No NM mothers continued to provide

a bottle at night for longer than 4 months after stopping daytime feeds. The duration of bottle feeding, defined as two or more bottles daily, also tended to be longer among M families.

The patterns of early feeding with solids revealed a high dependence on convenience foods in both classes. Only 5 families used no special baby food. A proprietary baby cereal was usually introduced between 1 week and 3 months, and was soon accompanied by canned, sieved "baby dinners". These gave place to canned "junior dinners", which in turn were replaced by shares of the family diet. Of the 59 mothers using special baby foods, 3 give them up before 6 months all 3 were in the NM group and used liquidizers at home. Five mothers continued using them after 18 months. All the mothers were offering "family foods" to their babies by 15 months; a few began before 3 months.

BLANKHART D.M. Four Villages Survey in the Coastal Area Kwale, Kenya. Mimeographed Report: Koninklijk Instituut Voor De Tropen, Amsterdam, 1-10, 1971.

In 1970 a survey was done in four population centers of Kwale, Kenya, to determine the nutritional status of the following communities: Kumbani, Gozi, Mbaleni, Borani. In Kumbani it was found that breast feeding is continued for at least 18 months and is rarely done after 24 months. Gozi follows the same pattern except that breast feeding is fully absent after 30 months. In Mbaleni there is frequent breast feeding up until 24 months. In Borani there is a slight decline of breast feeding after 18 months and only complete absence after 30 months. Weaning foods common to all areas are rice, sweet potatoes, cassava, beans, peas, bananas, mangos, meat and fish.

BLOOMFIELD, A.E. How Many Mothers Breast Feed? A Survey in General Practice. *Practitioner*. 188:393-396, 1962.

Of 50 babies of mothers who lived in East London, 8 were breast fed for more than 4 months, 33 were entirely bottle fed. The most common reason for giving up breast feeding was failure to satisfy the baby. The mothers were mostly of lower social class.

BOSE, C. Lactation and Feeding Practices of Mothers in An Urban Area. *Alumni Association Bulletin* (Calcutta). 16:11-13, 1966.

A study of 174 mothers who gave birth to children between January 1962 and March 1963. The poor mothers of the area were in the habit of prolonged breast feeding but the yield of milk ceased 6 months after childbirth. Most mothers chose sago or barley as supplementary feed; they could not afford cow's milk.

BOUCHALOVA, M. & OMEKKA, F. Development of Infants in Relation to Duration of Breast Feeding. *Ces Pediatrics*. 25:545-547, 1970.

For 406 infants seen at clinics in Brno, the average duration of complete breast feeding was 68 weeks. Infants in families with low incomes and first or second children were breast fed about a week less than infants from families with high incomes and third or later children. There was a significant difference in duration of breast feeding between mothers employed (6.6 weeks) and those at home (7.3 weeks). The difference was greatest between mothers at work and living in the poorest social conditions (5.8 weeks), and those at home in the best social conditions (8.7 weeks).

BROWN, M.L. & ADELSON, S.F. Infant Feeding Practices Among Low and Middle Income Families in Honolulu. *Tropical Geographical Medicine*. 21:53-61, 1969.

In Honolulu, 249 mothers of 281 children aged 2 or 3 years were questioned. About 1/4 of all children or 1/3 of those from middle income and 1/5 from low income families, had been breast fed, and another 1/10 of the total had been breast fed with bottle feeding also. In the middle but not in the low income families, the mothers who breast fed were the better educated and the breast fed were the earlier in the order of birth. Mothers who breast fed or who gave supplementary feeds early tended to be younger than those who did not. Solid food given in the first 3 months of life was not affected by the education of the mother or birth order of the child or by income, but more mothers of low income gave meat or vegetables later than 6 months of age.

CHAJECKA, M.; SALAMON-RURARZ, Z. and ZAWIRSKA-ROEFLER, B. L'Alimentation du Nourisson. *Courrier*. 18:1-11, 1968.

The frequency and duration of breast feeding has continued to decline somewhat in both rural and urban areas in Poland, but the situation is much less effected than in Western Europe or North America. In Poland in 1959-61, 35.5% of infants were breast fed at 6 months of age, compared with 24.0% in 1963-4.

CHOPRA, J.G. & GIST, C.A. Food Practices Among Trinidadian Children. *Journal of American Dietetic Association*. 49:497-501, 1966.

The mothers of 38 Negro and 19 East Indian infants under 1 year old and of 30 and 19 between 1 and 5 years, were interviewed. It was found that breast feeding was a diminishing practice. No East Indian infants and only 26.3% of the Negro infants were solely breast fed; 73.6 and 42.1%, respectively were bottle fed only. 68.4% of the East Indian infants and 94.7% of the Negro infants were given orange juice daily from a fairly early age. Cereals, which consisted of arrowroot, sago and parched flour, were started as early as 1 month or as late as 10 months. Fruit and vegetables were gradually introduced but green and yellow vegetables were not frequently used. Weaned children were given some milk but animal protein was given only once or twice weekly to Negro children and 2-3 times weekly to East Indian

children. Dried Legumes were given 7-10 times weekly to Negro and once to 7 times to East Indian children; mangoes and citrus fruits were eaten fairly frequently.

COOK, R. Some Information About Feeding Practices in the Eastern Caribbean. *West Indian Medical Journal*. 20:208-212, 1971.

This study covered several countries in the Eastern Caribbean. The typical pattern was "mixed milk" feeding from the early months, with complete cessation of breast feeding from 6 months or so. A wide variety of different brands of processed milk formulas are used, with a tendency to favor the more expensive.

COY, J.F.; LEWIS, I.C. & MAIR, C.H. Tasmanian Infant Feeding Survey. *Medical Journal of Australia*. 2:132-134, 1970.

A study of 547 mothers of children born between March and April 1969, showed that 52.7% of the infants were initially breast fed and at 3 months 16.8% were still being breast fed, 5.8% were partly breast fed and 30% were wholly artificially fed. The incidence of breast feeding at 3 months of age had been 44% in 1952.

CRUZ, P.S.; CALINGO, C.; CAPINO, A.; CASTRENCE, F.; COSCA, M. & CRUZ, T. Maternal and Infant Nutritional Practices in the Rural Areas. *Journal of Philippine Medical Association*. 46:668-680, 1970.

Ninety children aged 7-18 months were chosen at random from 417 registered births in 1968 in the town of Bay, Laguna. Of the 90 children, 9 were bottle fed, 48 were breast fed and the rest fed by both methods.

Supplementary feeds were given usually from age 8 months or over. Most mothers, 39 of them, weaned at 13-18 months. Supplementary foods in the form of "Kanin clurog", "am", "pula ng itlog" and potatoes were given as early as one month, but the majority of mothers interviewed (72%) would give these foods at 5-8 months of age only.

DEISHER, R.W. & GOERS, S.S. A Study of Early and Later Introduction of Solid Foods into the Infant Diet. *Journal of Pediatrics*. 45:191-199, 1952.

A study was made of the progress of 84 infants from a homogeneous background divided into two groups early and later feeding. Infants in both groups were either breast fed or given formulas plus multivitamins and orange juice from birth. Solids were introduced in the early feeding group during the first four weeks of life and in the later feeding group during the 9-12 weeks period. Growth between the two groups was comparable, as was the number of illnesses, character of stools, number of stools, incidence of diarrhea, constipation, colic, excessive regurgitation and number of food refusals.

DEODHAR, A.D. & RAMAKRISHIMAN, C.V. Effect of Socio-economic Status on the Vitamin Content of Human Milk. *Indian Journal of Medical Research*. 47:344-351, 352-355, 1959.

Samples of breast milk were obtained by expressing the milk between two feeds, about 3:00 p.m. Results of analyses are tabulated. Milk from the very poor women contained significantly less fat than that from the other groups, but values for lactose, protein, casein and the sum of lacto-albumin and lacto-globulin were similar among very poor, poor, middle and upper middle class groups. Concentration of pantothenic acid and vitamin B₁₂ in milk increased with rising socio-economic status.

DICKERSON, A.E., CRUMP, E.P. & HORTON, C.P. Growth and Development - Child Training Practices in Negro Families in Nashville, Tennessee. *Pediatrics*. 28:43-54, 1961.

Information was obtained from 144 mothers on the feeding practices of their children when the children were brought to the clinic at the ages of 15, 18, 21, 24 and 30 months. The percentage of mothers who breast fed their children was 59. They did so for less than 1 week to 19 months with a median of 3 months. Only 13.9% of all mothers breast fed their children for 7 or more months. There was a trend towards longer breast feeding as socio-economic status decreased. None of the children whose mothers had less than an 8th grade education was weaned from the bottle before the age of 21 months.

DOUGLAS, B.A. The Extent of Breast Feeding in Great Britain in 1946, with Special Reference to the Health and Survival of Children. *Journal of Obstetrics & Gynecology of the British Empire*. 57:335-360, 1946.

A study of the duration of breast feeding among a sample of 4,669 infants in 1946 in Great Britain, showed that the average duration of breast feeding was 4.2 ± 0.06 months. 53% of babies were still breast fed at the age of 2 years. It was also found that breast feeding was better maintained among the well-to-do. After the 7th month, babies of the working class were more often kept at the breast.

DUGDALE, A.E. Breast Feeding in a South East Asian City. *Far East Medical Journal*. 6:230-234, 1970.

For Malays in 1960 more women (with 264 children) breast fed and did so longer, except for families of over 4 children in 1962 and 1965. Breast feeding was lower incidence and shorter duration in higher income groups. There was an increase in breast feeding from 1960-65 among women in lower income groups. Among the Chinese, differences with size of family were not consistent; there was less breast feeding among women from higher income groups and decreased more between 1960-65. Among the Indians, size of family made no

difference in breast feeding pattern, but breast feeding was less among upper income groups. Fewer Malay women than Chinese worked outside the home which may account for their better record of breast feeding. It appeared that the trend toward artificial feeding was continuing among Chinese and Indians.

FLORES, M.; FLORES, Z. & LARA, M.Y. Food Intake of Guatemalan Indian Children, Ages 1 to 5. *Journal of the American Dietetic Association*. 48:480-487, 1966.

A study of 300 children showed that all had been breast fed usually to about 18-20 months and some were breast fed up to 26 months. Foods usually introduced into the diet were white bread, coffee, maize tortilla, bean broth, oatmeal and later banana, rice, green pear and tomato; milk and eggs were given if available.

FOLLS, C.V. The Perils of Childhood in Upper Burma. *Journal of Tropical Pediatrics*. 4:122-26, 1958.

A study done in Chouk, Upper Burma, in 1956, found that the majority of the children are breast fed for at least two years, sometimes up to five or six years. Breast feeding is all self-demand and no milk other than human is given to an infant. Occasionally bottle feeding with condensed milk is attempted, but this usually ends in disaster for the infant. At about 2 years some rice is given, then the child is weaned straight onto curry and rice. Fresh fruits and vegetables are eaten when possible.

FOMON, S. Bulletin of the New York Academy of Sciences. A Pediatrician Looks at Early Nutrition. 47:569-578, 1962.

Methods of feeding young babies have changed greatly in the U.S.A. in recent decades. In 1959, two months old babies were fed on evaporated milk (40%), commercially prepared formulas (30-35%) and human milk (15%). In 1971, commercially prepared foods were mainly used at this age (80%); while the breast fed remained at a 15% level and babies fed on evaporated milk had fallen to 5%.

FRENCH, J.G. Relationship of Morbidity to the Feeding Patterns of Navajo Children from Birth Through Twenty-four Hours. *American Journal of Clinical Nutrition*. 20:375-385, 1967.

Feeding patterns of 72 Navajo boys and 67 girls in Arizona were obtained by a questionnaire. Of the children, 73% were breast fed at birth, while 10% were given only bottle feeds and the other 17% had both. Weaning was not until 12 months of age in either group and after weaning many children were given no milk at all. Solid foods were generally added to the diets at 6-7 months of age and 1 year only 4.7% of children were having solid food. On direct observation of infant

feeding, only 1 child was found given a meal with solid food. The meal consisted of a mutton stew, corn, fry bread and coffee.

GHADIMI, HOSSEIN Child Care in Iran. *Journal of Pediatrics*. 50:620-628, 1957.

Breast feeding is the rule in Iran, and it is continued for two years or more. It is generally believed that girls should be breast fed for 24 months and boys for 22 months. There are no special feeding times. In the second year different kinds of food like rice, soup and bread are introduced, but breast feeding is continued. It is usually considered that weaning should not occur too early. New foods are introduced gradually. The usual food for weaning is bread, barley spread, sour milk, cheese, but rarely meat.

GHOSH, B.N. Feeding Habits of Infants and Children in South India (On 600 Families). *Indian Journal of Medical Research*. 54:889-897, 1966.

In South India, 600 mothers with children under 3 years were interviewed to determine their beliefs on ideal infant feeding and their actual practice and customs. Most mothers start breast feeding on the third day after delivery and continue until the infant is 2 years old.

Supplementation with other liquid food is started about 6 months—33% using fresh cow's or buffalo's milk. Solid food is introduced between 1-1.5 years; 43% use rice, 22% use rice and cereal, 3% use meat, fish or eggs.

GOPALAN, C. Malnutrition Among Infants and Young Children in India. *Journal of Tropical Pediatrics*. 3:3-12, 1957.

A study of malnutrition among pregnant women in South India revealed that the mothers were able to produce breast milk, at least for the first few months after delivery. Some mothers had considerable milk in the 18th and 24th months of lactation. Supplementary feeding of infants is often started in the 6th month. These supplements are mostly unmodified versions of the adult diet and consist almost entirely of cereal gruel and occasional vegetables. Milk, meat, eggs do not figure to any appreciable extent in these supplementary foods.

GOPALAN, C. Studies on Lactation in Poor Indian Communities. *Journal of Tropical Pediatrics*. 4:87-97, 1958.

In poor Indian communities, it has been found that women invariably breast feed their infants for prolonged periods. In the case of the communities investigated it was nearly 2 years. Feeding is almost always on demand. During the first 6 months, infants were fed solely on the breast, after 6 months infants received supplementary

feeds, mostly rice gruel. It was estimated that between 6 months and the end of the first year, breast milk made up about 60% of the infant's protein intake and from the 12th month to the end of the 18th month, about 35%.

GRAHAM, GEORGE, BAERTL, J.M. & Others Dietary Protein Quality in Infants and Children - Wheat or Oat-Soy Mixtures. *American Journal of Clinical Nutrition*. 25:875-880, 1972.

The report is an evaluation of wheat-soy blend (WSB) in the diet of convalescent malnourished and normal infants and children. Also included are results obtained with an oat-soy blend. The conclusion given was the utilization of proteins from these various mixtures was significantly limited by their digestibility, despite their apparent food value. However, the biological value of soy flour mixture was so high it almost completely compensated for its inferior digestibility as compared with milk protein.

GRANTHAM-MC GREGOR, S.M. & BACK, E.H. A Note on Infant Feeding in Kingston. *West Indian Medical Journal*. 19:111-115, 1970.

By 6 weeks of age 77% of the 300 infants were receiving bottle feeds of milk and usually a combination of bottle and breast was continued until 6 months old. By 6 weeks of age 51% were getting orange juice, by 3 months 41% were receiving meal, usually maize, and by 8 months 99%. By 4 months 25% were getting egg and cheese. The percentage rose to 94% at 1 year. The percentage getting vegetables and fruit rose from 26 at 4 months to 100 at 1 year. The percentage getting meat and fish rose to 17 at 6 months, 39 at 8 months and 93 at 1 year.

GRANTHAM-MC GREGOR, S.M. & BACK, E.H. Breast Feeding in Kingston, Jamaica. *Archives Diseases of Childhood*. 45:404-409, 1970.

A representative group of 300 infants in Kingston, Jamaica were studied. To age 6 weeks most infants were breast fed, then combined feeding methods were used. After 5 months straight bottle feeding was the more popular method. The commonest reason for changing from breast to bottle was that the baby refused the breast. A higher percentage of non-working mothers breast fed their children than those who were working and more mothers in the lower economic groups breast fed, which indicated that socio-economic and cultural factors played a large part in the choice of methods for feeding infants.

GROEN, J.J., BALOGH, M., LEVY, M. & YARON, E. (with ZEMACH, R. & BANADERET, S.) Nutrition of the Bedouins in the Neger Desert. *American Journal of Clinical Nutrition*. 14:37-46, 1964

64 families of semi-nomadic Bedouin were interviewed. Following 2 years when no crop was harvested and cattle had been moved to other grazing and children were deprived of any cow's milk. The only milk drunk was that from sheep, goats, asses—sometimes boiled, and from camel—which was not boiled. Milk powder was available to expectant and nursing mothers and some for children.

GUTHRIE, H.A. Infant Feeding Practices - A Predisposing Factor in Hypertension? *American Journal of Clinical Nutrition*. 21:863-867, 1968.

Infants, 49 from an urban area and 40 from a rural area, were studied at 3, 5, 7, 9, 11 and 13 weeks of age. The infants were grouped according to the age at which their diet was first supplemented with solid foods and 1-day records of their diets were examined and the Na content was calculated. At 13 weeks the average daily Na intake from solid foods of those who started solids was 235, at 5 weeks 189, at 7 weeks 122, at 9 weeks 72 mg. Infants given commercially prepared food ingested more Na than required for growth. The author feels that evidence is accumulating that diets high in Na predispose to hypertension in young animals and such studies are indicated for infants.

GURNEY, J.M. Weaning Practices from Guyana, Rural Trinidad, Grenada, Montserrat and Antigua. *West Indian Medical Journal*. 20:227-236, 1971.

Considerable variation was found in the pattern of breast feeding. 7% of Guyanese and 4% of Trinidadian mothers did not breast feed their infants at all. Ten percent of mothers who did breast feed stopped before the infant was 4 months old. "Mixed milk" feeding was common. Half the babies were receiving semi-solids by 6-7 months in Trinidad, Grenada and Antigua. The most frequent foods used were potato, plantain flour, commercial (maize meal) or trimmed cereal. Legumes, animal products (fish, meat, eggs) and dark green leafy vegetables were given in the latter part of the first year, but probably in small quantities.

GUTHRIE, H.A. Infant Feeding Practices in a Corn-Eating Area of the Philippines. *Tropical Geographical Medicine*. 19:48-55, 1967.

Mothers of 41 infants from the lower and middle class urban areas of Cebu City in the Philippines and 33 infants in a small rural town near the sea were interviewed about their infant feeding practices when the infants were 18-36 months old. Equal percentages of rural and urban children were completely breast fed for 6 months; the average length of time for breast feeding was 7-9 months for both groups, but 30% of the urban and 43% of the rural mothers breast fed for more than 10 months. Rice in the form of a prepared product, "Pablum", or as a thin gruel of porridge called linagaw was chosen by most mothers as the first supplement to

milk, as it was considered more easily digested than other cereals. A maize porridge was added several months later. Fish was used much more by the rural mothers and eggs and meat by urban mothers. Urban infants were more likely to have carbonated beverages, vegetables and fruits other than the bananas, but otherwise rural and urban practices did not differ significantly.

GUTHRIE, H.A. & GUTHRIE, G.M. The Resurgence of Natural Child Feeding. *Clinical Pediatrics*. 5:481-485, 1966.

The authors studied a group of 55 unselected women in a college community. Forty-two percent were breast feeding their babies at 3-5 months, and 27% nursed their babies longer than 5 months.

HANAFY, M.; SEDDIK, Y. & EL-KHATEEB, S. Infant Feeding in UAR and Developing Countries. *Pakistan Pediatric Journal*. 1-9, 1970.

Breast feeding for several months is the practice in Egypt. It is almost universal among rural communities and among working mothers from moderate to poor socio-economic levels. Breast feeding is sanctioned by traditional Moslem teaching which permits a child to receive for two years its "birthright of milk". It is feared, however, that with greater sophistication, industrialization and employment of female labor, the practice may decline in Islamic countries.

HARFOUCHE, Jamal k. Feeding Practices and weaning Patterns of Lebanese Infants. *Khoyats, Beirut, Lebanon*, pp. 1-116, 1965.

A prospective study was done on the feeding practices and weaning patterns of 379 Lebanese mothers in the low-income group in 1960. Out of 379 mothers, 370 (97.6%) had planned to breast feed their infants during the prenatal period. At the age of 1 month, 96.8% of their infants were breast fed, either completely (78.7%) or partially (18.1%) and 9.5% continued to breast feed partially through the 18th month of life. The peak incidence of partial breast feeding (58.0%) was attained by the age of 6 months and only 9.9% of infants in the three groups were still completely breast fed at this time. 99.2% of the mothers fed their infants on demand. 91.8% of the infants were weaned gradually and 8.25% were weaned abruptly. None of the infants were abruptly weaned after the age of one year. The commonest causes of weaning were milk inadequacy or pregnancy. Of all infants, 37.4% were given water before the end of the first month. By the end of the 7th month, all infants but one were given water, fruit juices; beverages and soft drinks were usually given between 4-6 months.

Of all cereals given, 5.6% were started at less than 3 months, mostly rice water, strained lentil soup, or thin gruel of cooked starch or bread. From the third month

onward, these cereals were given in thicker consistency. The highest frequency for starting cereals was between 4-6 months. With the eruption of teeth, more whole grains were added. Almost all infants were given a piece of bread to bite or suck on to help the teething process. Recently the use of special baby foods and cereals as a substitute for common household cereals has been encouraged by health workers. Fruits are introduced between 2-3 months, but usually between 7-9 months. Vegetables and pounded or minced meat were introduced between 10-12 months. Dairy foods, eggs, fish, chicken are not usually offered, but when available, are started between 7-9 months.

HARRIS, L.E. & CHAN, J.D. Infant Feeding Practices. *American Journal of Diseases of Childhood*. 117:483-492, 1969.

A questionnaire was given to mothers in the Mayo well-baby clinic and to clinic pediatricians, family physicians and examiners. Of the 383 mothers with infants 10-25 months old, 41% breast fed for different periods from birth to 1 month; 20.1% of all mothers or 27.1% of those breast feeding were physician's wives. All the mothers who breast fed for at least 3 months, gave whole cow's milk at weaning. Most mothers offered solid food before the age suggested.

HAUK, H.M. & TABRAH, F.L. Infant Feeding and Growth in Amo Omamma, Nigeria. *Journal of American Dietetic Association*. 43:327-330, 1963.

Infants in Amo Omamma are commonly breast fed for at least a year, often 18 months or longer. Some solid food is usually given from about 6 months of age. The first food is usually maize starch and later staple yam. Between 6-9 months mashed or prechewed foods are given 1-3 times a day. Infants 10-12 months old were usually given some soup with yam, but some had yam mixed with palm oil only.

HEINSTEIN, M.I. Behavioral Correlates of Breast-Bottle Regimes under Parent-Infant Relationships. *Monograph Research on Child Development*. 28:61, 1963.

A longitudinal study of the behavior of 47 boys and 47 girls from the age of 21 months to 18 years were analyzed in relation to information on duration of breast feeding, duration of nursing at breast or with bottle. The study revealed no significant difference favouring breast over bottle feeding.

HINDLEY, C.B.; FILLIOZA, G.; KLACKENBERG, D.; NICOLET-MEISTER, & SAND, E.A. Some Differences in Infant Feeding and Elimination of Training in Five European Longitudinal Samples. *Journal of Child Psychology and Psychiatry*. 6:179-199, 1965.

Age of weaning from breast and bottle and starting of elimination training was compared in relation to social class scores among longitudinal sample of children from Brussels, London, Paris, Stockholm and Zurich. Large differences were found between the samples. Median ages of weaning from breast ranged from 0.92 months in the Brussels sample to 4-5 months in the Stockholm sample. Median ages of weaning from bottle ranged from 13.3 months in the Zurich sample to 17.5 months in the London sample. Median ages of starting regular toilet training ranged from 4.6 months in the London sample to 12.4 months in the Stockholm sample. In general, differences between the samples were much greater than differences attributable to social class within samples.

HOLT, L.E.; MC INTOSH, R. & BARNETT, H.L. *Pediatrics*. Appleton-Century-Crofts, Inc. New York, 1962.

The authors state that exclusive milk feeding is satisfactory for the first three or four months of life. First semi-solid foods can consist of the pre-cooked variety: cereals, soups, vegetables, fruits, meat, fish and egg yolk.

HUNGERFORD, M.J. Breast Feeding Survey. *Preparation for Parenthood News: American Institute of Family Relations*. Vol. 14, No. 5:1-3, May, 1971.

A survey done in Los Angeles in 1971 showed that mothers who are educated to breast feed do so longer. The most common age for the start of weaning was nine to ten months. The second most common was 6-7 months. The most common age for termination was over two years. The next most common age for termination was 9-10 months. There was an equal number of terminations at 10-11 months, at 6-7 months and at 3-4 months. The median duration for beginning to wean was 8½ months and for completion of weaning 9 months. The reason for weaning in the case of 16% of this sample was that the baby wanted to. A sizeable portion (10.5%) indicated that illness of the mother was a reason.

JACKSON, ROBERT L. Feeding of Healthy Infants. *Journal of Iowa State Medical Society*. 40:159-163, 1950.

The author suggested that solid foods should be introduced to the infant in the third or fourth month after birth. Suggested foods were: egg yolk, strained meats, sieved vegetables and fruits. As the baby becomes older, the author suggested solid foods be offered in a coarser form. He also stated that at approximately 5 months of age the baby should also be offered some of his milk from a small glass or cup and that weaning should proceed gradually over a long period of time.

JELLIFFE, D.B. Culture, Social Change and Infant Feeding. *American Journal of Clinical Nutrition*. 10:19-39, 1962.

A general review of the literature on infant feeding practices in developing countries in recent years. Main emphases were on prolonged breast feeding in traditional societies and the decline with urbanization, and on classifications of foods in relation to infant feeding, including the over-valuation of the "cultural super food", restriction of certain foods, etc.

JELLIFFE, D.B. & MADDOCKS, I. Ecologic Malnutrition in the New Guinea Highlands. *Clinical Pediatrics*. 3:432-438, 1964.

In the New Guinea Highlands, breast feeding is the mainstay of infant nutrition. Breast feeding is also traditionally prolonged. Another pregnancy may not occur until 2-3 years after lactation. Introduction of foods other than breast milk is often delayed until the later months of the first year of life. As no semi-solid foods are available, softer portions of adult foods are given. As an extension of the solid food approach to infant feeding, the use of peanut butter as a regular infant food has been successful in some Chimbu villages, using home grown and processed peanuts.

JELLIFFE, D.B., BENNETT, F.J., JELLIFFE, E.F.P. AND WHITE, RICHARD. Ecology of Childhood Disease in the Karamojong of Uganda. *Archives of Environmental Health*. 9:25-36, 1964.

Karamojong babies are universally breast fed. If the mother has insufficient milk, the child may receive supplements of undiluted sheep's milk. Breast feeding is prolonged and continued through pregnancy until the next child is born. Fresh and sour milk and butter may be added to a child's diet from 1 month of age. Sorghum porridge, soft meat and beer are given regularly at about 6 months. By 2 years, a child is eating all adult foods.

JELLIFFE, D.B., BRAS, G., & STUART, K.L. Kwashiorkor and Marasmus in Jamaican Infants. *West Indian Medical Journal*. 3:43-55, 1954.

Breast feeding of Jamaican infants is carried out for a variable length of time, depending largely upon whether the mother is working and upon the occurrence of another pregnancy. Children are usually breast fed from 7-9 months. Longer periods are more common in country districts. Feeds may be widely spaced if a mother is working. Complementary feeds are usually given consisting of cornmeal porridge and sugar, mixed with a little sweetened condensed milk. Weaning is usually a gradual process. Weaning foods are usually sweetened cornmeal gruel, crushed Irish potato, and green banana gruel.

JELLIFFE, D.B. & JELLIFFE, E.F. PATRICE Nutrition Programs for Preschool Children. *American Journal of Clinical Nutrition*. Vol. 25, No. 6:595-605, 1972.

The paper represents the guidelines developed during

a symposium held in Zagreb, Yugoslavia, August 23-26, 1971. It discusses problem of malnutrition in early childhood, causes in both developed and developing parts of the world.

JELLIFFE, D.B., WOODBURN, J., BENNETT, M.B. & JELLIFFE, E.F.P. The Children of the Hadza Hunters. *Journal of Pediatrics*. 60:907-913, 1962.

Permissive breast feeding is the pattern of infant feeding among the Hadzas of northern Tanganyika. Breast feeding is usually prolonged until another pregnancy. Soft fats, gruel-like mixtures of uncooked powder and honey are given to infants in the early months. When an infant has 2-4 teeth, prechewed meat is given by the mother. By the age of 18 months, the full adult range of foods are given. Bone marrow, both raw and cooked, is introduced in the early months.

JELLIFFE, D.B., BENNETT, F.J., WHITE, R.H., CULLINAN, T.R. & JELLIFFE, E.F.P. The Children of Lugbara. *Tropical & Geographical Medicine*. 14:33-50, 1962.

A field study of the Lugbara tribe in the West Nile District of Uganda in 1961 revealed that all children were breast fed. 41% of the children surveyed were still on the breast at 2 years of age. In the first six months of life only a minority of children had any food besides breast milk. From 7-12 months between a quarter and a third of the children were given peas, ground nuts and millet. By 2 years of age, the whole range of Lugbara foods were given.

JELLIFFE, D.B. & JELLIFFE, E.F.P. The Children of the San Blas Indians of Panama. *Journal of Pediatrics*. 59:271-285, 1961.

A survey of 769 San Blas children was done to assess the general health of these children from birth to 4 years. Three study groups were broken down according to level of sophistication: sophisticated, semi-sophisticated and traditional. The study showed that in all 3 groups, breast feeding alone was successfully carried on by almost all mothers. In more traditional groups, breast feeding appeared to be uneventful, permissive and prolonged - until and through another pregnancy. Among the sophisticated mothers, breast feeding was carried on until 13-18 months in 83.2%. During the 19-24 month period, breast feeding was evident in only 33.3% of the sophisticated mothers as opposed to 75.8% in the semi-sophisticated and 79.0% in the traditional. Additional feeding of cow's milk was seen in mothers of all the groups, but was more common in the sophisticated group. Other food was introduced between 6-12 months in most all children. The first foods consist of mashed ripe banana, yams, cassava c: malanga. Chucula, a thick drink made of maize flour, ground cocoa beans, cane juice and water was also given. All foods when given were in a small amount and were

poor sources of protein. Basically, the young child receives small, but slowly increasing, amounts of the adult diet in the second year and subsequently.

JELLIFFE, D.B., BENNETT, F.J., STROUD, C.E., WELBOURN, H.F., WILLIAMS, M.C. & JELLIFFE, E.F.P. The Health of Acholi Children. *Tropical and Geographical Medicine*. 15:411-421, 1963.

Among the Acholi tribe in Uganda, breast feeding is prolonged into the second year of life or longer. Soft and semi-solid foods, including millet, beans, sesame are introduced from the second 6 months of life onwards. Among urban Acholi, breast feeding is carried on for an average of 16-18 months. Meat and dried fish is eaten more frequently than in other areas, but usually only the soup is given to small children.

JELLIFFE, D.B. AND JELLIFFE, E.F.P. The Nutritional Status of Haitian Children. *ACTA TROPICA*. 18:1-44, 1961.

From a study attempting to discover the significance of malnutrition in early childhood in Haiti, it was found from a sample of mothers that breast feeding was usually successful (99%) in the first six months of life. In the second half of the first year, it fell to 81%. From 12-18 months, over half of the women were still breast feeding, while from 18-24 months this dropped to 9%. No children appeared to be breast fed after two years of age. Cow's milk is not common in the diet of most Haitian infants. If it is given, it is only in small amounts. Supplementation of the diet is employed in the feeding of infants - between 3-6 months many starchy foods are given. In the second half of the first year, the diet usually includes a variety of carbohydrates. Early in the second year of life, a child will have a full range of carbohydrate foods consumed by the adult population.

JELLIFFE, D.B., SYMONDS, E.R. & JELLIFFE, E.F.P. The Pattern of Malnutrition in Early Childhood in Southern Trinidad. *Journal of Pediatrics*. 57:922-935, 1960.

An investigation of malnutrition in early childhood was undertaken in South Trinidad in 1959. Of the 70 children admitted to San Fernando General Hospital and diagnosed as having protein-calorie malnutrition, 86% were between the ages of 1-12 months of age. Studies of their dietary histories revealed that during the first 3 months of life, breast feeding was successful, although in 10% of the mothers some lactation failure had occurred. Also during this 3 month period some haphazardly prepared cow's milk formulas were used. Carbohydrate gruels were also used. During the 4-6 month period, there was a decline in complete breast feeding. Occasional breast feeding (twice a day) was used by some mothers. Bottle feedings increased from 80% to 83%. During the 6-12 month period, breast feeding had stopped in 41% of East Indian and in 33% of Negro

mothers. There was a corresponding increase in the use of bottle feeding of cow's milk and of carbohydrate gruels. Boiled Irish potato and yam were occasionally given in a mashed form. Bush teas were almost universal. Of protein foods, small amounts of legume were sometimes given by East Indian mothers. Meat and eggs were largely limited by cost.

JYOTHI, K.K., DHAKSHAYANI, R., SWAMINATHAN, M.C. & VENKATACHALAM, P.S. A Study of the Socio-Economic Diet and Nutritional Status of a Rural Community Near Hyderabad. *Tropical Geographical Medicine*. 15:403-410, 1963.

Infants of families living 20 miles from Hyderabad are breast fed after the third day of birth. The first supplement was usually introduced between 1 and 2 years and breast feeding stopped between the 2nd and 4th year. In the well-to-do families, the first supplement given to infants was cooked rice with salt, milk and the ghee. Among the poorest sections, the same supplement was given without milk and the ghee - which were replaced by ground nut oil. Not uncommonly, babies were straightaway placed on the adult spicy food when weaned.

KASS, A. BREAST FEEDING IN MOTHERS TODAY. *Tidsskr. Norske Loegeforening*. 88:939-942, 1968.

When discharged from the hospital, of 200 Norwegian mothers, 82% were breast feeding and only 4.3% were artificially feeding the infant. After 7 weeks only 50%, after 3 months only 28% and after 6 months only 12% were still practicing any breast feeding. After 1 month only 50% and after 3 months 15% were still completely breast feeding. Duration of breast feeding was not clearly related to age of mother or number of pregnancies, but mothers from rural areas and those from higher socio-economic groups, tended to breast feed longer than others.

KLACKENBERG, G. & KLACKENBERG, L. Breast Feeding and Weaning, Some Social Psychological Aspects. Part V of the Development of Children in a Swedish Urban Community - a Prospective Longitudinal Study. *ACTA Paediatrica Scandinavia*. Supplement 187:104, 1968.

The following statistically significant relationships were found from data on breast feeding and weaning collected in a prospective longitudinal growth study in Sweden: 1) boys were breast fed longer than girls, 2) mothers in the higher age groups (26 and over) continued breast feeding longer than mothers under 26, 3) mothers with higher education continued breast feeding longer than do mothers with less education, 4) mothers in the highest social class continued breast feeding longer than mothers in the intermediated and lowest social classes, 5) the lowest social class mothers

stopped breast feeding earlier than mothers in upper social classes.

None or insufficient milk was the most common reason given by mothers who weaned their babies before 6 months. Employment was of little importance as a reason for weaning. The mothers' attitudes towards breast feeding in the child's 1-3 months of life were generally positive. The frequency of night feedings on the return home from the maternity hospital was 85% and at 3 months 25%. Boys received night meals for a significantly longer period than did girls.

KAGAN, BENJAMIN M., STANINCOVA, VERA & OTHERS. Body Composition of Premature Infants: Relation to Nutrition. *American Journal of Clinical Nutrition*. 25:1153-1164, 1972.

Five comparable groups of premature infants, each consisting of six infants were studied. On the 6th and 28th days of life, body weight, total body water and dry body weight were calculated. During 21 day intervals, the infants were fed isocalorically at rate of 120 Kcal 1kg per day of the following milks: human milk, SMA, S-26, Similac, 0.67, Alacta. The study was to determine the influence of milk constituents on body composition. It was found that: 1) diet had an influence on body composition, 2) there were no statistically significant differences in the final absolute dry weights, 3) there were statistically significant differences in the amounts of final total body water, 4) there were differences in the distribution of body water into the intra and extra cellular compartments, 5) electrolytes, their relative amounts in the milks, and the ratio of electrolytes (namely potassium) to protein were found to influence body composition. The results and their interpretation are discussed.

KAO, YUNG-EN Breast Feeding in China. *Acta Paediatrica*. 36:233-236, 1948.

From study records of two pediatric clinics in China in 1945, it was found that 95% of Chinese babies are breast fed. As a rule, every Chinese mother is eager to breast feed, she considers it her duty. Only a few mothers are adverse to breast feeding and their babies depend on wet nurses or artificial feedings. Studies of cases showed that feedings were 10% every 4 hours, 20% every 3 hours, and 70% irregularly. Night feedings were as high as 85%. Almost 50% of Chinese infants are not weaned until 1 year. A small number continue on breast milk to the age of 6, but food is also supplemented.

KNUTSSON, K.E. & MELLBIN, T. Breast Feeding Habits and Cultural Contest (A Study of Three Ethiopian Communities). *Journal of Tropical Pediatrics*. 15:40-49, 1969.

Factors which influenced the breast feeding habits of children in 3 culturally different areas of Ethiopia were

studied. Children from the strongly traditional community of Tigre in Northern Ethiopia were breast fed considerably longer than children from the other two changing communities. Weaning in Tigre was very late, 64% of the children being breast fed for 19 months or longer. The late weaning was due to changes from outside being treated with suspicion and artificial feeding was not attempted. In Sidamo, a more affluent community, changes were more readily accepted and breast feeding habits were visibly altered. Additional food such as cow's milk was given to supplement breast milk when the children were 2-3 months old. Weaning was earlier and only 32% of the children were breast fed for 19 months or longer. In Arussi, a cattle area, the pattern of breast feeding is different. The children were breast fed for 7-12 months and the girls weaned at least a month earlier than the boys. Only 11% of the children were breast fed for longer than a year. In Arusi, as in many other areas of Ethiopia, the newborn child is first given butter and water before the breast feeding starts. Sometimes even diluted cow's milk is given as a preliminary to mother's milk.

KOLTYPIN, A., LANGOVOL, N. & VLASOV, V. Children's Diseases. Foreign Languages Publishing House, Moscow, 1953.

In 1953 the majority of women in the Soviet Union breast fed their children both in cities and in the country. According to the data of Moscow infant health centers, approximately 92% of the mothers feed their babies at the breast alone in the first few months. At six months, one feeding (usually 2:00 p.m.) is replaced by a wheat farina cereal. At seven months vegetable puree is added to the baby's diet. By eight months one breast feeding is replaced by a meal of cow's milk with white bread soaked in it, also strained buckwheat or oatmeal instead of farina. By 8-9 months, the baby is given a half cup of meat or vegetable broth with strained vegetables and bread. By 9 months a second breast feeding is replaced by cow's milk or a roasted grain beverage with milk. After 11 months, a baby is given meat puree, later meat balls in soup and after one year, ground meat patties. The baby is weaned at one year, but never in the summer or during an illness.

KREMAR-JOVANOVIC, F. Undernutrition of Infants and Young Children in Serbia and in Yugoslavia (Methods of Detection, Evidence and Correlation with Morbidity and Mortality). *Hrana Ishrana*. 10:630-639, 1969.

A team of nutrition workers studied the nutrition of infants born between May 1965 and May 1966 in 2 villages of Kosmet province. Of 120 infants, 111 were breast fed and 80% were still being so fed between 10-12 months. Supplementary feeding was given to 24% of infants in the first month, 25% in the first half year and 68% in the second half year. Mixed feeding was begun in the first 6 months for 25% of infants. Of the 120 infants

only 3 got fruit juice, 7 fruit, 4 vegetables, 9 eggs, 3 meat, 6 cheese, 13 bread or biscuit and 2 fats.

LADAS, A. Breast Feeding: The Last Available Option. *Journal of Tropical Pediatrics and Environmental Child Health*. 18:317-346, 1972.

This monograph reports a study of the social and psychological background of mothers breast feeding their babies in the USA, with special reference to the influence of the LaLeche League (LLL). LLL mothers breast feed for an average of 9 months. They are well-educated, and success depends primarily on their receiving information and social support.

LALA, V.R. & DESAI, A.B. Feeding of Newborns and Infants (Cultural Aspects). *Pediatric Clinics of India*. 5:191-197, 1970.

Women in postnatal ward in Ahmedabad were interviewed with a questionnaire; 410 completed the study. Most gave the first feeding within 12 hours after birth. It was found that the duration of breast feeding was over 3 years. Most gave the first supplements of solid food or milk between ages 1 and 1.5 years.

LIGHTWOOD, R. & BRIMBLECOMB, F.S. Sick Children: Diseases and Treatment. Cassel & Co., London, 1963.

The authors suggest that 5-6 months is the age to introduce semi-solid food preparations. They further explain that this age was an arbitrary choice and that infants can do well on milk alone until about the ninth month. From 5-8 months, an infant may be given broth and vegetable purees and soft cereals. From 8-12 months, the amount and consistency of broth and vegetable purees can be gradually increased.

LONGO, L.P. Sociocultural Practices Relating to Obstetrics and Gynecology in Community of West Africa. *American Journal of Obstetrics and Gynecology*. 89:470-475, 1964.

Newborn infants in a Yoruba community in Southwestern Africa are forced to swallow a mixture of herbs 3 times daily followed by a period of breast feeding. Breast feeding is continued for 2-3 years and solid food is not given usually until teeth appear. Diet after weaning consists almost entirely of yam, cassava, rice and other carbohydrates.

MACLEAN, CATHERINE M. Yoruba Mothers: A Study of Changing Methods of Child-rearing in Rural and Urban Nigeria. *Journal of Tropical Medicine and Hygiene*. 69:253-263, 1966.

A study of child-rearing practices in Ibadan, Nigeria,

in 1966, showed that breast feeding was the rule. Breast feeding usually begins 2-3 days after birth. The average time of breast feeding is from 2-3 years, although male children may be kept on the breast a few months longer than female. In extreme cases, breast feeding may be continued up to 4-5 years. Births are usually naturally spaced at approximately three yearly intervals, as intercourse is prohibited from the time a pregnancy is recognized until the termination of lactation. Weaning is a gradual process, starting early with thin corn meal gruel given by hand and going on to a variety of mashed purees of adult foods. Yams, a staple article of diet, are considered to make a child sluggish and "heavy" delaying walking and healthy growth.

MAGLIETTA, V. A "Critical or Sensitive Period" in Infant Feeding. The Initiation of Mastication and Deglutition of Solid Foods in Relation to Present Methods of Weaning. *Minerva Dietol.* 9:89-93, 1969 (Italy).

Among 162 babies there were 2 peak ranges for the age at which they first took solid food, between 8-12 months, when 25.92% began chewing and between 24-34 months, when 39.46% began. Babies who did not begin to chew until after 36 months amounted to 1.23% and those who chewed before 6 months to 4.93%. The author discussed the importance of establishing the habit of taking solid foods at an age when the child is ready for it.

MALCOLM, L.A. Growth and Development in New Guinea: A Study of the Bundi People of the Madang District. The Institute of Human Biology (Madang). Monograph Series No. 1, 1970.

A study of infant feeding patterns among the Bundi of New Guinea showed that a Bundi infant is breast fed until a mean age of 4 years. Breast feeding is on demand and is limited only by the mother's work schedule. Mashed sweet potato, sugar cane, banana and *pit-pit* are introduced as early as 3-4 months.

MARTIN, W.J., MORLEY, D. & WOODLAND, M. Intervals Between Births in a Nigerian Village. *Journal of Tropical Pediatrics.* 10:82-85, 1964.

Among 291 women at Imesi in Western Nigeria, the mean duration of breast feeding was 23.2 months.

McKAY, D.A. & WADE, T.L. Nutrition, Environment and Health in the Iban Longhouse. *Southeast Asian Journal Tropical Medicine and Public Health.* 1:68-77, 1970.

A study done in 5 Iban Longhouse communities showed that breast feeding is universal and prolonged, usually to age 2 years and often to 3-4 years unless there is a new baby. The first food other than milk is usually crushed or powdered rice given early in the first year.

MCLAREN, D. A study of the Factors Underlying the Special Incidence of Keratomalacia in Oriya Children in the Phubani and Ganjam Districts of Orissa, India. *Journal of Tropical Pediatrics.* 2:136-140, 1956.

A study done among the Oriyas and the Khonds of Orissa, India, found that breast feeding is a predominant trend. Breast feeding is continued for 2-3 years or even longer. By the age of 9 months, an infant's diet is usually supplemented with a little watery rice, red gram and some vegetables. It is usually the custom to let the child decide when to "break away" from the breast. No attempt is made to wean a child unless or until another pregnancy occurs. The process of weaning usually lasts for 2-3 months. A common practice is to smear chili juices on the nipples to discourage the child. The child is weaned onto anything the parent may be eating.

MELLBIN, T. The Children of Swedish Nomad Lapps. A Study of Their Health, Growth and Development. *Acta Paediatrica(Suppl.).* Vol. 51, No.131, p. 97, 1962.

Information obtained from 173 families about the duration of breast feeding showed that percentages of infants breast fed for less than 6 months was 30%, 6-12 months, 33%, and more than 12 months, 37%. 2.8% of the infants were breast fed for 18-24 months and 3.8% over 24 months. Only 2.9% were never breast fed.

MEYER, HERMAN F. Breast Feeding in the United States: Extent and Possible Trend. *Pediatrics.* 22:116-121, 1958.

A survey was conducted in 1956 concerning the incidence of breast feeding in the U.S., as a followup to the Katherine Bain study in 1946. It was shown that the percent of infants in the U.S. leaving hospitals with breast feeding decreased from 38% in 1940, to 21% in 1956. Evidence was presented in each category of states and regions of the U.S. that there was less breast feeding of hospital newborn infants than there was a decade ago. The data suggested a trend or inclination towards less breast feeding in the U.S.

MEYER, H.F. Solid Food Supplements to the First Year Infant Diet. *Current Medical Digest.* 20:23-28, 1953.

The author offered a list of solid food supplements to the first year infant diet, that included: cereals (last part of the first year), preferably the pre-cooked variety; vegetables (strained); fruits; egg yolk; whole egg; meats (strained); strained fish; puddings; non-cereal starches; dairy foods; chewing foods - dry toast, bread crust, crackers, cookies; unstrained foods; raw or uncooked foods. There was no mention of breast feeding.

MITCHELL, R.G. *Child Life and Health.* J & A Churchill, London, 1970.

The author stated that the majority of infants can thrive on milk alone until 4-5 months. From the age of about 5 months, sieved fruits, vegetables, and meats can be given.

MILLIS, JEAN The Feeding of Chinese, Indian, and Malay Infants in Singapore. *Quarterly Review of Pediatrics*. 14:42-48, 1959.

A study of 680 Chinese, Indian and Malayan infants in Singapore revealed that the mothers preferred to breast feed. Prolonged breast feeding was common among the Malayan mothers - who continued into the second or third year. Among poor women, the major cause of weaning was failure of lactation. Among wealthier women, breast feeding was usually discontinued because of the inconvenience. For Chinese infants, processed cow's milk was used for artificial and complementary feedings. The introduction of foods other than milk is delayed until an infant is 6 months. Most infants receive a mixed diet at 12 months. The well-to-do mothers are usually more ready to introduce other foods at an age earlier than 6 months. The consumption of milk drops rapidly after the introduction of a mixed diet.

Powdered and condensed milks are used for artificial and complementary feedings for Indian infants. Solid foods are seldom introduced in the first 6 months, but after 8 months, the majority of infants are given cereals. Although prolonged breast feeding is customary for Malayan infants, a number of mothers supplement breast milk early in lactation. Rice porridge may be given as early as 3 months. Condensed cow's milk is usually given for complementary feeding. The majority of infants receive only milk and starchy food during the first 12 months. Rice porridge is the popular choice, but wheat products such as bread biscuits and rusks are sometimes given and occasionally oatmeal, millet or corn flour.

MILLIS, JEAN The Influence of Economic Level on the Feeding of Chinese Infants in the First Year. *Journal of Tropical Pediatrics*. 2:103-108, 1956.

A series of visits at 4-week intervals were made to the homes of 103 poor and 114 wealthier Chinese infants throughout their first year in 1955. The incidence of breast feeding among the poor women was high, although a number of women had to supplement the supply of breast milk early in lactation. Thirty women had weaned before the 12th week, but approximately 1/3 of the women were still offering the breast when the baby was one year old. In contrast, 59 wealthier women had weaned before the 12th week and only 6% were breast feeding after one year. In both groups, processed cow's milk was used for complementary and artificial feeding and less than half the infants were given starchy foods at six months. After weaning, the infants of the poorer women had diets deficient in protein, calcium and vitamins. The infants of the wealthier mothers were given a varied and adequate diet.

MOLLER, M.S.G. Custom, Pregnancy and Child Rearing in Tanganyika. *Journal of Tropical Pediatrics*. 9:66-80, 1961.

The patterns of breast feeding and weaning was observed in six tribes in Tanganyika in 1961. Among the Wahehe, breast feeding goes on for about two years. Additional food is given very early. Among the Wagogo, the breast is sometimes given until child is 3-4 years of age. If the mother and child are healthy, the child is given both breasts. Weaning takes place gradually. A pregnancy during the breast period (up to 4 years) is avoided. Among the Waluguru, a child two days old is given a small piece of taboo meat to eat. After that a child is never to touch it again for the rest of his life. Breast feeding is continued up to 2 years of age. Among the Wonyakyusa, a child is entirely breast fed for 6-8 months, as a rule, when additional foods is given. A child is not fully weaned until about 2 years old. Among the Wachaga, a newborn child is given water or a small amount of mashed bananas to "clear its throat". Breast feeding usually goes on for 2 years. Additional food, fluid or semi-fluid is given from the 4-5 month.

MORLEY, D., BICKNELL, J. AND WOODLAND, M. Factors Influencing the Growth and Nutritional Status of Infants and Young Children in a Nigerian Village. *Transactions of Royal Society of Tropical Medicine & Hygiene*. V. 62, 164-199, 1968.

A study of the Yoruba village of Imesi in Western Nigeria revealed that the Imesi mother breast feeds her infant and would consider no other method. The baby is fed on demand and at night lies beside the mother, the suckling continuing while both are asleep, and it is during the night, rather than the day, that the baby is likely to receive a substantial proportion of his total milk intake. Breast feeding is prolonged to approximately 2 years. Termination of breast feeding by the mother depends on her child being sturdy and healthy, and not on chronological age. Breast milk is the only constant source of calories and protein for at least the first 12 months of life. Early termination of breast feeding, for whatever reasons, before the age of 12 months, usually leads to severe undernutrition, if it occurs before the age of 6 months, the child rarely survives.

In such village communities where tradition is strong and western ideas have very little influence, a mother who is unable to feed her child may be despised and shamed. For various beliefs it is not always easy to find a wet nurse. It is customary to start giving solid foods during the first year. For the first solid food, mothers use maize from which they make a pap. The second solid food "ole", a steamed bean cake, containing palm oil, tomato and peppers, is usually introduced about 4-5 months later than the maize pap.

MUNDO, FE DEL & ADIAO, AMPAROC Lactation and Child Spacing as Observed Among 2,102 Rural Filipino Mothers. *Philippine Journal of Pediatrics*. Vol. 19, No. 3:128-132, 1970.

In the Philippines, particularly in rural areas, breast feeding is still the feeding for 61% of infants. From October, 1968, to September, 1969, a survey was done to compare spacing of child births between two groups of 121 mothers per group, 16 to 39 years of age. In one group breast feeding was the manner of feeding from birth to about 7-12 months. In the second group, the babies were artificially fed from birth. Among lactating mothers, spacing between births was from 24-35 months in 51.2% and intervals of 36-47 months in 13.9% of mothers. On the other hand, among artificially fed babies, the figures were 30% and 13.4% respectively.

NAMBOZE, J.M. Weaning Practices in Buganda. *Tropical Geographical Medicine*. 19:154-160, 1967.

Of 73 mothers from under 19 to over 30 years old in Buganda who were interviewed, 26 stopped breast feeding at 12-14 months, for the others the age varied from 3 months to 2 years. The main reason given for weaning was the child was big enough. Another reason was insufficient milk from the mother. Solid foods were introduced gradually by 28 mothers, but 18 weaned their babies abruptly without previous introduction of solid foods. In 33 cases a child was sent to a relative after weaning.

NEAVE, M. The Nutrition of Polynesian Children. *Tropical Geographical Medicine*. 21:311-322, 1969.

Average values for islands ranged between the five islands except Upolo were: duration of breast feeding 6.6 to 10.4 months, first solid food (immature coconut or pawpaw), given at 4.5 to 5.9 months of age and fish at 6.7 and 9.5 months. For 3 islanders, the use of fish, meat, flour or rice was noted.

NEWSON, L. & NEWSON, F. Breast Feeding in Decline. *British Medical Journal*. 2:1744-1745, 1962.

An investigation of the breast feeding situation in Nottingham from 1959-1960 revealed that while 83% of mothers were breast feeding at four days after birth, only 60% were still doing it by a fortnight. Only about one in ten mothers continued to breast feed for as long as six months. 72% of the mothers who stopped within the first fortnight gave as their reason the failure or unsuitable quality of their milk; on further questioning, it appears that 55% of all who stopped within this period, would not have breast fed any longer in any case, and only 28% would definitely have continued if it had been possible.

NEWTON, D.B. Breast Feeding in Victoria. *Medical Journal of Australia*. 801-804, October, 1966.

In Victoria, the breast feeding rate at the age of three months declined from 55% in 1943 to 33% in 1963 and 29% in 1964. The number of babies being weaned in the

first two weeks increased in this period from 10.2% to 29.8%, so that nearly half 47.8% of the babies being artificially fed at 3 months are actually weaned in the first two weeks, either in the midwifery hospitals or immediately after their discharge. Along with the decline in breast feeding, it was noted that there had been a fall from 14.2% to 5.38% in the number of women who offered a complement to their babies at the age of 3 months. Very little could be concluded as the causes for the falling breast feeding rate. In areas investigated, mothers with poor social and economic conditions and mothers under the age of 20 years had the lowest rates. Greek and Italian mothers had better rates than English-speaking ones.

NIEHOFF, A. & MEISTER, N. Cultural Characteristics of Breast Feeding. *Journal of Tropical Pediatrics and Environmental Child Health*. 18:16-24, 1972.

The authors carried out a survey of the Human Relations Area Files (HRAF) into the cultural characteristics of breast feeding and weaning, including the initiation of nursing, duration of breast feeding, supplementary feeding and weaning methods.

In societies less effected by Western cultures, prolonged breast feeding was usual, until the mother became pregnant again.

NURGE, ETHEL Infant Feeding in the Village of Guinhangdon, Leyte, Philippines. *Journal of Tropical Pediatrics*. 3:89-96, 1957.

Neonates in Ghinhangdon, Philippines, are given a purgative immediately after birth and are not nursed until the second or third day of life. Occasionally a child is breast fed by a wet nurse for various reasons. Some mothers make use of canned condensed milk that is diluted with water as a supplement or as a weaning food. Most mothers begin supplementary feeding at 6-8 months. The first foods are usually mashed bananas or rice and water gruel. Weaning is usually completed between 1 and 1½ years. Reasons for earlier weaning may be pregnancy or the child is judged to be ready. Complete weaning is accomplished anywhere from 3 days to 2 weeks.

OBERNDORFER, L. & MEJIA, W. Statistical Analysis of the Duration of Breast Feeding (A Study of 200 Mothers of Antioquia Province, Colombia). *Journal of Tropical Pediatrics*. 14:27-42, 1968.

Interviews were obtained with 100 mothers who attended a university hospital for delivery and 100 mothers who were entitled to medical care under social security in Medellin, Colombia. Only mothers who had previously nursed at least 4 children exclusive of the new born were included. Statistical evaluation of the data for 1412 babies showed that for the hospital group the average time of breast feeding alone was 3-5 months. The average time of the total lactation period was 6 months. For the other group, corresponding times 2343

months. For the other group, corresponding times were 3.3 and 6 months. Thus the duration of breast feeding was practically the same in both groups, inspite of the lower socio-economic and nutritional status of the hospital group.

OJIAMBO, J.A. Maternal and Infant Dietary Practices of the Abasamia of Busia District, Western Province, Kenya. A Preliminary Study 1966-67. *East African Medical Journal*. 44:518-529, 1967.

A study of infant feeding practices in a remote area of western Kenya showed that for infants, breast milk was the staple; of 32 mothers, 15 breast fed for 2 years. A watery porridge, pounded banana, yam, rice and occasionally liver was introduced at 6 months to 1 year.

OOMEN, H.A. Nutrition and the Papuan Child. *S.P.C. Technical Paper*. No. 110, 48-58, 1958.

Breast feeding of Papuan infants is usual and normal the first three months of life. If the mother is working the child sleeps with the mother, nursing on and off during the entire night. It is usual to give supplemental foods for a very long time, up to 3-4 years, while still breast feeding. Consequently, there is no particular weaning period. Supplemental feedings are started between 3-8 months.

OOMEN, H.A. The Papuan Child As a Survivor. *Journal of Tropical Pediatrics*. 6:103-121, 1961.

Diet and malaria are the two most important factors in survival of the Papuan child. The diet is predominantly starchy and is given too early and in too large quantities to young children. Protein rich foods are not readily available. The average Papuan woman has 5-7 live births with 4 or more lactation periods of about 22 months. About 50% of the infants are breast fed until age 2. There is seldom a sudden suspension of breast feeding. The first foods are introduced gradually and in increasing quantities. Often a toddler and a new infant may compete for the breast. During the study, two grandmothers who had not borne children for 11 and 14 years, were observed suckling a grandchild and apparently yielding appreciable quantities of milk.

PAYTON, E., CRUMP, E.P. & HORTON, C.P. Growth and Development. Feeding Practices with Negro Infants Six to Eight Weeks Old and Their Relationships to Various Maternal Factors. *American Journal of Obstetrics & Gynecology*. 81:1009-1017, 1961 (Washington, D.C., U.S.A.).

Of 388 Negro infants, 4-10 weeks, 44.3% had never been breast fed, 24.7% had been breast fed for a time but were artificially fed at the time of the study, 14.4% were breast fed with a milk supplement, and 16.5% were fully breast fed. The age at which the mothers expected

to wean the infants still being breast fed ranged from 3-15 months; 43% of the mothers planned their infants at about 3 months. Multivitamins were being given to 69% of the infants, orange juice to 37%, cereals, strained fruits and vegetables to 30.4%; the mean ages at which cereals and vegetables were given were 37-42 days. Mothers in higher socio-economic groups expected to wean their infants earlier than mothers in the lower socio-economic groups. Mothers who had never breast fed their infants had a higher educational level than the others. The mothers who supplemented the infants' diets with vitamins, fruits, cereals, etc. were in the upper socio-economic groups and had higher education.

PETERMAN, M.G. So-Called Progress in Infant Feeding. *Rocky Mountain Medical Journal*. 48:416-418, 1951 (Milwaukee, Wisconsin, U.S.A.).

The author suggests that vegetables, bananas and other fruits may be safely added to an infant's diet at 5-6 months. Hard boiled eggs, strained or chopped meats may be added at 6 months or later. Brotw, gelatin, and custards may be added at the same time. He further suggests it is desirable to add one food at a time and wait 4-5 days before further additions to determine the reaction of the infant. He warns against rigid routines and force feeding.

POLAK, H.E.; TOUBIA, N. & BAMDAD, N. Problems of Infant Nutrition Amongst the Urban Population of Iran. *Journal of Tropical Pediatrics*. 9:98-104, 1964.

Of 95 infants born during 1959 to parents in poorer urban households, 44 were entirely breast fed to 12 months of age; the others at from 3-12 months received supplements of dried skimmed milk. Only small quantities of fruit juice, soup and vegetable puree were given during the nursing period. In another series of 60 infants born in 1961, 19 received breast milk alone for up to 12 months and supplements of skimmed or full cream dried milk or fresh milk were given to 4, 17 and 20 between birth and 3 months, 3-6 months, and 6-12 months respectively.

PROTHERO, R. Women Who still Breast Feed Their Babies. *Medical Officer*. 121:141-142, 1969.

The study was done at a child welfare center in London. Women seen there who had had their first baby between January 1965 and July 1968 numbered 584, of these 284 breast fed. The duration of breast feeding was less than 5 weeks in 43, 5 weeks to 3 months in 141, 3-6 months in 36 and over 6 months in 20. It was practiced by 168 of 450 women born in the U.K. and by 72 of 134 born abroad; by 17 of 69 less than 20 years old, 190 of 437 20-29 years old, 31 of 73 30-39 years old and 2 of 5 40 years and older. The women were divided into 5 social classes--the lower socio-economic groups 3 of every 4 did not attempt to breast feed, while among the more educated women 3 of every 4 did breast feed. The

motive for breast feeding seemed to be intellectual conviction, not instinctive urge.

RAPHAEL, D. The lactation-Suckling Process Within a Matrix of Supportive Behavior. Ph.D. Thesis: University of Columbia, New York, 1966.

A cross-cultural analysis of various aspects of "matresence" including childbirth, the puerperium and lactation in a large number of traditional human cultures and in social mammals. The importance of information and of physical and emotional support in successful lactation is stressed, and the *doula* (traditional female assistant) concept elaborated.

RAPHAEL, D. The Role of Breast Feeding in a Bottle Oriented World. *Ecology of Food & Nutrition*. 2:121-126, 1973.

The author divides world communities into four categories as regards the choice of breast vs. bottle in feeding—*The Total Breast Feeders*: traditional societies, presently concerned with food and shelter; *The Emerging Bottle Feeders*: newly urbanized poor, striving for status, a modern image and economic upward mobility; *The Elite Bottle Feeders*: economically secure, able to purchase and use cow's milk formulas satisfactorily.

More recently among educated women in Western countries, a fourth category of elite breast feeders is emerging, in which mother-baby interaction, closeness, reciprocal feelings, tenderness, etc. are prime concerns.

RIVERA, J. The Frequency of Use of Various Kinds of Milk During Infancy in Middle and Lower Income Families. *American Journal of Public Health*. 61:277-280, 1971.

A survey was made in 1969 in New York and San Francisco on the frequency of breast feeding and use of other milks during the first 18 months of life. Commercial milk feeds were the most frequently used up to 4 months of age, thereafter more than half got fresh cow's milk and the proportion increased with age to practically all infants at 1 year. The incidence of breast feeding during the first month was about 25% in middle income and less than 5% in lower income families.

ROBERTSON, I. The Relationship of Dietetic Habits and Customs to the Nutrition of Infants and Pre-School Children as Seen in Cape Town. *Proceedings of Nutritional Society of Southern Africa*. 3:6-11, 1962.

Of infants at child welfare clinics in Cape Town, percentages breast fed or breast fed with milk supplements for 4 weeks, 2-3, 5-6, or 7-8 months were European, 82, 55, 40, 35; Colored 99, 81, 53, 25; and

Bantu 100, 94, 82, 67. Diet surveys were made in 30 families of each of the following groups: English, Afrikaans, Jewish, Colored Malay, Bantu of long residence and tending to European habits and Bantu of short residence and retaining rural habits.

ROBERTSON, W.O. Breast Feeding Practices: Some Implications of Regional Variations. *American Journal of Public Health*. 51:1035-1042, 1961.

A questionnaire was sent to a random sample of 1500 mothers of young infants. The information obtained from 1223 replies showed that at 1 week of age 24% of infants were wholly breast fed and 6% partly breast fed. By 8, 14, and 18 weeks, the percentages of infants receiving breast milk had fallen to 15, 10 and 7% respectively. Variations in incidence with geographical location, educational and income levels of mothers were discussed.

ROBINSON, P. Infant Feeding in Burma. *Quarterly Review of Pediatrics*. 12:14-15, 1957.

Breast feeding is not practiced as universally in Burma as in India. Mothers usually begin to breast feed their infants, but by the second quarter of the first year of life the incidence of breast feeding drops considerably. The reasons for this are varied: many women work, practitioners encourage weaning if mother is deficient in certain nutrients because they say the milk produced is poisonous to the child, mothers fear excessive development of the breast. Weaning food is usually polished rice. Traditionally milk is not drunk in Burma by children or adults. However, milk is given to infants especially if it is condensed or dried milk and does not come from the "sacred" cow.

ROBINSON, P. Infant Feeding in Ceylon. *Quarterly Review of Pediatrics*. 12:208-209, 1957.

Practically every mother in Ceylon breast feeds her infant. However, only 50% of the infants are fully breast fed at three months of age. Partial breast feedings of condensed and dried milks is continued for long periods. In poorer classes, the average period of partial breast feeding is twenty months; among the middle classes, the average is nine months. There is a weaning ceremony at about the 14th month. The weaning food is usually rice gruel diluted with water. As soon as rice is given, milk is discontinued because of the belief that a mixture of rice and milk breeds worms.

ROMANOVA-BOSEVSKA, N. Nutritional Survey of Infants and Small Children in the Village of Kamenjane, Commune Tetovo. *Hrana Ishrana*. 10:533-537, 1969.

The village selected for study had 3065 inhabitants in 312 households. It was found that breast feeding was considered sufficient until about 8 months. Most

mothers were reluctant to introduce mixed feedings before 8 months for fear of gastrointestinal upsets. Egg or egg yolk was given to a few infants over 9 months but none earlier. Cow's milk was given to about 20% before 5 months, 39% at 6-8 months and to all over 8 months, but none had dried milk. Weaning foods were bread, beans, tea, potatoes, peppers and biscuits. Breast feeding is continued for at least 2 years although the weaning foods are first introduced at about 8 months.

ROSS, A.I. & HERDAN, G. *Breast Feeding in Bristol*. *Lancet*. 1:630-632, 1951.

By definition of the authors, the breast fed babies in the study included babies receiving solids in addition to breast milk. It does not include babies receiving both breast and bottle feeds.

This study done from 1947-48 revealed that the incidence of breast feeding in Bristol had fallen considerably in the past 20 years. In 1949, 36.2% of babies were breast fed at 3 months, compared to 77% in 1929-30. Investigation in the causes of weaning an infant before 6 months, found that 64.4% of mothers did so because their breast milk failed, only 2.2% because they went to work.

ROSS HOSPITAL SURVEY. Ross laboratories (Columbus, Ohio). 1970.

Hospital surveys performed by Ross Laboratories in Columbus, Ohio, from 1965-1970 showed breast feeding alone to be 19.8% in 1965, while breast feeding along with supplemental feedings was 6.2%. By 1970, breast feeding alone in hospitals had decreased to 17.5% and supplemental feedings had increased to 6.7%.

In 1965, upon discharge from hospitals, women breast feeding alone with supplemental feeds at discharge were now numbered 8.2%. By 1970, upon discharge, 18.9% were breast feeding alone and supplemental feeds were done by 8.6%.

SACKETT, W.W. Results With Three Years Experience With a New Concept of Baby Feeding. *Southern Medical Journal*. 46:358-363, 1953 (Miami, Florida, U.S.A.).

A six hour feeding schedule is offered with the introduction of solid foods as early as the second day of life.

SADRE, M.; EMAWIS, E. & DONOSO, G. The Changing Pattern of Malnutrition. *Ecology of Food & Nutrition*. 1:55-58, 1971.

The authors describe the move in emphasis in malnutrition in young children in Teheran, Iran, with declining lactation performance. The trend is towards marasmus in the first year of life.

SALBER, EVA; STITT, PAULINE & BABBOTT, J. Patterns of Breast Feeding in a Family Health Clinic. *New England Journal of Medicine*. Vol. 260, No. 7 310-315, 1959.

The duration of breast feeding was studied in 111 babies whose mothers attended a family health clinic in Boston from 1950-56. Of the 111 babies 68 were breast fed at some time after birth; 43 were never breast fed. The median duration of nursing for the groups of 68 infants was 2-9 months. College education of mother and college education of father increased the number of babies breast fed and the duration. For the 43 mothers who never attempted breast feeding, the commonest reason was an emotional barrier expressed as repulsion toward the act or as embarrassment. Of the 68 mothers who attempted nursing, abnormalities of the breast or nipple, unwillingness on the part of the mother to continue and an insufficiency of milk were the most frequent causes of weaning.

SAND, E.A. Weaning. *Acta Paediatrica Belgium*. 15:75-91, 1961.

Of 126 infants breast fed for over 2 weeks, 103 were breast fed for a month or more, 38 for 3 months or more. At 1-2 months of age, more were still breast fed in the middle one of the three social classes, but at or after four months, there was no difference between classes.

Weaning took place over at least a week in 82, over 2 weeks in 62. It took less than 3 days in 20 of the 79 whose weaning began before age 2 months, and in 8 of the 47 whose weaning began after 2 months.

SANJUR, D.; CRAVIOTO, J. & VAN VEEN, A.G. Infant Nutrition and Socio-Cultural Influences in a Village in Central Mexico. *Tropical Geographical Medicine*. 22:443-451, 1970.

In a village in central Mexico in summer of 1967 125 Mestizo families with infants under 12 months were interviewed. All infants were breast fed at first. The foods given in the first 6 months were: herb teas, other milk including fresh cow's, powdered or evaporated and goat's; fruit, especially banana, bean soup totillas. Infants were generally weaned at 1-1.5 years; 34% because of a new pregnancy, 27% for teething, 20% for low milk yield, and 6% because the mothers felt weakened by breast feeding. The better educated women weaned earlier and gave a greater variety of foods; the older women weaned later than the younger.

SELINUS, R.; GOBEZIE, A.; KNUTSSON, K.E.; VAHLQUIST, B. Dietary Studies in Ethiopia: Dietary Pattern Among the Rift Valley Arusi Galla. *American Journal of Clinical Nutrition*. 24:366-377, 1971.

Infants of the Rift Valley of Ethiopia are usually

breast fed up to 6 months. Children aged 2 months to 1 year might be partly breast fed. Breast feeding usually continues normally for 6 months, occasionally for 1 year, but sometimes for only 3-4 months. This rather short period for an underdeveloped area is because it was believed that lactation prevented pregnancy and a high birth rate was necessary to counteract high mortality. At about 1 year the child is introduced to adult food. Often the first solid food is toasted corn, but the child will mainly rely for nourishment on butter milk in quantities as available.

SETH, V. & GHAI, O.P. Feeding Habits of Infants and Preschool Children in the Urban, Semi-urban and Rural Community. *Indian Pediatrics*. 8:452-455, 1971.

In the three places studied around Delhi, almost all infants were breast fed. By the age of 1 year, 36.8% of the urban, 4.5% of the semi-urban and 2.1% of the rural children were completely weaned. By the age of 9 months artificial feeding supplemented breast feeding in 75% of the urban and 57.1% of the rural. Solid foods were introduced before 9 months in 24.5% of the urban, 13.6% of the rural children.

SHUKLA, A.; FORSYTH, H.A.; ANDERSON, C.M. & MARWALT, S.M. Infantile Over-Nutrition in the First Year of Life: A Field Study in Dudley, Worcestershire. *British Medical Journal*. 4:507-515, 1972 (England).

A survey of 300 normal infants up to 1 year of age highlighted a problem of overnutrition in the group, 50 (16.7%) were found to be suffering from infantile obesity and a further 83 (27.7%) were overweight. The incidence of breast feeding was found to be low.

Out of 84 mothers (28%) who gave breast milk as the first food, 18 (6%) gave it up within 1 week, 11 (3.6%) within 2 weeks, and 14 (4.7%) within 4 weeks. Only 19 babies (6.3%) received mixed breast feeding - including bottle and solids - up to or beyond 12 weeks.

Early introduction of solids was common even in breast fed babies. The earliest age when solids were given to these 19 infants was 4 weeks.

On survey day, 270 (90%) were receiving bottle feeding and solids, 12 (4%) were entirely bottle fed and 14 (4.8%) had breast, bottle and solids. The mean intake of milk among the 12 exclusively bottle fed babies was 837 ml. a day.

Solid foods were offered to some infants from the first week after birth. Of the 300 babies, 119 (39.7%) had solids by 4 weeks and 280 (93.3%) by 13 weeks. First solids consisted of a range of commercial products of baby rusks and instant cereals, most of which contained high quality proteins. These were soon followed by instant dinners.

Junior foods were fed exclusively in the latter part of the first year and only a few mothers used home cooked foods. Since the 1950's, the concept of weaning appears to be the introduction of solid foods without appreciably reducing the milk intake.

Reports showed that 18.7% of the mothers and 8.4% of the fathers were obese. The high correlation between obese parents and obese or overweight infants (0.96 and 0.74), together with the greater birth weight in these babies, indicated such infants may be "at risk".

SIDEL, RUTH Women and Child Care in China. Hill and Wang, New York, 1972.

All mothers breast feed their babies until 1 year or 1½ years of age. Supplementary bottles are used only when necessary and children are weaned directly from the breast to the cup.

Solid foods like noodles and porridge are introduced at 5 months if the baby has a few teeth, otherwise, solids are not started until the teeth are through.

SLOME, CECIL Culture and the Problem of Human Weaning. *Journal of Tropical Pediatrics*. 6:23-34, 1966.

The author defines weaning as the complete and permanent cessation of suckling. The paper involved a study of the wide variations found in different societies in time and method of weaning, reasons for cessation of breast feeding and rituals and beliefs associated with the process. For example, among the Basuto and Zulu, the onset of pregnancy leads to immediate weaning based on the belief that breast milk would prove injurious to the sucking baby. The Chaga, believing the mother's milk is inadequate, spit food into the baby's mouth from the second day of life and with the gradual introduction of foods, the breast serves primarily as a comforter.

Among the traditional Zulu, foods are introduced even before the breast feedings because of the belief that colostrum is injurious to the infant. The breast is withheld for the first 24-28 hours or longer, with a finely sieved pulped maize and water gruel given as a substitute.

SOLIEN DE GONZALEZ, NANCIE Breast Feeding, Weaning and Acculturation. *Journal of Pediatrics*. 62:577-581, 1963.

The incidence of breast feeding and time of weaning were studied among Indians and rural and urban Guatemalans of Latin ancestry in Guatemala in 1962. Among the Indians, children were never weaned earlier than 18 months of age. The latest age for weaning was 4 years. The ideal age was 2-2½ years. Nursing continued throughout the next pregnancy and the older child was weaned a few weeks after the new birth. Among the

rural lower-class Ladinos, weaning takes place from 12-24 months. During the first 3-4 days of life, a child is not breast fed by the mother, sometimes a wet nurse is employed or the infant is given sugar water or nothing at all. Weaning may take place early if it is felt that the milk of the mother has become immature. Weaning takes place when another pregnancy occurs. If pregnancy does not occur, the usual age for weaning is 18 months. Among the urban low-class Ladinos, weaning may take place before 6 month of age. A child may be given a bottle with very dilute cow's milk or be given cereal gruel made of cornstarch, oatmeal or cassava starch. Most children in this group are weaned by 18 months. Reasons given for early weaning were: impairing the health of the mother, advice of doctors or nurses, insufficient milk, mother's return to work. The author believed that breast feeding became less common and shorter in the urban group as medical advice became more available.

SOLIEN DE GONZALEZ, N.L. Patterns of Diet, Health and Sickness in a Black Carib Community. *Tropical Geographical Medicine*. 15:422-430, 1963.

Breast feeding among the Black Caribs in Guatemala is started shortly after birth. In the first 2 weeks breast feeding is supplemented by a paste of cassava starch, sugar and flavoring. At about 2 months a bottle of dried milk and water or sweetened tea once or twice daily is often introduced. Solid foods are introduced at about 10-18 months. Weaning is almost always complete by 2 years but often earlier.

STEARNS, GENEVIEVE Nutritional Requirements During Infancy. *Journal of Iowa State Medical Society*. 40:154-159, 1950.

The requirements of the full term infants for calories, protein, calcium, phosphorus, sodium, potassium, water, riboflavin and vitamin A will be met when the breast fed infant receives 2-2½ ounces of milk per pound and the infant fed cow's milk gets 1½-2 ounces per pound of body weight of milk containing 6-8% added carbohydrate, according to the author. Vitamins C and D must be provided as soon as feeding is instituted. Additions of foods containing iron and thiamine are desirable by 3 months or soon thereafter.

SUSKIND, R.M., OLSON, L.C., OLSON, R.E. Protein Calorie Malnutrition and Infection with Hepatitis Associated Antigen. *Pediatrics*. 51:525, 1973.

48 children with second and third degree protein calorie malnutrition were studied. Fourteen (29%) of the patients were positive for Hepatitis Associated Antigen at some time during their three-month hospitalization. The frequency of hepatitis associated antigen infection in those patients with protein calorie malnutrition compares to an incidence of 6.4% in normal children from the same area and suggests that nutritional factors may play a role in the acquisition of hepatitis associated

antigen. The authors concluded that the impairment of host defense mechanisms and especially of cell-mediated immune function which have been demonstrated in children with protein calorie malnutrition is suggested to be the basis of their increased susceptibility to hepatitis associated antigen.

TAITS, L.S. Infantile Overnutrition Among Artificially Fed Infants in the Sheffield Region. *British Medical Journal*. 1:315-316, 1971.

Artificially fed 6 week old infants in the Sheffield region are heavier than would be predicted from their birth weights and show a greatly increased evidence of excessive weight gain. According to the article, the findings are associated with caloric intakes that exceed the classic 50 calories/lb./day (110 calories/Kg./day). There was also a tendency to early feeding with cereals and mixed infant foods. Possible harmful implications discussed are obesity and hypernatraemic dehydration. The author feels that overnutrition should be considered as a nutritional and public health problem which requires careful evaluation.

TASSOVATZ, B. & BOTSITCH, A. Breast Milk and Its Protective Effect Against Intestinal Infections in the Newborn. *Annals of Pediatrics*. No. 27/5; 1649/285-1652/288, 1960.

An epidemic of enterocolitis among newborn babies in the maternity hospital in Belgrade in 1959 provided the information for this study. In 6 months 16 babies had severe infections and 7 of them died. Analysis of records revealed that all 16 were among a group of 125 who were fed on boiled breast milk. Although some babies were being breast fed or on raw breast milk, none of them became ill. When feeding on boiled milk was abandoned, the infection died without further medication.

THAMAN, O.P., ANAND, H.L. & MANHAS, R.S. A Review of Feeding Habits of Infants and Children in Kashmir. *Indian Pediatrics*. 1:428-435, 1964.

312 children attending an out-patient clinic were selected at random from ages 6 months to 12 years. The time period covered was 28 months. Breast feeding was done in 96.2%, in 85% for over 6 months, 71% for over 12 months and 31% for over 2 years. The first food offered was breast milk in 35%; coffee or tea with milk and honey in 47%.

Weaning took place for 32% of the infants in the first 6 months, 37.5% between 6-12 months, 37.5% between 1-2 years, and 14% after age 2 years. Milk supplements were cow's, buffalo's, goat's or tinned milk. Solid foods offered were rice or bread, biscuits, tea or coffee.

THAMAN, O.P. & MANCHANDA, S.S. Child Rearing Practices in Punjab. *Indian Journal of Pediatrics*. 35:334-341, 1968.

Feeding practices and related socio-economic factors were studied in 500 children between 1 month and 14 years old admitted to the hospital in Amritsar. About 99% of the Punjabi women breast feed, 89% of them for more than 6 months, and 82% and 40% for more and 1 year and 2 years. In comparison, 84% of children in Kashmir were breast fed for 6-12 months, 70% for 12-24 months and 31% for over 2 years. Of Punjabi mothers, 62.5% and of Kashmiri women, 37.5% started weaning their infants between 6-12 months. Bread, rice and biscuits were the usual initial foods.

THOMPSON, B. & RAHMAN, A.K. Infant Feeding and Child Care in a West African Village. *Journal of Tropical Pediatrics*. 13:124-138, 1967.

In a study in 1962-63 of the growth and health of 224 children under 5 years old in Keneba, Gambia, it was found that infants were breast fed for 18-24 months. Sweetened rice water was introduced at 4-5 months with pieces of fruit, mangoes or oranges, when seasonally available. Boiled rice was given at 7-8 months plus steamed millet, maize or findo. At 11 months, ground nuts, sauces and fish were added to the diet.

THOMSON, A.M. & BILLEWICZ, W.Z. A Study of Growth and Health of Young Children in Tropical Africa. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. Vol. 62, No. 3:330-340, 1968.

In 1968 for babies in Keneba, an isolated Gambian village of some 800 inhabitants, breast feeding was the rule and continued for at least 18 months. After 3-4 months, small amounts of cereal are introduced. By the time a child is fully weaned, he is receiving an adult diet.

VAN STAVEREN, W.A., TIGGELMAN-KRUGTEN, V.A.H., FERRIER, B., MAGGILLAVRY, E.J. & SUBOIS, G. Food Habits of Infants and Preschool Children in Surinam. *Journal of the American Dietetic Association*. 58:127-132, 1971.

In 1967 a team of home economists surveyed mothers regarding the food habits of their preschool children from birth to two years. It was found that breast feeding is rather prolonged, only a minor percentage of infants are not breast fed. In all ethnic groups, the majority of women terminate breast feeding between the age of 9 months and 1 year, although some continue until 2 years or even 4 years, based on the arrival of the next baby. Working mothers replace breast feeding by bottle feeding after 6 weeks to 3 months. The first additional food may consist of several kinds of porridge, fruit juice or soft drinks. Soft rice is often mixed with soft vegetables or enriched infant biscuits. After 6 months, infants are given fish, cow's milk, rice flours and breads.

VELEZ BOZA, F. & BAUMGARTNER, J. General Clinical and Nutritional Study on Native Tribes of the

Amazon. Federal Territory of Venezuela. *Archives of Venezolon Nutricion*. 12:143-225, 1962.

A study of native tribes in Venezuela showed that infants were breast fed usually for 2 years and sometimes longer. From 6 months of age, supplementary feeds were prepared from sweet potato and different fruits and other diet items as available and in season.

VELEZ BOZA, F. & GONZALEZ, M. Survey of Infant Feeding Practices in Workers' Families in Caracas. *Archives Venezolon Nutricion*. 14:63-90, 1964.

The diet of healthy infants nearly all under 2 years (1st group) and of 495 ailing or undernourished infants (2nd group) all belonging to working class families of low income and of same social and educational levels, was studied by questionnaire in Caracas. Nearly 80% of both groups were breast fed at birth, but the practice was discontinued early for many in the 2nd group. During the first 6 months mixed feeding was usual in the 1st group and artificial feeding in the 2nd group. Supplementary feeding generally began earlier in the 1st group than in the 2nd. In the first 6 months, supplements were fruit juices, bananas, apples, oranges, stewed fruit, soups, cereals, oats, barley and maize. In the second 6 months, the infants began to have eggs, meat, fish and legumes. The proportion of infants habitually getting supplementary foods were for the 1st group: fruit juice - 39, fresh fruit - 27, stewed fruit - 48, cereals - 53, soups - 58, eggs - 31, meats - 39, fish - 16, legumes - 37, and beverages - 20. Values for the 2nd group were: 61, 54, 54, 73, 75, 51, 55, 37, 55 and 45.

VENKATACHALAM, P.S. A Study of the Diet, Nutrition and Health of the People of the Chimu Area. Nutrition Research Laboratories, (Hyderabad, India). 1-90, 1962.

A study of infant feeding patterns was conducted from 1956-1957 in the Chimu area of the Eastern Highlands of New Guinea. It was found that all infants are breast fed during the first few months of life. It is sometimes continued as long as 2-3, or even 4, years. Up to 6 months, all infants are entirely breast fed. By the end of the first year most infants are receiving some supplement. At the end of the second year, there were very few infants entirely on breast milk still. First supplements are introduced at the time of the first eruption of teeth. This is usually between 8-10 month. The first supplement is a type of sugar cane called pit-pit. Foods introduced later are sweet potato, banana, corn and green leafy vegetables. Complete weaning is a gradual process, taking several months or even years. Breast feeding is discouraged when a child has most of his teeth and is able to move about steadily by himself.

WATSON, E.H. Infant Feeding: Common Errors. *Journal of Arkansas Medical Society*. 48:207-212, 1952.

The author feels that the commonest error in infant feeding is the failure to employ breast feeding. He feels that breast feeding is very beneficial to the infant and should be carried out at least for the first few months of the infant's life. He points out that many mothers after leaving the hospital have a temporary decrease in milk supply and become panicky and stop breast feeding. Also, some doctors, at this time, encourage the mother to go to formula bottle feeding, instead of encouraging her to continue breast feeding. Another common error pointed out by the author, is the practice of rigid scheduled feedings, rather than demand feeding. The author suggests that supplements should not be introduced before 3 months and then with strained cereals, fruits and vegetables.

WEGMAN, MYRON E., MARCHANTE, R.F. & KRAMER, MORTON Infant Mortality and Infant Feeding in Puerto Rico. *Puerto Rico Journal of Public Health and Tropical Medicine*. 17:228-245, 1942.

A study of infant mortality and infant feeding in Puerto Rico revealed the following data: the proportion of breast fed infants is high in the first 2 months and then takes a rapid decline. An area of relatively low mortality showed the highest percentage of breast fed infants and the longest duration of nursing. The older the mother, the less likely she is to breast feed her baby, but when she does, she continues for a longer than average time. Rural mothers breast fed longer than the urban mothers.

WELBOURN, H.I. Backgrounds and Follow-Up of Children with Kwashiorkor. *Journal of Tropical Pediatrics*. 5:84-95, 1959.

The social and domestic background was studied of 65 children with kwashiorkor of various African tribes who attended child welfare clinics in the vicinity of Kampala, Uganda. There was a control group of children consisting of same age group attending the same clinics. There were marked differences in the feeding histories of the kwashiorkor children. Underfeeding at the breast during the first 6 months occurred in over 50% in both tribal groups, but in only 13% of the Ganda control children and only 3% of the Ruanda and Luo control children. Weaning before 12 months occurred in 40% of Tonda children and 15% of Luo and Ruanda children in the control groups, but occurred approximately twice as frequently in kwashiorkor children.

WELBOURN, H.F. Bottle Feeding: A Problem of Modern Civilization. *Journal of Tropical Pediatrics*. 3:157-166, 1956.

A study was done on the incidence of bottle feeding in the Baganda tribe in Kampala, Uganda, from 1950-1955. It was shown that supplementary bottle feeds before 6 months of age increased 16% and 13%, respectively, for ordinary families and highly educated

families; supplementary bottle feeds before 1 month increased 3% and 1%. Complete weaning from the breast before 1 month increased 5% for ordinary families. There was no increase for the highly educated families; complete weaning from the breast before 6 months increased 1% and 2%. Final weaning from the breast was usually completed about 12 months. However, among highly educated families, weaning was completed at about 9 months. Mixed feedings were usually started at 4-5 months. Supplementary bottle feeding was always followed by early weaning. Highly educated mothers were generally anxious to breast feed for at least 6 months. The author mentions that it is not an uncommon sight to see an African baby being fed, often by an older child, with various mixtures of milk, cereal or tea from a bottle.

WELBOURN, H.F. Weaning Among the Baganda. *Journal of Tropical Pediatrics*. 9:14-24, 1963.

A study of Baganda children attending child welfare clinics during the weaning period found that the duration of breast feeding was usually from 12-16 months. Additional foods, matoke and tea, are given from the age of 6 months or earlier. The final cessation of breast feeding is abrupt and often pre-planned for a particular day. A mother will stop breast feeds in the day time a few weeks before she stops the night feeds.

WELLIN, EDWARD Maternal and Infant Feeding Practices in a Peruvian Village. *Journal of American Dietetic Association*. 31:889-894, 1955

Cultural factors involved in the dietary patterns of early infancy are described for Espinos, a Peruvian coastal village. During the first 3 days of life, mothers do not feed infants but offer them cotton dipped in a laxative oil. Mothers discard their colostrum and take laxatives before beginning to breast feed on the third day. Up to six months, the infant receives only breast milk, but from 6-12 months the bottle is deliberately substituted from time to time. Supplemental foods are started about the sixth month. Although oranges and a variety of fruits and vegetables are available, they are not included in the infant's diet. The reasons for this are related to local conceptions of the body and food.

WICKES, I.G. Overfeeding in Early Infancy. *British Medical Journal*. 2:1178-1180, 1952.

In 503 health infants, a diagnosis of overfeeding was made in 71 (14%) and was suspected in 59 (12%) between the ages of 2-8 weeks. Of those infants whose feeds were reduced for this reason, 72% were fully breast fed at the time the diagnosis was made. In 5 cases, the babies were being force fed.

WONG, HOCK BOON. Breast Feeding in Singapore. Choon Kee Press: Singapore, 1972.

Studies on the prevalence of breast feeding were carried out in the early 1950's, 1960's and 1970's. A progressive decline has occurred in these two decades in both well-to-do and poor Chinese women.

WORLD HEALTH ORGANIZATION: Seminar on Nutritional Problems in the Weaning Period (Addis Ababa, Ethiopia). March, 1969.

Participating countries were: Ethiopia, Iran, Iraq, Jordan, Kuwait, Libya, Pakistan, Sudan, Tunisia, Kenya, Tanzania and Uganda. The pattern of breast feeding was fairly similar in all countries. In rural areas, prolonged breast feeding was reported to be the rule, extending from 1-2 years and in some areas up to 3-4 years. However, in urban and semi-urban areas, there was a tendency toward early cessation of breast feeding (including low income groups), early introduction of diluted cow's milk or starch low protein cereal gruels.

Comments made on the incidence of breast feeding and time trend: in post-World War II era, the declining trend of breast feeding in developing countries became

evident in urban and peri-urban sectors of the population, especially among upper income groups. However, breast feeding has not appreciably decreased in rural communities since no social or economic situation exists to favor artificial feeding nor is processed or safe milk available at reasonable costs. It was also felt that often mothers are not fully aware or convinced of the importance of breast feeding.

YOON, J.J. & KIM, I.D. Study on Weaning Pattern and Nutritional Status of Infants and Toddlers in Korea. *Korean Journal of Nutrition*. 3:65-80, 1970.

304 children, under 3 years of age, from resettlement flats, towns, plains, mountains or islands of Korea were studied and information obtained by interview with the mother. All but 1 of the infants were breast fed up to 7 months. About 10% and 50% of the children were weaned from the breast by 8-17 months and 18-23 months respectively. Supplementary feeding was begun between 6-15 months and the first food was usually rice. Wheat flour, noodles, potatoes or other carbohydrate foods were given to older infants. Meat, milk and eggs were given infrequently.

APPENDIX: FACTORS PROMOTING LACTATION AND PRACTICAL STUDIES*

APPLEBAUM, R.M. The Modern Management of Successful Breast Feeding. *Pediatric Clinics of North America*. 17:203-225, 1970.

The author reviews current knowledge concerning factors making for success in lactation. Differentiation is made between the passively acquired "foremilk" and the high fat "hindmilk", which depends on an uninhibited "let-down reflex". A practical regimen is detailed, with special reference to the significance of milk tension and milk drainage.

BERG, A. The Nutrition Factor. The Brookings Institution, Washington, D.C. 1973.

In consideration of the role nutrition plays in national development, the financial aspects of lactation failure on a community are reviewed. These are considered in relation to the value of human milk, the need for replacement, the cost of hospitalization for infants with marasmus-diarrhea, and the anti-contraceptive effect.

BLAIKLEY, J.; CLARKE, S.; MACKEITHER, R. & OGDEN, K.M. Breast Feeding: Factors Affecting Success. *Journal of Obstetrics & Gynecology of the British Empire*. 60:657-669, 1953.

A modified "Waller regimen" was used, including massage and expression from breasts thirty-two weeks of pregnancy onwards. Lactation nurses were employed to give close supervision and care of breasts. On discharge, 93% were breast feeding compared with 84% controls; at 6 months, the incidence was 51% and 26% respectively.

CHATEAU, P. DE; HOLMBERG, H. & WINBERG, J. Relationship Between Feeding Routine at the Maternity Ward, Weight Development and the Duration of Breast Feeding. *Acta Paediatrica Scandinavica*. Suppl. 236, p. 33.

In Sweden, it has been quite usual to weigh babies before and after feeds, and to give additional formula thereafter up to a certain quantity (complementary

feeds). This practice has been stopped recently in the maternity unit in Umea, Sweden. Less anxiety has been observed among mothers and the nurses have more time to take care of the mothers. It is suggested that this may have a beneficial effect on the initiation of lactation.

COHEN, R.L. Notes on Mothers Becoming Successful Breast Feeders. In press. 1974.

COHEN, R.L. & BIRD, I. Lactation Consultants: An Approach to the Promotion of Breast Feeding. In press. 1974.

These two papers describe methods developed to prepare nurses working in maternity units to give information and support, and to minimize disadvantageous circumstances. Details are given concerning suggested practical methods of training (e.g. video tapes, availability of literature for mothers and for nurses, etc.). A regimen undertaken in Los Angeles increased the numbers of mothers discharged breast feeding by about one-third—from 37.1% to 48.2%.

EGLI, G.E.; EGLI, N.S. & NEWTON, M. The Influence of Numbers of Feedings on Milk Production. *Pediatrics*. 27:314-317, 1961.

Neonatal studies were undertaken into breast milk secretion, as judged by test weighing. Results showed that milk secretion increased with the number of feedings, presumably as a result of increased anterior pituitary hormone, prolactin, secreted in response to the additional stimulation of the breast.

FOOD AND AGRICULTURE ORGANIZATION. Report of Commission I, Bi-Annual Conference, Rome. p. 2, 1973.

Discussion by Norwegian Delegate covered the need to include human milk in national food balance sheets, especially in less developed countries.

GUNTHER, M. Instinct and the Nursing Couple. *Lancet*. 1:575-578, 1955.

Studies undertaken in a London maternity unit on 150 "nursing couples" indicate that the baby's reflex rooting-suckling behavior is inherent and instinctive, but can be influenced by nipple protractility.

*Information is available on a continuing basis from *Ammehjelpen*, Postboks 8139, Oslo 1, Norway; *Natural Childbirth Trust*, 41A Reeves Mews, London, W1, England; *Nursing Mothers Association of Australia*, 99 Burwood Road, Hawthorn, Victoria 3122, Australia; *La Leche League International*, 9616 Minneapolis Ave., Franklin Park, Illinois 60131, U.S.A.

HAIRE, D. The Cultural Warping of Childbirth. *Journal of Tropical Pediatrics & Environmental Child Health*. 19(2A): Monograph No. 27, 171-191, 1973.

This monograph reviews current practices in maternity units in the U.S.A. Many of these appear to be geared more to hospital routine than to the biological needs of mother and neonate. Practices making lactation more difficult are listed, including ambivalent prenatal counselling, oversedation of women in labor, routine episiotomy, separation of mother and newborn, delayed first breast feed, pre-lacteal bottle feeds, scheduled feeds, etc.

ILLINGWORTH, R.S. & STONE, D.G.H. Self-Demand Feeding in a Maternity Unit. *Lancet*. 1:683-687, 1952.

Self-demand feeding of newborn babies increased the incidence of breast feeding on discharge from 88.0% to 94.4%. At one month of age, 80.3% were breast fed compared with 64.5% fed initially on a regular regimen. Maternal breast problems (sore nipples, engorgement) were less in the self-demand group.

JACKSON, E.B., WILKIN, L.D. & AUERBACH, H. Statistical Report on Incidence and Duration of Breast Feeding in Relation to Personal-Social Factors and Hospital Maternity Factors. *Pediatrics*. 17:700-717, 1956.

A ten year survey carried out in New Haven Hospital showed that "rooming in" was a major factor in ensuring breast feeding on discharge.

JELLIFFE, D.B. La Leche League as an Influence in Tropical Pediatrics. *Journal of Pediatrics*. 69:161-162, 1966.

The current situation regarding the effects of the decline in breast feeding in developing countries is outlined. The development and activities of La Leche League in the U.S.A. are described briefly. It is suggested that the La Leche League International can have an important nutritional message for developing countries, increasing the prestige of lactation.

JELLIFFE, D.B. Breast Milk and the World Protein Gap. *Clinical Pediatrics*. 69:161-162, 1966.

The hazards of artificial feeding in most developing countries are outlined, together with the consequences of a continuing decline. Methods directed to reversing the trend are suggested, including raising the status of breast feeding; health education to school girls and antenatal mothers; legislation and control of unsuitable advertising. Economic and agronomic considerations of loss of breast milk are considered in relation to the increasing world "protein-gap".

JELLIFFE, D.B. & JELLIFFE, E.F.P. (Editors). The Uniqueness of Human Milk. *American Journal of Clinical Nutrition*. 24:968-1024, 1971.

This symposium covers major recent information on human milk and breast feeding, including some aspects of factors responsible for success and some consideration of prevention programs.

JELLIFFE, D.B. & JELLIFFE, E.F.P. Education of the Public for Successful Lactation. *Ecology of Food and Nutrition*. 2:127-129, 1973.

Success or failure in human lactation mainly depends on two psycho-physiological reflexes, the prolactin reflex and the let-down reflex. In actual communities, frequent suckling and confidence are major factors, and the latter is related in large measure to knowledge and social support.

Success in social mammals, including traditional human societies, is made more likely by the presence of what Raphael has termed a *doula* or culturally defined assistant, usually female.

Consideration is given to the anti-*doula* function of most modern midwifery units, and to the need to consider the need for the *doula* role in programmes designed to promote lactation in the community.

JELLIFFE, E.F.P. Nutrition Education in the Maternity Ward (or What Mothers Believe They Have Learnt). *West Indian Medical Journal*. 20:177-183, 1971.

A study conducted in 2 major maternity wards in Kingston, Jamaica, showed a low incidence of breast feeding. Major sources of information were commercial milk forms (pamphlets, free samples, visits by milk nurses). Hospital staff played a very small role in supplying information.

JELLIFFE, D.B. & JELLIFFE, E.F.P. Doulas, Confidence and the Science of Lactation. *Journal of Pediatrics*. 84:462-464, 1974.

This editorial comment covers recent knowledge on the psycho-physiology of human lactation, with special reference to the effect of confidence (or anxiety) on the let-down reflex and the significance of the *doula* (traditional female assistant) concept of RAPHAEL in modern medical practice.

LADAS, A. Breast Feeding: the Less Available Option. *Journal of Tropical Pediatrics & Environmental Child Health*. Monograph No:25:317-346. 1972.

This study analyses psycho-social aspects of lactation in members of La Leche League, in one group in each State, and, in particular, apparent factors making for

successful breast feeding. Results showed that information and social support (individual and group) were the major determinants of success.

MCBRYDE, A. Compulsory Rooming-In on the Ward and Private Newborn Service at Duke Hospital. *Journal of the American Medical Association*. 145:625-627, 1951.

"Rooming-in" of mothers and neonates was shown to increase the rate of breast feeding on discharge from 35% to 58.5%.

MOBBS, E.J. & MOBBS, G.A. Breast Feeding—Success (or Failure) Due to Attendants and the Prevailing Fashion. *Medical Journal of Australia*. 1:770-772, 1972.

The authors review some of the factors responsible for success or failure in lactation. They note that a major world-wide factor is the type of care and degree of understanding given by attendants, especially in the early puerperium.

They note that prudery in relation to breast feeding may extend to physicians, who may never have seen a baby breast fed.

MULLER, M. The Baby Killer. War on Want Publication: London, 1974.

MULLER, M. Money, Milk and Marasmus. *New Scientist*. Feb. 28, 1974.

Both publications cover the influence of commercial baby food companies on breast feeding in developing countries.

NEWTON, N. & NEWTON, M. Relation of Let-Down Reflex to Ability to Breast Feed. *Pediatrics*. 5:726-730, 1950.

Studies undertaken to show practical significance of confidence and anxiety on the let-down reflex and, in turn, its relation to success or failure of lactation.

PATTERSON, B. Promotion and Management of Breast Feeding. In: *New Horizons in Midwifery*. Waverly Press: Maryland, 1973.

Preliminary results are presented of modifying antenatal care and procedure in the maternity ward at the University Hospital of the West Indies, Mona, Jamaica, to facilitate lactation. Following introduction of this regimen, initial results showed an 89% breast feeding rate at 16 weeks.

PROTEIN ADVISORY GROUP (FAO/WHO/UNICEF). Feeding the Pre-School Child: Report of a PAG Ad-Hoc Working Group. Document 1.14/S, U.N., New York, 1971.

This report is concerned with the socio-cultural dynamics of breast feeding, including current views concerning causes of failure, the need for better information and preventive strategies.

RAPHAEL, D. The Lactation-Suckling Process Within a Matrix of Supportive Behavior. Ph.D. Thesis: Columbia University, New York, 1966.

The basic psycho-physiological factors responsible for successful lactation are covered in detail, with special relation to the information-supplying and supportive behavior of the *doula* (female assistant) in social mammals and traditional cultures.

RAPHAEL, D. The Role of Breast-Feeding in a Bottle Oriented World. *Ecology of Food and Nutrition*. 2:121-126, 1973.

Difficulties with breast feeding are described as they occur in a bottle oriented world. The author classified groups as regards infant feeding into "total breast feeding", "emerging bottle feeding" and "elite bottle feeding".

RICHARDSON, F.H. Universalizing Breast Feeding in a Community. *Journal of the American Medical Association* 85:668-670, 1925.

An early account of a program to increase the incidence of breast feeding in Nassau County, New York. Major factors were "convinced physicians" and "trained nurses". Following this campaign, the following incidence of breast feeding was found: 1 month 92.1%, 3 months 82.6% and 6 months 70.1%.

SLOPER, K.; MCKEAN, L. & BAUM, J.D. Breast Feeding in Oxford. *British Medical Journal*. In press, 1974.

A change in attitude by nursing staff in a maternity ward was found to increase the number of mothers breast feeding from 13.8% to 36.7% at the time of discharge. However, this did nothing to prevent a rapid decline in lactation after leaving hospital.

WADE, N. Bottle Feeding: Adverse Effects of Western Technology. *Science*. 184:95-96, 1974.

This paper covers some of the effects of bottle feeding in developing countries, including the rise in

incidence of marasmus and diarrhea. The etiology is discussed with special reference to ill-adapted Westernized health services and the influence of inappropriate advertising of commercial baby foods.

WALLER, H. The Early Failure of Breast Feeding: A Clinical Study of Its Causes and Their Prevention. *Archives of Disease in Childhood*. 105:1-12, 1946.

Easy commencement of lactation is considered to depend on milk pressure within the breasts not rising excessively. Massage of the breasts and removal each day of colostrum during the last three months of pregnancy resulted in 83% breast feeding rate at six months of age, compared with 42% in controls.

WINTER, S.T. Breast Feeding and the Lying-In Ward. *Clinical Pediatrics*. 11:127-128, 1972.

The paper discusses some factors responsible for failure of lactation, and concludes that two of the most important are the precipitate administration of stilbestrol by obstetricians and the short hospital stay after delivery.

WORLD HEALTH ORGANIZATION. Report of Twenty-Seventh World Health Assembly, Agenda Item 2.2.3, May 18, 1974.

"Reaffirming that breast-feeding has proved to be the most appropriate and successful nutritional solution for the harmonious development of the child;

Noting the general decline in breast-feeding, related to sociocultural and environmental factors, including the mistaken idea caused by misleading sales promotion that breast-feeding is inferior to feeding with manufactured

breast-milk substitutes;

Observing that this decline is one of the factors contributing to infant mortality and malnutrition, in particular in the developing world; and

Realizing that mothers who feed their babies with manufactured foods are often unable to afford an adequate supply of such foods and that even if they can afford such foods the tendency to malnutrition is frequently aggravated because of lack of understanding of the amount and correct and hygienic preparation of the food which should be given to the child,

1. RECOMMENDS strongly the encouragement of breast-feeding as the ideal feeding in order to promote harmonious physical and mental development of children;

2. CALLS the attention of countries to the necessity of taking adequate social measures for mothers working away from their homes during the lactation period, such as arranging special work timetables so that they can breast-feed their children;

3. URGES Member countries to review sales promotion activities on baby foods and to introduce appropriate remedial measures, including advertisement codes and legislation where necessary;

4. URGES the Director-General to intensify activities relevant to the promotion of breast-feeding, to bring those matters to the notice of the medical profession and health administrators and to emphasize the need for health personnel, mothers and the general public to be educated accordingly; and

5. REQUESTS the Director-General to promote and further support activities related to the preparation and use of weaning foods based on local products."