B4

#2, b ack

MCH-N-33b

EGG YOLK OR STRAINED PINTO BEANS -- A SOURCE OF IRON:

At about three months of age the baby's body store of blood building iron is low and some food source of iron must be added to the baby's diet. Egg yolk and strained pinto beans are both good sources of iron.

Egg yolk:

Egg yolk can be given hard-cooked or soft-cooked. To hard cook the egg bring the water to a rapid boil; add the egg; cover the pan and set on the back of the stove or simmer for 20 minutes.

The yolk and white of the egg can be separated, leaving the whites for other cooking uses. Put the egg yolk in a custard cup and set the custard cup in a pan of boiling water and cook with occasional stiring for 5 to 10 minutes.

Begin with ¼ to ½ teaspoon of egg yolk. Mix with a small amount of evaporated milk or boiled milk to make it soft enough for the baby to swallow. Gradually increase the amount of egg yolk given until the baby is getting a whole egg yolk daily.

Pinto beans:

Pinto beans or other dried beans, peas or lentils can be used in place of egg yolk to supply iron for blood building. Cook the beans until thoroughly soft. Do not add lard, salt pork or other fat or chile or anything else to the beans to be fed the baby. Put through a fine sieve to remove the outside skin. Begin with ¼ to ½ teaspoon of strained pinto beans and gradually increase until the baby is getting 2 tablespoons.

VEGETABLES:

Vegetables and fruits are useful to prevent constipation and to supply vitamins and minerals. Use vegetables such as carrots, peas, rutabagas, potatoes, spinach, quelites or other greens, squash, etc., that are cooked for the family. Cook vegetables in a small amount of boiling, salted water for as short a time as possible or until the vegetable is just done. Remove the vegetable to be fed the baby before adding butter, margarine, salt pork or spices. Strain the vegetables through a fine sieve. Never give the baby fried vegetables.

Add vegetables to the baby's diet at about 3½ months of age. Begin with ½ to 1 teaspoon of strained vegetables and gradually increase until the baby is getting 2 to 3 tablespoons. If the baby is constipated increase the amount of vegetables given. If the baby has diarrhea stop the vegetables until the bowels are normal.

Give the different vegetables alone so that the baby will learn to like the different tastes and textures. Do not give mixed vegetables until later.

FRUITS:

Add fruits to the baby's diet at about 4 months of age. Use mashed, ripe bananas, strained cooked applesauce, prunes, apricots, peaches, etc. Never give the baby unwashed, unripe fruits to chew on. These may cause diarrhea.

DO NOT GIVE THE BABY OLIVE OIL, MINERAL OIL, CASTOR OIL OR OTHER LAXATIVES OR MEDICINES OF ANY KIND UNLESS ORDERED BY THE DOCTOR. IF THE BABY IS CONSTIPATED OR HAS DIARRHEA, ASK THE DOCTOR OR YOUR PUBLIC HEALTH NURSE WHAT TO DO ABOUT IT.

Is your baby's birth registered?

#2 front

MCH-(J-33b)
10/23/45

STATE DEPARTMENT OF PUBLIC HEALTH
SANTA FE, NEW MEXICO

RECOMMENDED DIET PLAN FOR: _____

AGE	3 months	4 months
WEIGHT	lbs.___oz.___	lbs.___oz.
FEEDING TIME	AMOUNT OF FOOD	AMOUNT OF FOOD
_____Breast feeding or formula		
_____Orange, tomato or rose-hip juice,		
Cod-liver oil		
_____Cereal, cooked and strained		
Breast feeding or formula		
_____Egg yolk or strained pinto beans		
Vegetables, strained		
Breast feeding or formula		
_____Cereal, cooked and strained		
Breast feeding or formula		
_____Breast feeding or formula		

GIVE BOILED WATER BETWEEN FEEDINGS

ADDING NEW FOODS TO THE BABY'S DIET: Follow these rules for adding new food to the baby's diet:

1. Add only one new food to the baby's diet at a time.
2. Give the new food to the baby before giving the breast or the bottle. A hungry baby is more likely to eat new foods.
3. Give new foods in very small amounts. Start with ½ to 1 teaspoon and gradually increase as the baby is able to handle the food.
4. Allow a week's trial period for each new food before adding another new food.

The baby will spit out foodsuntil he has learned to swallow them or until he has learned to like the taste and texture of the new food. The baby learns to like new foods when they are given often.

By the time the baby is a year old he should be eating a well-balanced family diet, except for seasonings other than salt and improperly fried foods.

DO NOT GIVE THE BABY OLIVE OIL, MINERAL OIL, CASTOR OIL OR OTHER LAXATIVES OR MEDICINES OF ANY KIND UNLESS ORDERED BY THE DOCTOR. IF THE BABY HAS DIARRHEA OR CONSTIPATION ASK THE DOCTOR OR YOUR PUBLIC HEALTH NURSE WHAT TO DO.

Is your baby's birth registered?

#3 back

MCH-N-33c

Use strained vegetables and fruits until 6 to 7 months of age. Then begin using these foods mashed with a fork. The change from strained to mashed foods should be gradual. Add a small amount of mashed food to the strained food, then gradually decrease the amount of strained food and increase the amount of mashed food. The condition of the bowels will be a good guide as to how fast to make the change.

FOODS THAT ARE HARMFUL TO THE BABY:

Do not add the following foods to the baby's diet. They may cause diarrhea.
Chile, spices and seasonings of any kind
skins and hulls of beans and corn
unripe fruits and vegetables
unwashed fruits and vegetables
unboiled water
fried foods of all kinds
candies and pop
ice cream
cookies of any kind

Be sure all foods added to the baby's diet are clean. Always protect the baby's food from flies and dirt.

DRY TOAST OR HARD BREAD:

Begin dry toast or hard bread at about six months of age or as soon as the baby can hold the toast or bread in his hands. Do not spread the bread with butter, margarine, jam, peanut butter and jelly. Give a small piece of bread for the baby to chew on, but do not let the baby use it as a toy and then eat it.

DO NOT GIVE THE BABY OLIVE OIL, MINERAL OIL, CASTOR OIL OR OTHER LAXATIVES OR MEDICINES OF ANY KIND UNLESS ORDERED BY THE DOCTOR. IF THE BABY IS CONSTIPATED OR HAS DIARRHEA, ASK THE DOCTOR OR YOUR PUBLIC HEALTH NURSE WHAT TO DO.

Is your baby's birth registered?

G1
B3 #3, front

STATE DEPARTMENT OF PUBLIC HEALTH
SANTA FE, NEW MEXICO

~~MCH-N-33c~~
10/23/45

RECOMMENDED DIET PLAN FOR: _____

AGE	5 months	6 months
WEIGHT	lbs.___oz.___	lbs.___oz.___
FEEDING TIME	AMOUNT OF FOOD	AMOUNT OF FOOD
_____Breast feeding or formula		
_____Orange, tomato or rose-hip juice		
Cod-liver oil		
_____Cereal, cooked, strained		
Breast feeding or formula		
Toast or hard piece of bread		
_____Egg Yolk or strained pinto beans liver soup		
Vegetables, strained		
Breast feeding or formula		
_____Cereals, cooked & strained		
Breast feeding or formula		
Fruits, cooked and strained or mashed, amound & kin d		
_____Breast feeding or formula		

GIVE BOILED WATER BETWEEN FEEDINGS

WEANING:

At six months of age, whether the baby is bottle or breast fed, give one milk feeding from a cup that has been boiled. Start with a small amount of milk in the cup, about ½ to 1 teaspoon, so the baby can drink it without spilling. Gradually increase the amount of milk in the cup until the baby is taking a whole cup without spilling or choking. This makes weaning easier later on. Choose the feeding to start with the cup when you, the mother, have the most time to spend with the baby.

Milk for the cup feeding must be "safe". To prevent diarrhea use evaporated milk diluted with an equal amount of boiled water or use boiled fresh milk. Boil the milk 3 minutes and give the milk in a cup that has been boiled.

DO NOT GIVE THE BABY OLIVE OIL MINERAL OIL, CASTOR OIL OR OTHER LAXATIVES OR MEDICINES OF ANY KIND UNLESS ORDERED BY THE DOCTOR. IF THE BABY IS CONSTIPATED OR HAS DIARRHEA, ASK THE DOCTOR OR YOUR PUBLIC HEALTH NURSE WHAT TO DO.

Is your baby's birth registered?

133

AN EMERGENCY KIT FOR PREMATURE INFANTS

This emergency kit was developed by the Division of Child Hygiene in the Bureau of Maternal and Child Health, Alabama State Department of Public Health, with a view to placing one in each county health department for the use of physicians and public-health nurses who are called on to care for premature infants.

The drawings were made by the Alabama Visual Education Division, Work Projects Administration.

The total cost of the kit, on the basis of the prices listed (as of May 10, 1942), is about $23.50.

Distributed by

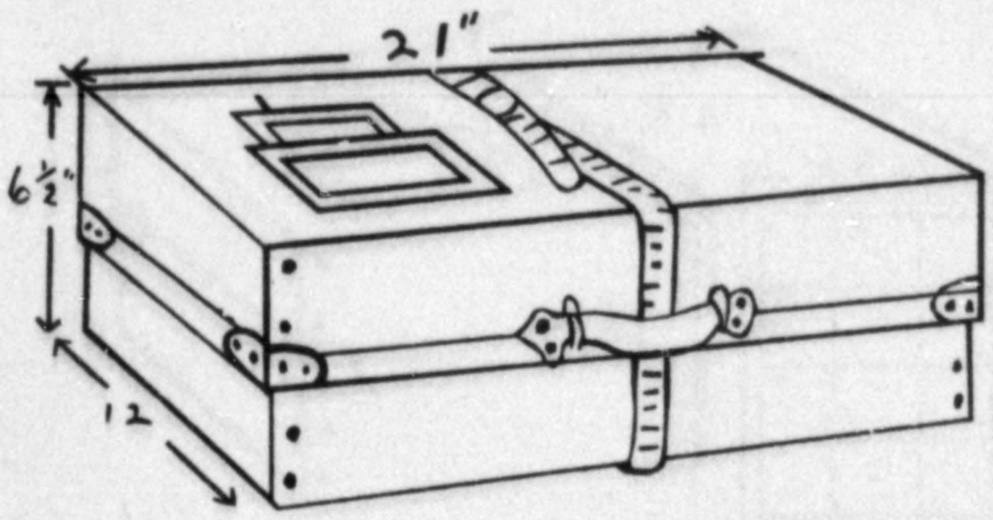
U. S. Department of Labor

Children's Bureau

Washington: 1942

CONTENTS OF THE EMERGENCY KIT FOR PREMATURE INFANTS

1. CONTAINER--FIBERCO--LAUNDRIPAK--SIZE 21" x 12" x 6½" ---------- 1.89
   COVER BOTH INSIDE AND OUTSIDE WITH THREE COATS OF WATER-PROOF VARNISH SO THAT IT MAY BE CLEANED EASILY.



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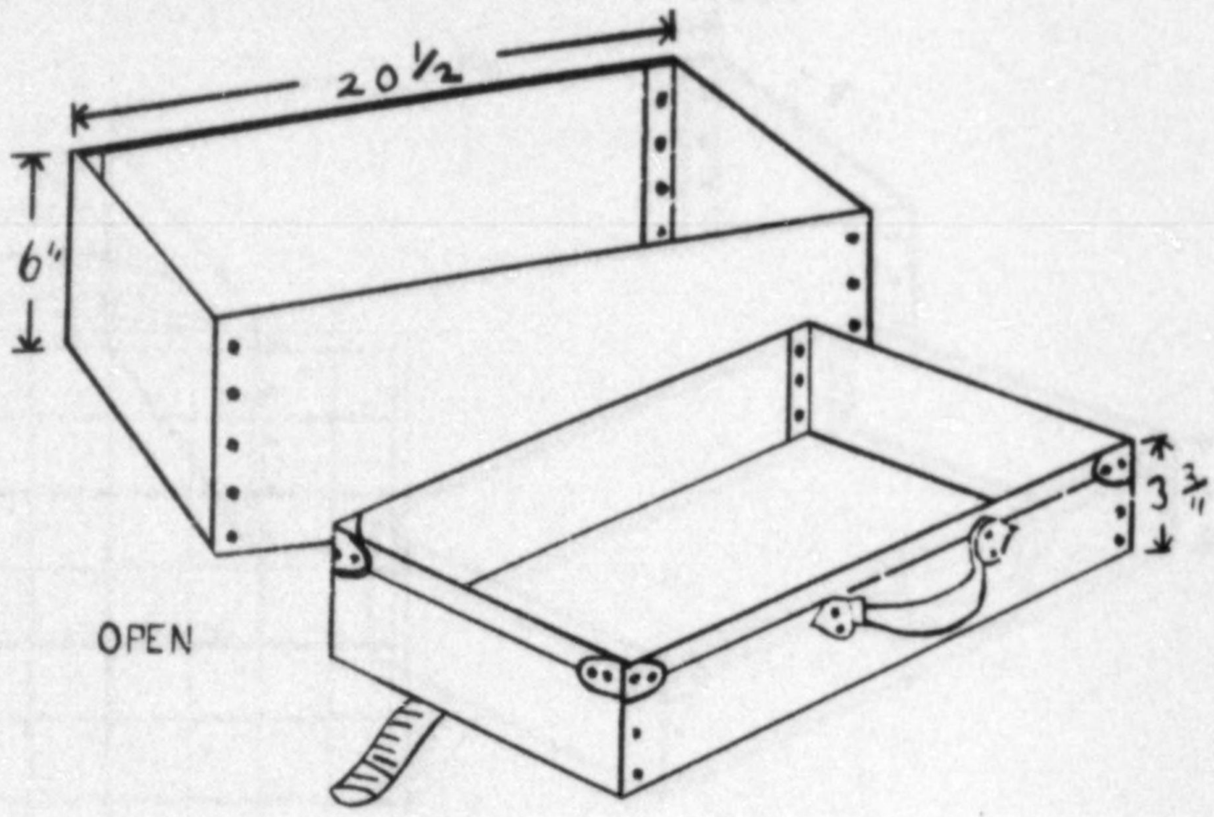
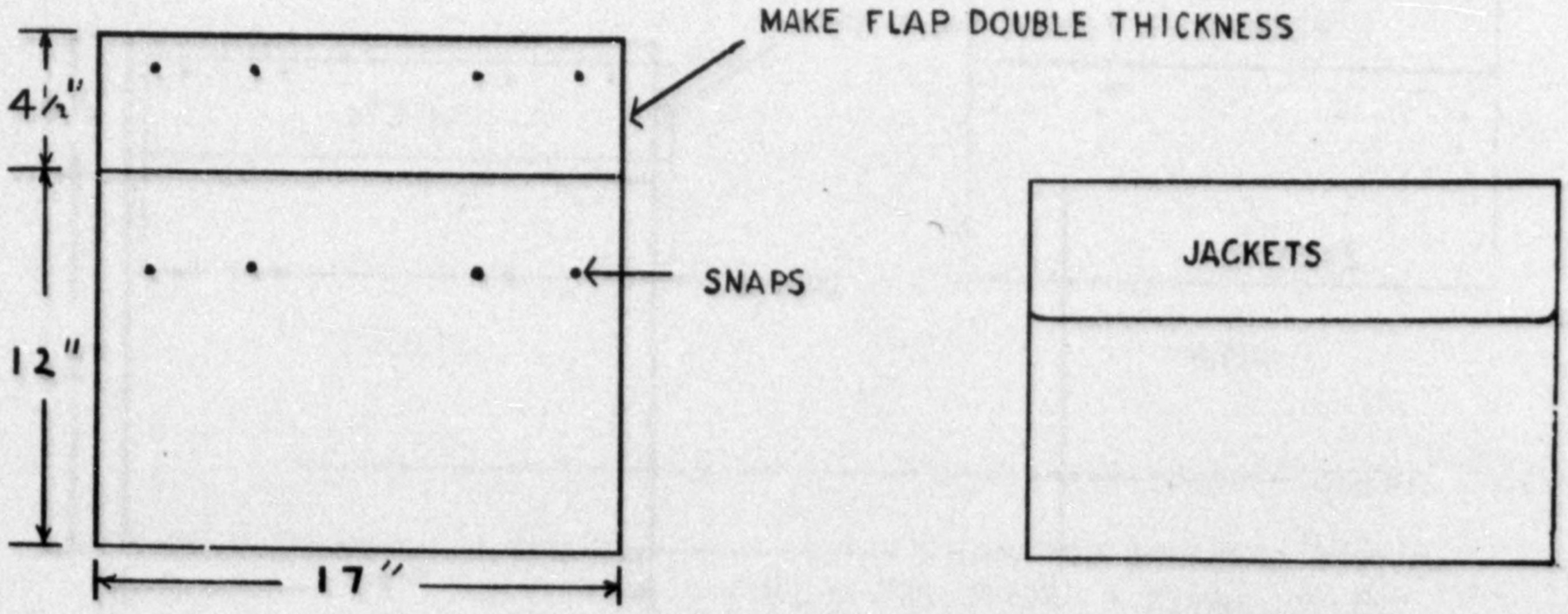


OPEN

2. ONE PAMPHLET - "CARE OF THE PREMATURE INFANT."

3. ENVELOPE CONTAINERS, CONTENTS AND GOWNS FOR PHYSICIAN AND NURSE.
   UNBLEACHED MUSLIN (HEAVY QUALITY) APPROXIMATELY 10-YDS. 45" MATERIAL REQUIRED
   (SHRINK MATERIAL BEFORE CUTTING) @ 0.15 YD. ----- 2.10
   THREAD -- #50-TWO SPOOLS ---------- @ 0.05 ----- .10
   SNAPS --- 4 CARDS ---------- @ 0.05 ----- .20
   TAPE ---- 2 PKGS. ---------- @ 0.10 ------ .20

   a. TWO ENVELOPES (17" x 12") REQUIRED FOR WADDED JACKETS:

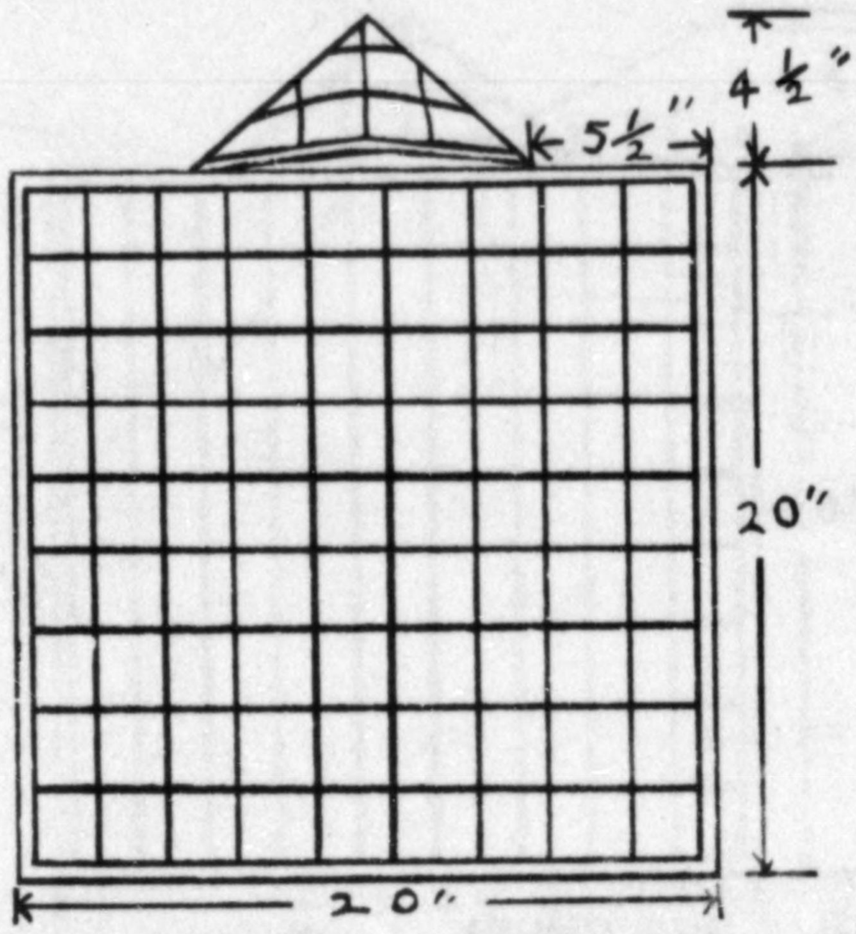


OPEN

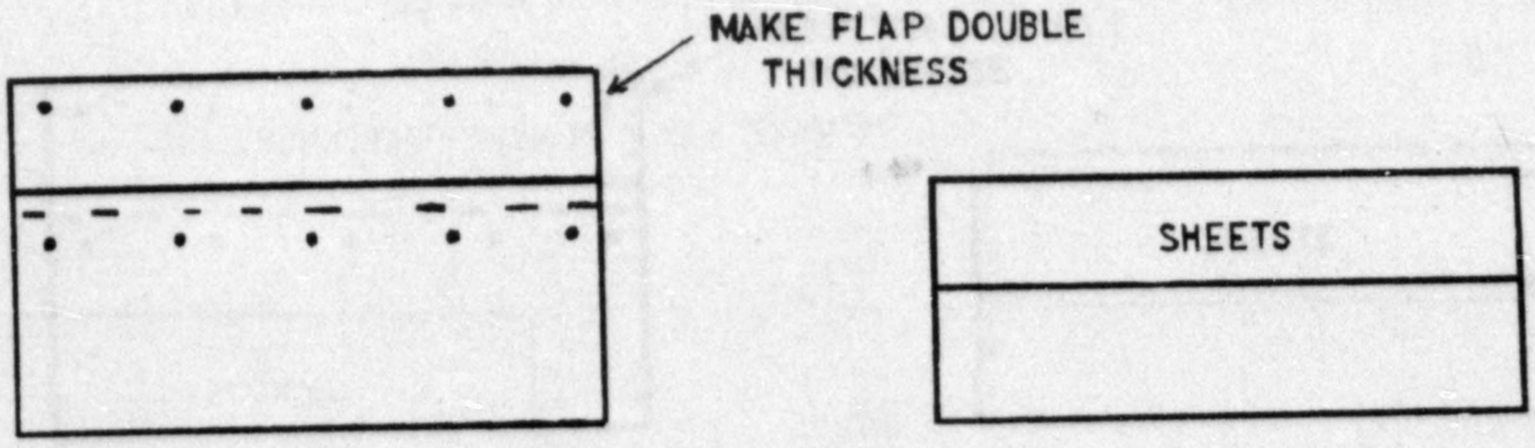
CLOSED

WADDED JACKETS (FOUR IN EACH ENVELOPE) ---------
CHEESE CLOTH 1½ YDS. PER JACKET --- @7½¢ PER YD. $0.90
(FLANNEL MAY BE SUBSTITUTED FOR THE CHEESE CLOTH)
COTTON WADDING 1½ BOLTS (81" x 108") @ 82¢ PER BOLT 1.23

$2.13



D. ONE ENVELOPE (7" x 17") FOR SHEETS.

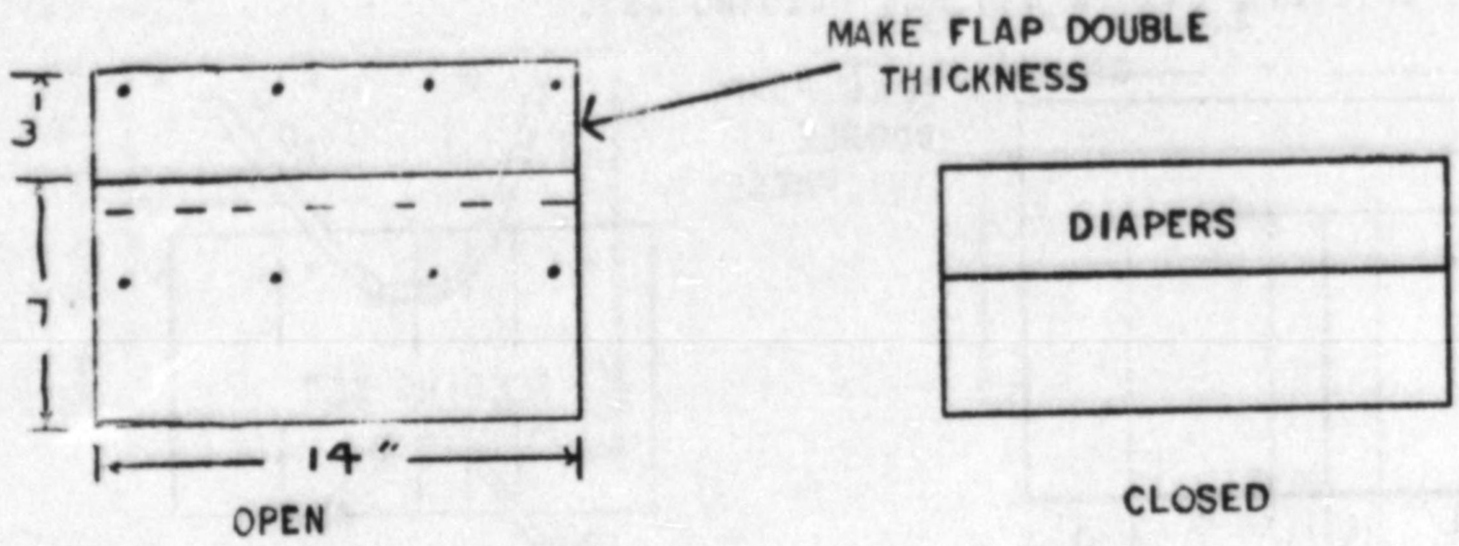


OPEN CLOSED

SHEETS -----8---------- .80

COTTON SHEETING 90" WIDTH ----------@ 0.40 YD
(1 YD. MAKES 4 SHEETS 22" x 34")
SHEETS MAY BE MADE OF FLANNEL OR DIAPER CLOTH.

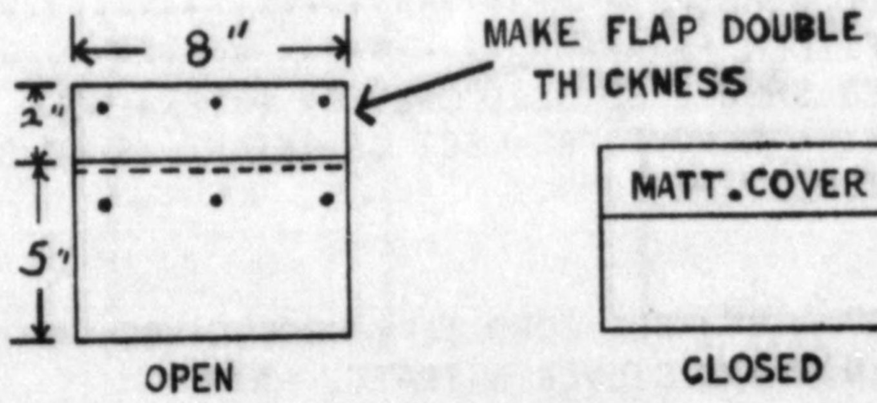
c. ONE ENVELOPE (7" x 14") FOR DIAPERS.



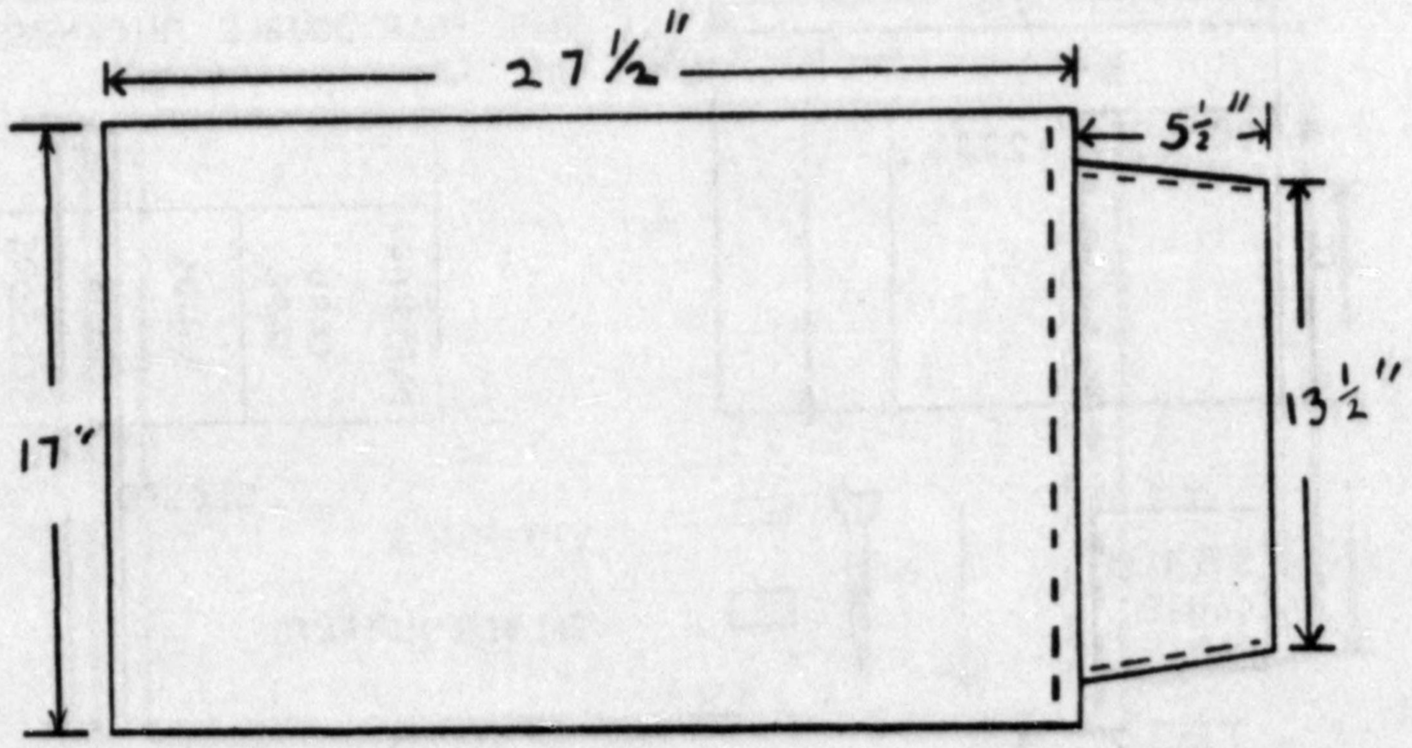
TWELVE DIAPERS -----18" x 18" - 20
IF MADE APPROXIMATELY 18" x 18" FOUR DIAPERS MAY BE MADE OUT OF 1 YD. OF MATERIAL 36" WIDE. FLANNEL OR DIAPER CLOTH MAY BE USED.

FLANNEL --- 36"-----@0.22 ----------	0.66
DIAPER CLOTH ------18" @ 0.12½ ----------	0.75

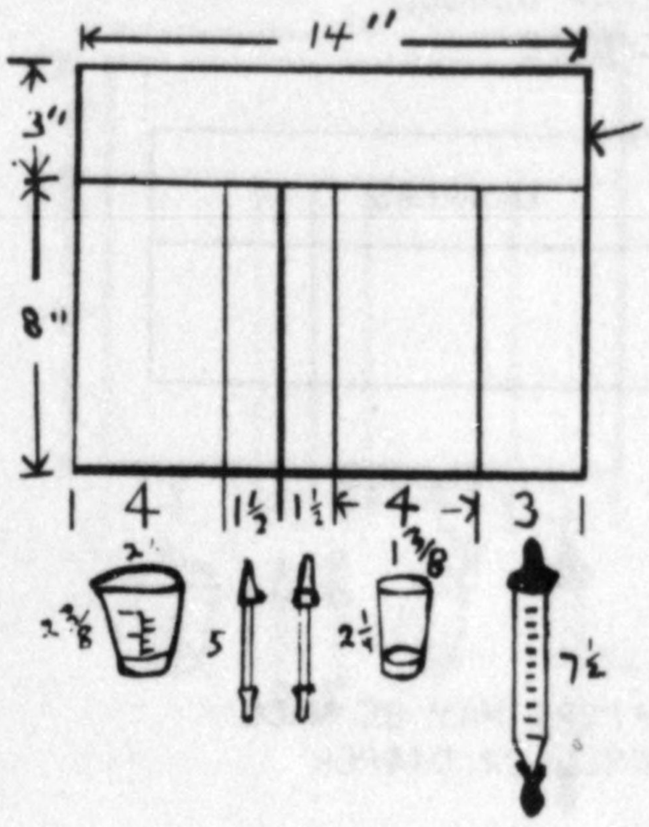
d. ONE ENVELOPE (8" x 5") FOR MATTRESS COVER.



MATTRESS COVER - TRANS-O-SILK ----14" x 28" --#411 ------- 1.50



e. ONE ENVELOPE (14" x 8") FOR FEEDING SET.



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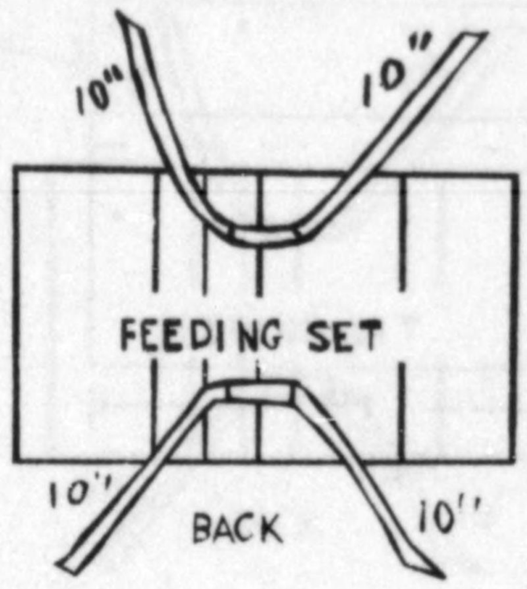


FOLDED

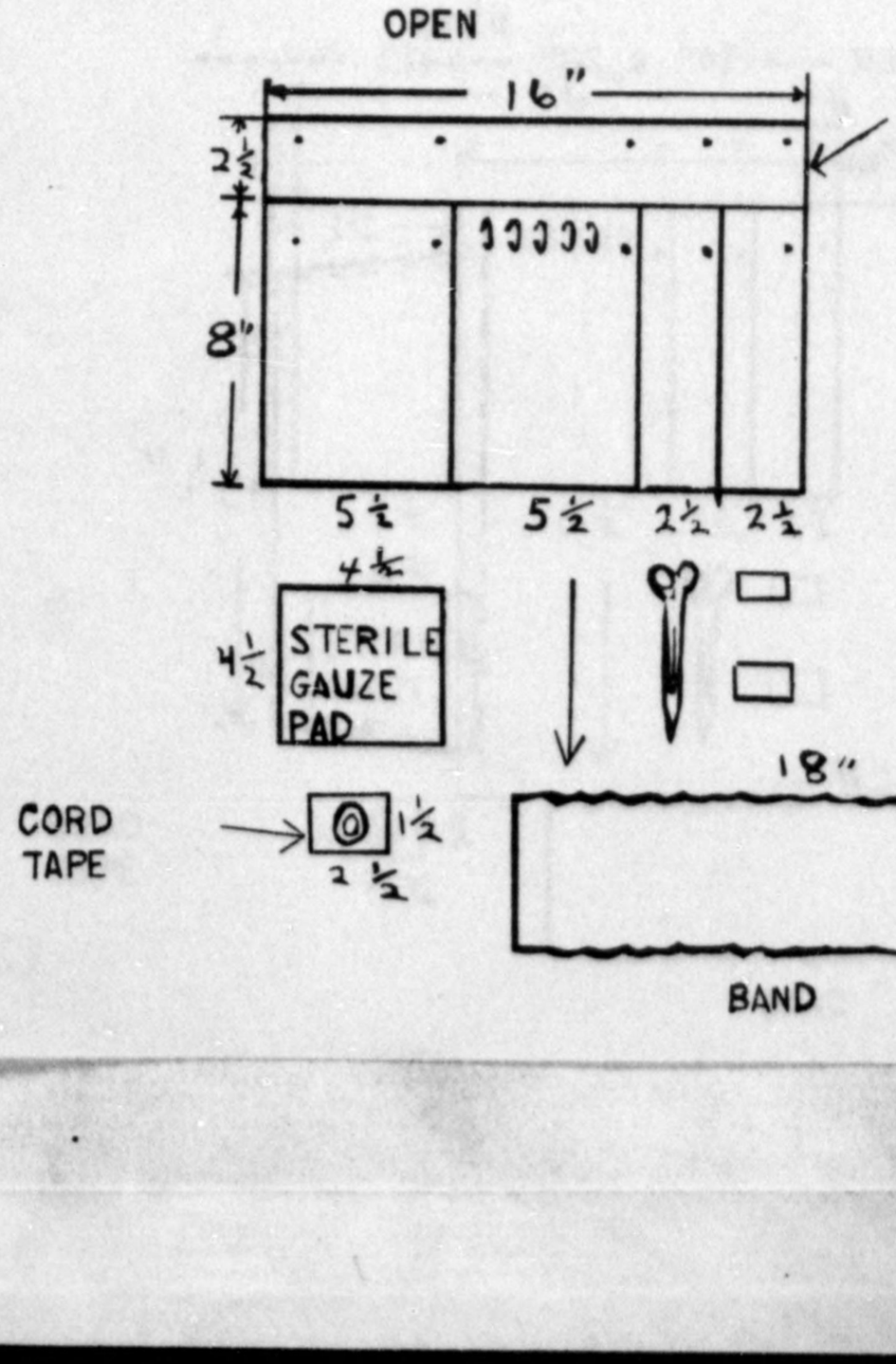
FEEDING SET.

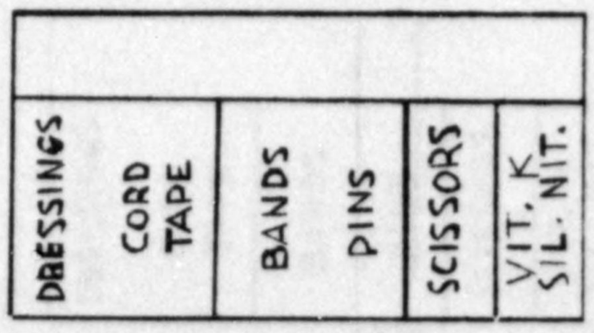
TWO RUBBER TIPPED MEDICINE DROPPERS	@	$ .05	.10
TWO MEDICINE GLASSES	@	.05	.10
ONE BRECK FEEDER			.75

(THIS FEEDER SHOULD BE USED ONLY BY EXPERIENCED INDIVIDUALS -- REMOVE FROM SET IF INFANT IS TO BE FED BY INEXPERIENCED PERSONS.)

f. ONE ENVELOPE (16" x 8") FOR CORD TAPE, DRESSINGS, BANDS, PINS, SCISSORS, VITAMIN K AND SILVER NITRATE.

OPEN





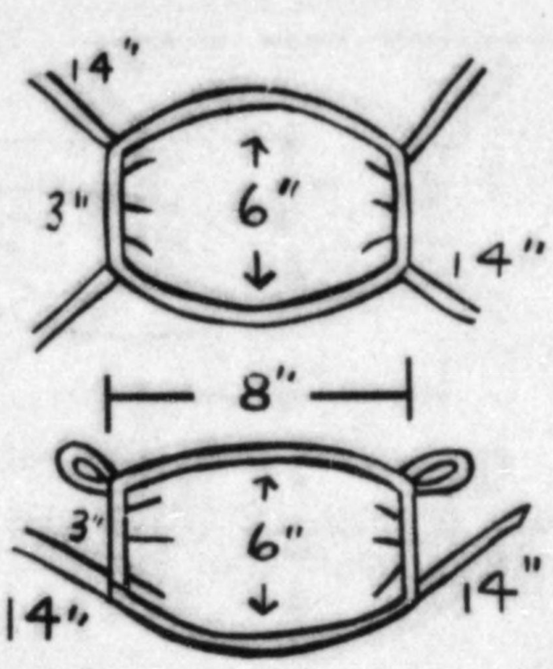
CLOSED

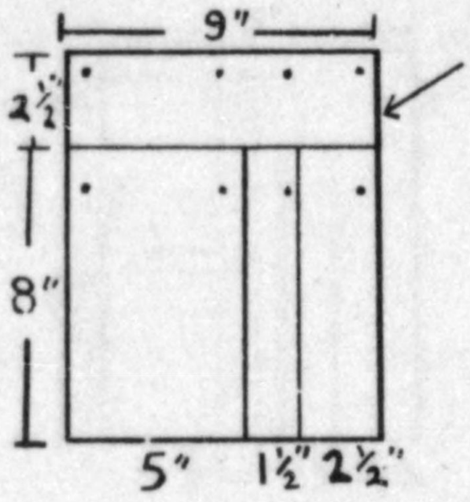
CORD TAPE	.15
12 STERILE CORD DRESSINGS	.16
(STERIGAUZE 4½" x 4½" - 25 PADS PER PKG. @ 32¢)	
SCISSORS--MAYO DISSECTING--5½" STRAIGHT, KLAY-ADAMS	1.87
SILVER NITRATE--FURNISHED BY THE STATE HEALTH DEPARTMENT.	
BANDS - 3 or 6 ---- ½ YD. FLANNEL ----------@ .20	.10

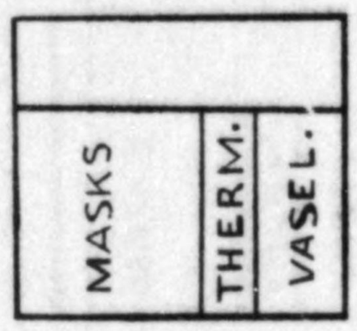
g. ONE ENVELOPE (8" x 9") FOR MASKS, THERMOMETER, AND VASELINE OR K-Y JELLY.

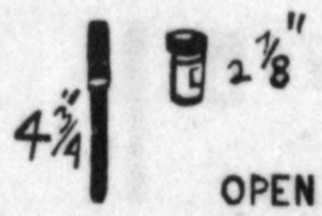
THERMOMETER - RECTAL	.60
VASELINE - SMALL JAR	.05

MAKE FLAP DOUBLE THICKNESS









OPEN

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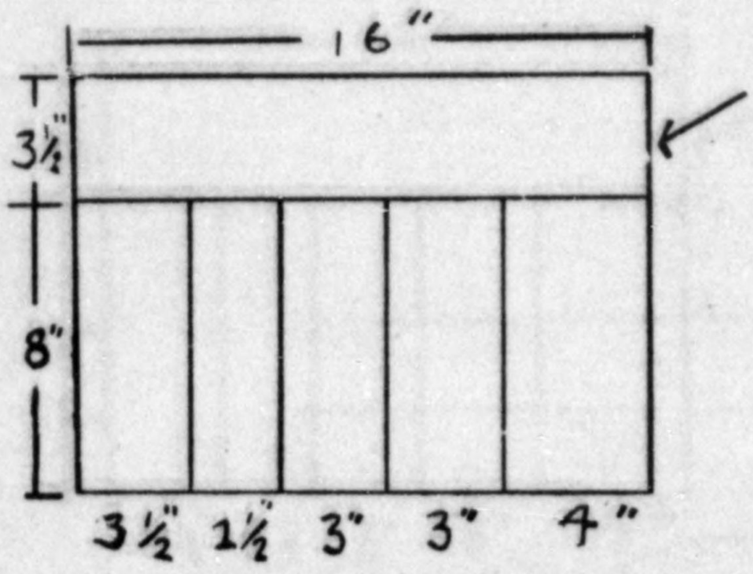
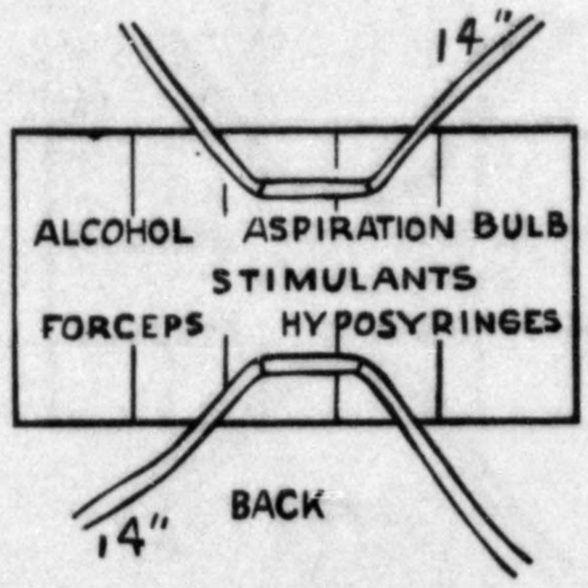
h. ONE ENVELOPE (8" x 16") FOR ALCOHOL, ASPIRATION BULB, STIMULANTS, FORCEPS AND HYPOSYRINGES.

MAKE FLAP DOUBLE THICKNESS





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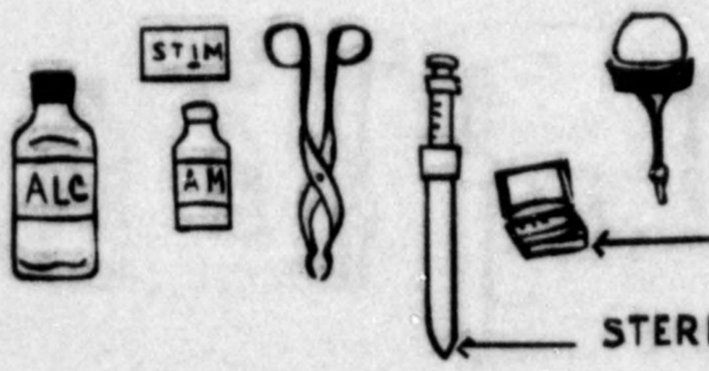


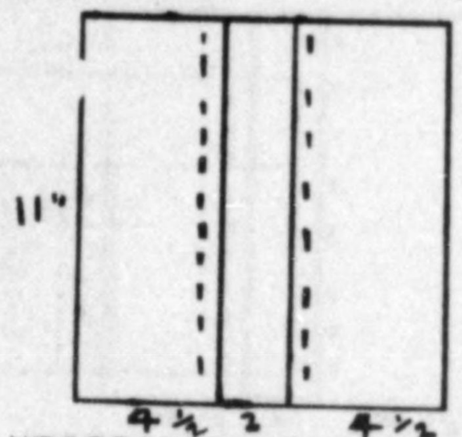
SYRINGE IN BAKELITE CASE O2Y B. D.

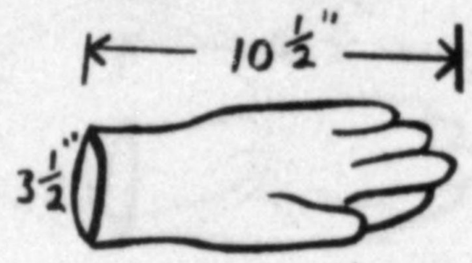
STERITUBE 302 L B. D.

FRONT

ASPIRATION BULB -------HEIN #67 ---------- .60
ALCOHOL---------- .15
STIMULANTS ---------- .56
SPIRITS OF AMMONIA ----1 OZ ---------- 0.10
2 AMPOULES ADRENALINE ---------- 0.20
2 AMPOULES CAFFEINE SOD. BENZ. ---------- 0.26
1 BAKELITE CASE ----------B-D #02Y---------1 HYPO SYRINGE -
AND 2 NEEDLES ---------- .90
1 STERITUBE 302 L B - D ---------- 1.32
1 PAIR FORCEPS - OBTAINABLE FROM A DIME STORE ---------- .10
VITAMIN K ---------1 AMPOULE AND 1 CAPSULE (1 MGM. EACH)

1. TWO ENVELOPES (11" x 11") FOR TWO PAIR OF RUBBER GLOVES.
(THESE ARE TO BE WRAPPED IN TWO THICKNESS OF UNBLEACHED MUSLIN
BEFORE STERILIZATION)
RUBBER GLOVES ------2 PAIR ---------- 0.25 .50





SURGICAL GLOVES

j. WRAPPINGS FOR PHYSICIANS AND NURSES GOWNS. MAKE DOUBLE THICKNESS (24" X 2 3").
PATTERN FOR GOWNS IS OBTAINABLE FROM THE STATE DEPARTMENT OF
HEALTH.

FRONT

BACK

(SCALE = 1/27 ACTUAL SIZE)

4. ONE PACKAGE OF STERILE COTTON ---------- .10

5. ONE STERNO OUTFIT ---------- .25

PACKED

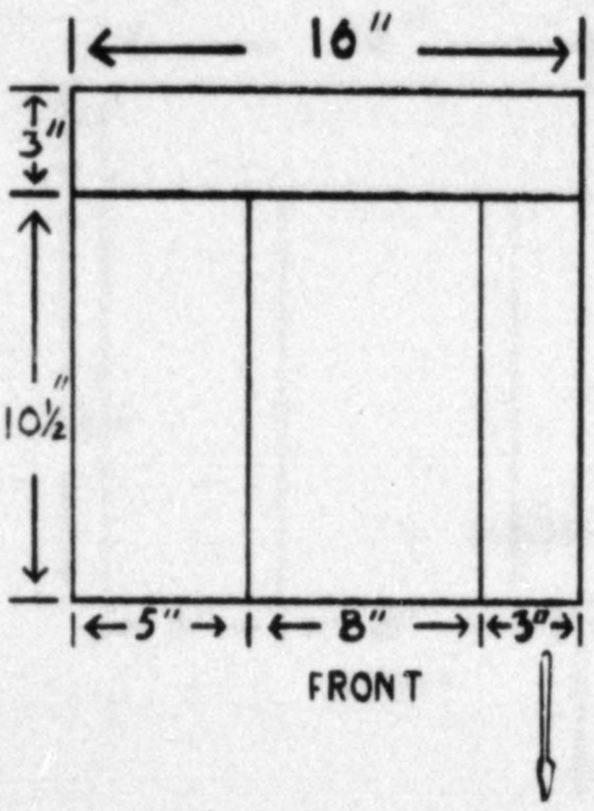
SET UP

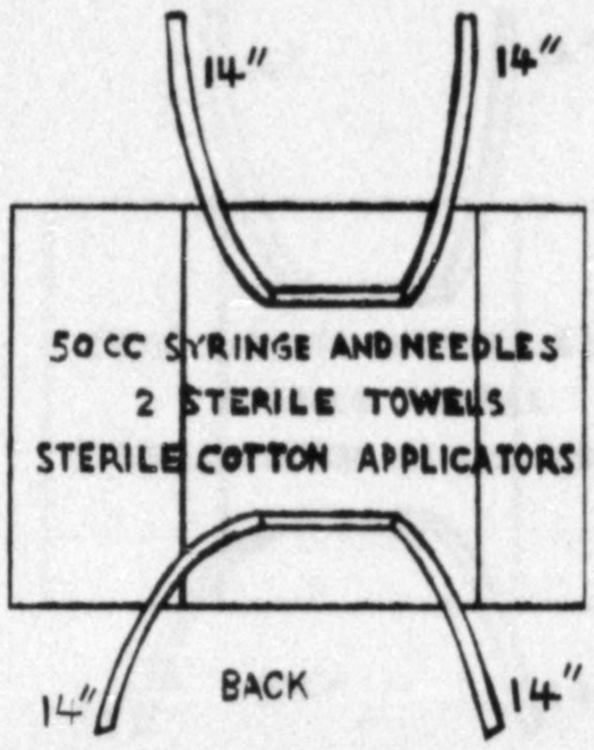
EXTINGUISHER

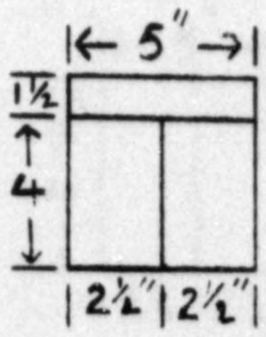
TOTAL COST ---------- 17.94

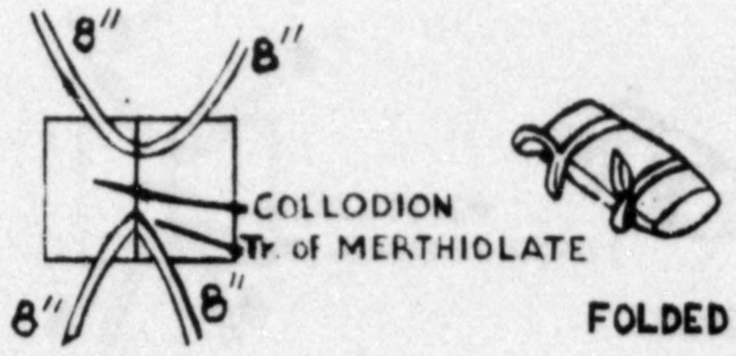
ADDITIONAL EQUIPMENT ADVISED FOR GIVING SUBCUTANEOUS FLUIDS:

SALINE SOLUTION ---------- 500 CC ----------	0.29
1 50 CC SYRINGE B-D ----------	4.00
2 NEEDLES ---------- 1 ½ - 2" ---------- B-D ----------	.34
2 STERILE TOWELS ----------	.30
1 OZ BOTTLE TR. OF MERTHIOLATE ----------	.25
OR 1 OZ BOTTLE 3½% TR. IODINE	
1 OZ BOTTLE FLEXIBLE COLLODION ----------	.14
STERILE COTTON APPLICATORS ----------	.10
TOTAL COST ----------	23.36









ALABAMA STATE DEPARTMENT OF HEALTH

BUREAU OF MATERNAL AND CHILD HEALTH

DIVISION OF CHILD HYGIENE

MONTGOMERY, ALABAMA

5/10/'42

B3

The Premature Infant in the Public Health Program*

ETHEL C. DUNHAM, M.D.†
WASHINGTON, D. C.
AND
FRANCES C. ROTHERT, M.D.†
NEW ORLEANS, LA.

FURTHER reduction of infant mortality depends largely on reduction of neonatal mortality which in turn entails a great reduction in the number of premature births and of deaths of infants prematurely born. These interested in making special efforts towards these goals now have several advantages. On the side of prevention the public has been educated to a wider appreciation of the value of prenatal care in relieving certain maternal conditions underlying premature birth and there has been a greater extension of such care through public health programs. On the side of saving the lives of prematurely-born infants, most of the measures used to reduce infant and neonatal deaths tend to reduce deaths from premature birth and in addition the technique of care of these infants has been improved and new methods of care have been developed.

There exist, however, certain handicaps with which public health departments—physicians, nurses, social workers, and nutritionists—are confronted in developing and extending their work in the field of prematurity. Some of the principal handicaps are: We do not know the cause of premature birth in about half of the cases in which it occurs; among the cases in which the cause is known are a good number of conditions that we do not know how to prevent; usually we cannot predict a premature birth; and, finally, we are limited in our knowledge as to the best methods of care for infants prematurely born.

In spite of these handicaps definite progress has been made in recent years. In this connection the development of the present programs will be discussed and some plans for future developments will be outlined. We shall try to give you both a public health and a clinical perspective, hoping that in this way you may go on with even more interest and vigor to tackle this serious problem of premature birth.

Data in regard to morbidity and mortality from premature birth have been and still are somewhat meager. Less than ten years ago very few hospitals kept statistics in regard to premature infants. Recognizing the need for such basic information the Children's Bureau in 1934 sent out a member of the medical staff, a pediatrician, who visited more than 100 hospitals scattered throughout the United States. Only four or five of them were found to have statistical data as to the results of care of premature infants. Methods of care of premature infants are developed and tested in hospitals which are research institutions; obviously analyses of results of various methods of care must be made and if proved to be effective can then be released for the use of professional workers. There were, of course, a few centers at this time where these contributions were being made.

The information obtained revealed a lack of uniformity in defining premature birth in a way that is basic for statistical analysis. The Academy of Pediatrics now recommends that all infants born alive who weigh less than 2500 grams (5 lbs. 8 ozs.), regardless of period of gestation and regardless of how short a time they live, shall be included in reports as premature. The next step was to recommend reporting of births and deaths of premature infants in certain birth-weight groups because the mortality of these infants bears such a close relation to their birth weight. In addition, for reporting mortality, uniform age periods should be used such as are used in reporting neonatal mortality.

With establishment of definitions and standards numerous reports of hospital statistics have appeared in medical literature which show that even under favorable conditions more than

*Read at the annual meetings of the Louisiana Association of Public Health Workers, New Orleans, La., December 10, 1940, and the Mississippi Public Health Association, Jackson, Miss., December 11, 1940.

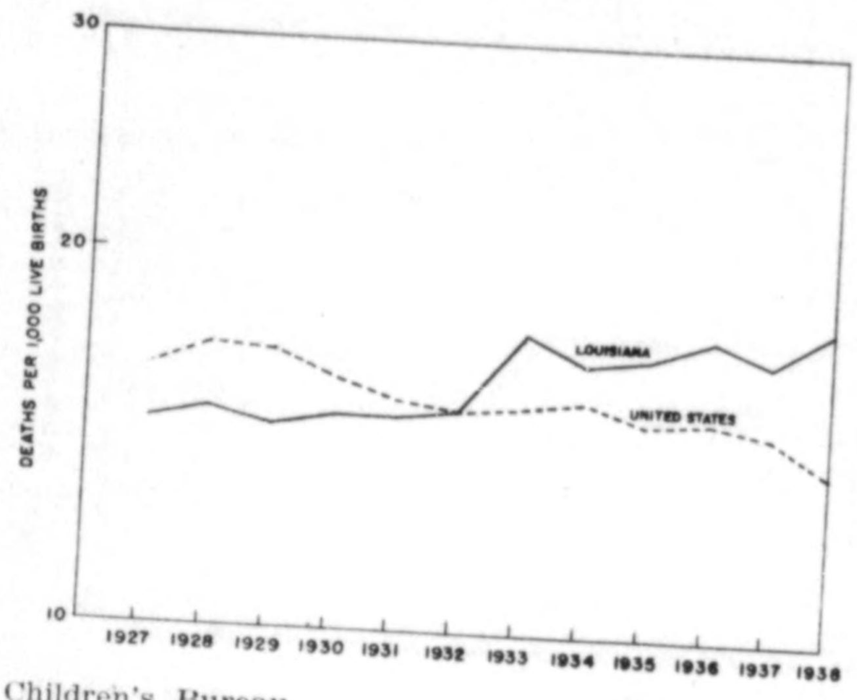
†From the Children's Bureau, United States Department of Labor.

85 per cent of premature infants weighing less than 2 lbs. at birth die but that only about 6 to 14 per cent of those weighing between 5 and 5½ lbs. die.

Since nationwide mortality rates from premature birth under 1 month had not been published the Children's Bureau sent clerks to the Bureau of the Census and obtained data from which tables and charts were prepared for distribution. We now have for the United States the trend of the mortality rate from premature birth under one month for each year from 1915 to 1938 and only since 1936 has it shown a definite downward trend (from 15.1 per 1000 live births in 1936 to 13.8 in 1938, a decrease of about 9 per cent). Figure, I, showing the trends from 1927 to 1938 for the United States and for Louisiana, reveals that the mortality rate for Louisiana was high in 1938—18.2 per 1000 live births—and that it appears to be increasing, although this may be partly a matter of better reporting. Figure 2 shows that 47 per cent of the deaths under one month in both the United States as a whole and in Louisiana are reported to be due to premature birth.

Figure 1

TREND OF MORTALITY FROM PREMATURE BIRTH IN THE FIRST MONTH OF LIFE, LOUISIANA AND UNITED STATES, 1927-1938



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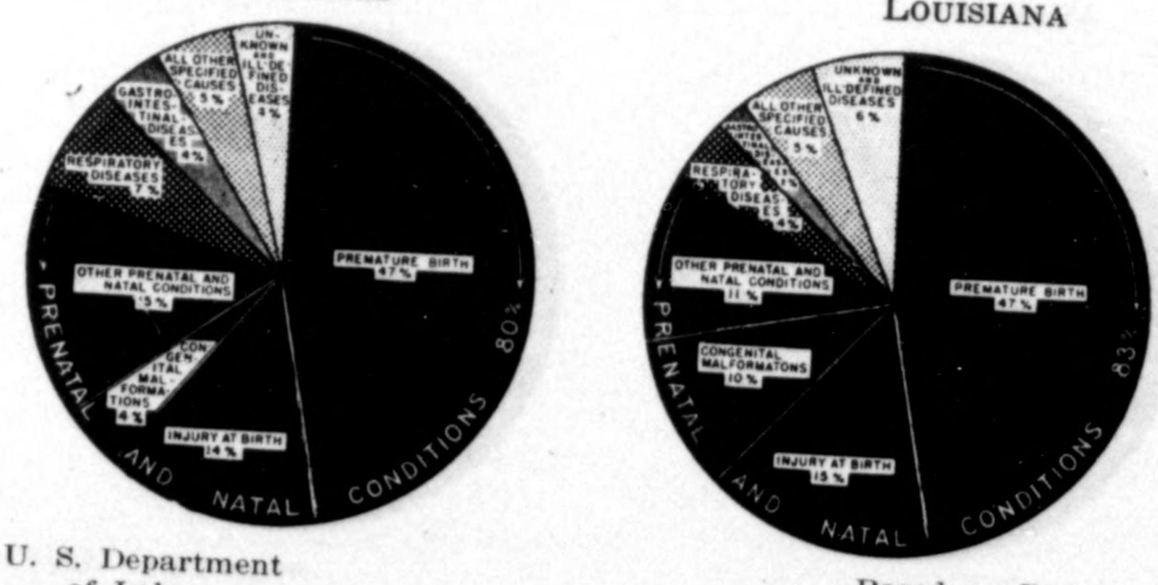
The accumulated evidence shows that without question premature birth is today a real public health problem in the United States and especially in Louisiana. It is clear that it is important to develop further programs to extend and improve prenatal care and to extend and improve care of individual premature infants in hospitals and homes. With the willing acceptance of this burden by health departments (latest reports to the Children's Bureau show that 23 states, the District of Columbia, and Hawaii have some plan) the demand for information in regard to prevention and care increased greatly. In response to this demand the reports of authorities in the field were studied by the Children's Bureau staff and an extensive bibliography was prepared and

Figure 2

CAUSES OF NEONATAL MORTALITY, 1938



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made available in mimeographed form. In addition, that section of infant care which gives instructions to the mother about caring for her premature infant until she can secure medical and nursing advice and to help her in following this advice was rewritten and amplified and is undergoing further revision at the present time.

While these efforts were being made to meet one aspect of the problem it was evident that knowledge along certain lines was inadequate and that in some areas there was little or no scientific basis for certain procedures used in care of premature infants. Although the basic principles of care of premature infants are well known, namely, to keep the infant warm, to feed him properly, and to protect him from infection, the best methods for carrying out these principles are not established or if established are somewhat difficult of attainment.

With a view to testing various methods of care and with the hope that possibly some new and more adequate methods of care of premature infants might be developed, the Children's Bureau, in co-operation with several medical school hospitals has made and is making studies to test various methods of care and to develop new and more adequate methods, if possible.

Feeding of Premature Infants

Studies are being made at New York Hospital in which small premature infants are put in a metabolic chamber with a glass top. The infants can be observed for several hours a day without being upset in any way. These studies require the time of a specially trained physician to supervise the experiments and two specially trained nurses who weigh and feed the infant before the test, watch him and collect the urine and feces during the test, and weigh him and feed him after the test. Finally the studies require the services of a technician who makes the chemical analyses of the air collected from inside the chamber and of the urine and feces of the infant. As a result of these studies it has been determined that the premature infant requires no more than 120 calories of food per kilogram of body weight (about 55 calories per pound) to grow satisfactorily after the second week of life and probably requires less during the earlier period; that he will thrive on a relatively low intake of fat (when on cow's milk ½ skimmed milk is satisfactory); that if the fat in the milk is increased beyond this amount to increase the calories in the feeding the premature infant may simply excrete more fat in the stools[2].

Clinical experience has shown that the feeding of the premature infant is not difficult, provided breast milk is available. Nursing at the breast should not be permitted until the sucking and swallowing reflexes have been tested and until regular respiration is well established and any tendency to cyanotic attacks overcome. The milk should be given in small amounts preferably with a medicine dropper with soft rubber tip. Premature babies are usually not given milk until they are at least 18 hours old. It is best not to give even boiled water until after the baby is about 12 hours old. Great caution must be taken to begin with small amounts of water and milk and to increase the amounts very gradually. Mistakes are most often made by increasing feedings too rapidly both in volume and in caloric value in an attempt to make the infant gain weight rapidly. A steady though perhaps slight gain maintained from week to week, without vomiting or frequency of stools, is the desired goal. It is important to maintain the mother's supply of milk. This is made difficult, however, by the fact that she often leaves the hospital before her baby can be taken home.

The Children's Bureau is now co-operating in an analysis of clinical records of premature infants cared for in the past 7 years in two university hospitals with a view to determining the effect of human milk compared with cow's milk feeding on the growth and nutrition of these infants.

Clinical observations have shown that premature infants will thrive on cow's milk mixtures provided the milk is boiled and carbohydrate (5 to 10 per cent) added. Partial skimming of the milk appears to increase its utilization by the premature infant.

Data on the optimum requirements of the premature infant for various vitamins are very meager. There is nearly general agreement, however, that the needs are greater than those of the full-term infant. Even those infants who receive breast milk may lack certain vitamins entirely or obtain certain ones in inadequate amounts. The physician will have to decide on the amounts of each vitamin that he considers optimum for the infant according to standards

2. Clinical Problems in the Newborn Infant, by Harry H. Gordon, M.D., pp. 2 and 4. The Connecticutt State Medical Journal, Vol. IV, No. 4 (April 1940).

that are available and order it to be given in such form that the infant will receive this optimum at the age at which it is required. For example, the need of the premature infant for vitamin C in adequate dosage is well recognized. The infant must take about 2 ounces of orange juice a day to obtain 25 mgm. of vitamin C. It is obvious that small premature infants in order to take the required amount must be given orange juice in divided doses in the milk or in the form of ascorbic acid. The premature infant's need for vitamin D has been estimated as at least 2 or 3 times that of the full-term infant. To administer this vitamin as cod liver oil in full dosage at an early age to very small infants has obvious disadvantages from the point of view of volume and the danger of aspiration of oil resulting often in pneumonia. A concentrate of vitamin D that contains vitamin A also should be given at the beginning of the second week of life.

Regulation of Body Temperature

Several years ago Blackfan and Yaglou[3] reported the results of studies which showed that optimum environmental conditions for premature infants are a temperature of 75 to 100 degrees F. with a relative humidity of about 65 per cent. The Children's Bureau is co-operating in further research in this field, the results of which are not yet ready for publication.

In co-operation with the Bureau of Standards a study of 12 different types of incubators and cribs has been made to determine their efficiency and safety. The report of this study with tentative specifications has been recently published[4] and will, therefore, not be discussed here in detail. It should be pointed out, however, that it is important that the infant's face and upper chest should be clearly visible at all times. The source of heat should be placed so that it will warm the baby most efficiently. The temperature should be controlled in order to maintain the infant's temperature at as nearly a constant point as possible. Thermostats should be used with electric apparatus and simpler devices for non-electric heaters are possible to make. Studies in progress at the Children's Hospital in Boston make it appear that the maintenance of a stable temperature is more important than the actual level maintained. A word of caution should be given here. The incubator temperature should be gradually increased to a point at which the infant's temperature will not go above that desired. At least 1- or 2-hour readings of the infant's temperature (rectal or axillary) and of the incubator temperature should be made until satisfactory relationships are established.

The spontaneous activity of the premature infant should be restricted as little as is compatible with keeping him warm. He moves about in the uterus after the fifth month and is prepared to do so after birth. Observed activity of small premature infants lying naked in incubators is the basis for specifying a space of 9 inches from mattress to cover, a space greater than was available in several of the incubators tested. If circumstances make clothing necessary a one-piece wadded jacket or soft flannel gown may be used. Pads of cotton or disposalable tissue covered with gauze may be placed so as to absorb urine and catch stools. Blankets should not be wrapped tightly and should be light weight.

Prevention of Infection

This brings us to consideration of the last principle of care, namely, the prevention of infection. Infection may be prenatal, intrapartum, or postnatal. Syphilis is the commonest form of prenatal infection and is responsible for a large proportion of premature births (both live births and stillbirths). Fortunately, it is a preventable cause of premature birth if specific treatment is given before the fifth month of pregnancy. Postnatal infection is usually acquired through the cord stump, the skin, or the respiratory tract. With the exception of so-called epidemic diarrhea of newborn infants the etiology of which is unknown gastro-intestinal tract infections are usually secondary to infections elsewhere. To avoid infection handle the infant as you would a sterile package in the operating room; do not bathe him or rub his skin, and treat the cord dressing as instructed by the attending physician. No one should enter the room in which a premature infant is being cared for except the physicians and nurses, and no one with a respiratory infection should attend the premature infant.

Prognosis for Premature Infants

Special studies have shown that at least 5

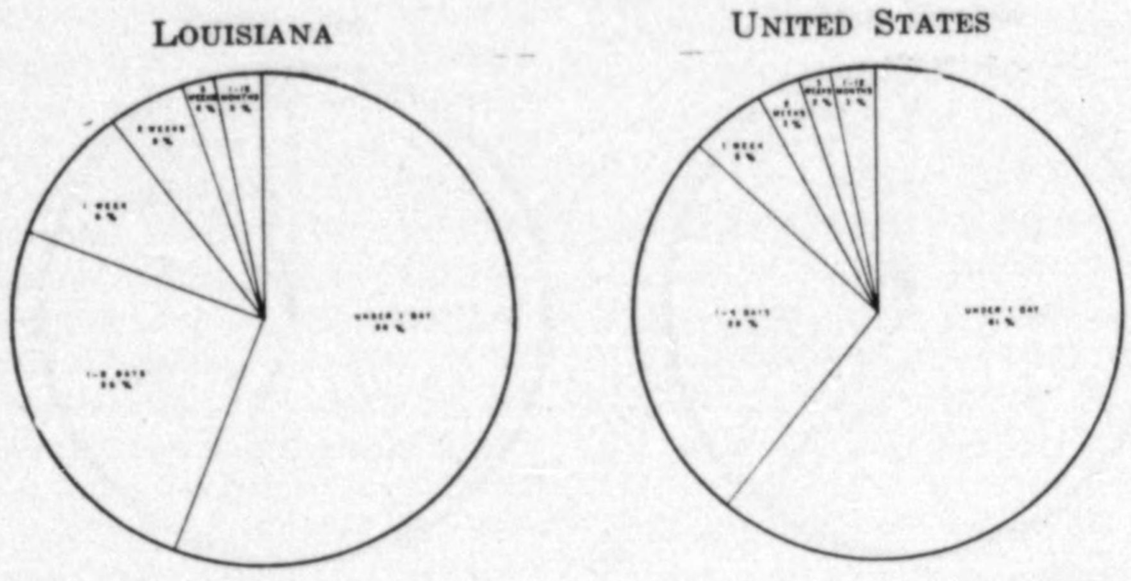
3. The Premature Infant, by Kenneth D. Blackfan and Constantin P. Yaglou, p. 1233, American Journal of Diseases of Children, Vol. 46, No. 5 (Nov. 1933).

4. Incubators for Premature Infants, by Ethel C. Dunham, H. C. Dickinson, Grace J. Gowens, and Juanita Witters, p. 1415, American Journal of Public Health, Vol. 30, No. 12, (Dec. 1940).

per cent of all infants born are born prematurely. This means that in the United States in 1938 more than 114,000 infants were born prematurely. In the same year more than 31,000 neonatal deaths were reported by the United States Bureau of the Census as directly due to premature birth. Sixty-one per cent of deaths of infants from prematurity occurred on the first day of life, 26 per cent from 1 to 6 days, and only 13 per cent between the end of the first week and the end of the first year (Fig. 3).

Figure 3

AGE AT DEATH OF INFANTS THAT DIED FROM PREMATURE BIRTH, 1938



U. S. Department of Labor Children's Bureau

Based on Reports of U. S. Bureau of the Census

Studies of results of hospital care of premature infants show that mortality is inversely proportional to birth weight. Hess reports that of 1499 premature infants weighing less than 2500 gms. (5 lbs. 8 ozs.) on admission to the Sarah Morris Hospital, 87 per cent of those who weighed between 2000 and 2500 gms. (about 4½ to 5½ lbs.) were "graduated"; 75% of those between 1500 and 2000 gms. (about 3¼ to 4½ lbs.); 43% of those between 1000 and 1500 gms. (about 2¼ to 3¼ lbs.); and that only 16% of those weighing less than 1000 gms. (about 2¼ lbs.) at birth survived[5].

The chief causes of deaths of premature infants in order of frequency, as shown by Potter and Adair, are hemorrhage, anoxemia, malformation, and infections[6]. Birth injury, largely intracranial hemorrhage, is a well-known cause of physical and mental disability in premature infants who survive.

The prognosis for the mental development of premature infants is naturally a matter of concern to all who are interested in programs to improve their care. Benton has recently made a comprehensive review of this subject[7]. He points out there is a wide variation in the quality of the contributions as well as in the conclusions reached. He states, however, that all of the investigations with two exceptions indicate that prematurely born children show developmental retardation during the first 2 years of life. Mohr and Bartelme reported that if allowance is made for the degree of prematurity no reliable difference between the mental growth of premature infants and that of their full-term siblings was found; that there was no significant relationship between birth weight and intelligence; and that the

5. The Physical and Mental Growth of Prematurely Born Children, by Julius H. Hess, George J. Mohr, and Phyllis F. Bartelme, p. 15. University of Chicago Press, Chicago, 1934.

6. Fetal and Neonatal Death, by Edith L. Potter and Fred L. Adair, p. 16. University of Chicago Press, Chicago, 1940.

7. Mental Development of Prematurely Born, by Arthur L. Benton, American Journal of Orthopsychiatry, Vol. 10, No. 4 (Oct. 1940), pp. 719-746.

children who had suffered intracranial hemorrhage at birth tended to be retarded[8]. This study was based on 250 white children weighing less than 2500 grams (5 lbs. 8 ozs.) at birth and is cited by Benton as of special value because consideration was given to the socioeconomic status of the children, objective test scales were used for the estimation of the intelligence of the children, and a control group was investigated. Benton refers also to the work of Gesell who has reported detailed studies of the behavioral development of several prematurely born infants (born after a gestation period of less than normal) whom he followed over a period of several years. He found that "present data, though scanty and sometimes contradictory, indicate that prematurity of birth in itself does not markedly distort, hasten, or retard the course of mental development, when the age of the infant is reckoned from conception[9]."

Reduction of Mortality from Premature Birth

Hess reports that among infants cared for in the Sarah Morris Hospital there was a decreasing mortality from 1922 to 1933, both among infants born at home and born in hospitals. This reduction of mortality he ascribes to several factors—to education of physicians and parents to advantages offered by the Premature Infant Station, to the increased number of infants sent to the station within the first 24 hours after birth, and to improved facilities for transporting the infants to the station[10].

Stoesser, after instituting a new program for caring for premature infants at the Minneapolis General Hospital, reported lowering of mortality rates. During a four-year period (July 1930 to July 1934), in which isolation technique and a definite feeding program was established, the mortality rate dropped from 61 to 33 per cent; during the next four-year period (July 1934 to July 1938), in which special emphasis was placed on resuscitation, the mortality rate dropped from 27 to 19 per cent[11].

The city-wide plan for care of premature infants that has been in operation in Chicago for about 5 years has resulted in a 31% reduction in the neonatal mortality rate from premature birth[12].

During the past 5 years state health departments have begun to take steps to reduce mortality from premature birth. According to the most recent reports received by the Children's Bureau 28 states, the District of Columbia, and Hawaii have already made or plan to make special provisions for the care of infants as a part of the work of their maternal and child health divisions.

A State-Wide Program for Improving the Care of Premature Infants

To be effective a state-wide or even local program for the care of premature infants should be a joint endeavor of state and local health departments, hospitals, and practicing physicians. The various parts of the program must be correlated by joint planning and by frequent meetings of the representatives of these groups. Each has an important part to play.

The hospitals need to be sure that they have the facilities and are using the techniques necessary for the proper care of premature infants born within their walls and those who might be brought in for care after being born elsewhere. In some states certain of the larger hospitals with a sufficient volume of work, adequate staff and equipment, and sufficiently perfected techniques might assist the health departments and smaller hospitals by giving short intensive courses in the care of premature infants for nurses or even for physicians. The health departments might assist some of the hospitals by furnishing expert consultants, by making available special equipment by loan, and in certain instances affording opportunities for some of the nursing staff to attend courses in the care of premature infants. It is the responsibility of the hospitals to report promptly to the local health departments when a premature infant is born or is admitted to that hospital so that the public health nurse may make immediate contact with the physician and may begin teaching the mother

8. The Physical and Mental Growth of Prematurely Born Children, by Hess, Mohr and Bartelme. For reference, see above, footnote 5, p. 9.

9. The Mental Growth of Prematurely Born Infants, by Arnold Gesell, p. 680. The Journal of Pediatrics, Vol. 2, No. 6 (June 1933).

10. The Physical and Mental Growth of Prematurely Born Children, by Hess, Mohr and Bartelme, pp. 12 and 13. See footnote 5, p. 9.

11. Reducing Premature Infant Mortality — With Special Emphasis on Resuscitation, by Albert V. Stoesser, Journal-Lancet, Vol. 59, No. 5 (May 1939), pp. 236-241.

12. Personal communication to the authors from H. N. Bundeson, M.D.

how to follow the physician's instructions as to care for the baby as soon as it is feasible. Whether the teaching while the mother is still in the hospital is to be given by the hospital or health department nursing staff must be decided. If it is to be given by the hospital staff the correlation of teaching in the hospital and in the home must be worked out. Opportunity should be given for at least one visit in the home by the public health nurse before the infant is sent home from the hospital and for any arrangements that might be necessary with welfare agencies. Hospitals may serve as educational centers for physicians in the care of premature infants by means of discussion of this subject at staff meetings.

The State Health Department also may contribute to keeping practicing physicians up-to-date in this phase of pediatrics by making sure that the subject is treated in extramural refresher courses; by seeing that articles dealing with the care of premature infants, or arousing interest in them, are provided for medical journals; and by distributing reprints of articles and other available literature. This is an important subject for the joint consideration of the health department's obstetric and pediatric advisory committees. Methods and techniques of providing care for premature infants should have an important place in staff educational projects for both state and local personnel, and the field staff of the divisions of maternal and child health, of public health nursing, and of engineering, can be particularly helpful to local workers. Heated beds or boxes for premature infants, or plans for making them, may well be furnished by the State Health Department, perhaps even a choice of several varieties that may be useful under different conditions.

The local health officer may be instrumental in securing places on the programs of local medical meetings for discussion of the care of premature infants. It may often be necessary for the health officer to provide consultation on their care to local physicians, particularly in remote rural areas, and he should fit himself for this responsibility or provide a staff member to meet this need. Or, better still, if a pediatrician is within reach, the health officer may make it possible for this consultation to be available. On him falls the special responsibility for seeing that the care of the premature infant is studied and discussed at local public health staff conferences—and joint discussion by physicians, nurses, and sanitarians should be helpful to all of them. The fact that the premature infant is particularly sensitive to environmental conditions gives the sanitarian a considerable share, both in the discussions with other staff members and in advising and helping the family make the home fit for the premature infant. On the health officer falls the final responsibility for seeing that equipment for the care of the premature infant is always available and in good order. There is no time after the baby is born to ask grocers for boxes or to look for bottles to fill with hot water. Above all, on the local health officer falls the responsibility of seeing that the providing of facilities for proper prenatal care, and for natal and neonatal care, for special care of the premature and for infant and child care, are made available for the people in his jurisdiction, or at least of working unremittingly toward this end.

The responsibility of the public health nurse is a major one. Not only must she know and be able to demonstrate and teach the techniques for the all-important nursing care of premature infants but she must be able to adjust her schedule to make an immediate visit when the birth of a premature infant is reported. She must have her equipment ready at all times—not only the special bed but, for instance, medicine dropper with soft rubber tip for feeding him. On her falls the responsibility for seeing that there is someone in the home at all times who knows how to care for the infant. It is she who may need to mobilize community resources, official and unofficial, to obtain for the family necessary things they may not be able to obtain for themselves. A premature infant is in itself a matter of community interest, but this interest frequently needs to be guided into channels where it can do the most good.

It goes without saying that the whole local health department staff will keep on such terms with practicing physicians that each will use to the fullest extent the services of the other, and will devise mechanisms to make this working together smooth and easy.

A local program for the prevention of deaths from prematurity is made simpler by the fact that the principles of care of the occasional premature infant are essentially the same in kind, if not in degree, as those that govern the care of the everyday full-term infant. Measures directed according to the best of our

present knowledge toward the prevention of prematurity are inherent in an adequate program of prenatal care—at which we have long aimed even if we still have not provided it everywhere. Many mothers are already receiving adequate delivery care and our intentions for the not-too-distant future include this service for all mothers. Although it is imperative for a premature infant to have an immediate visit from the public health nurse, we are beginning to feel that a visit within the first 48 hours is almost a right of every newborn infant, and that the nurse's schedule should be sufficiently flexible to allow for it.

The special bed provided for premature infants by many state and local health departments has not only served to dramatize the fact that the tiny premature infant should be kept at an even temperature and should be protected from infection and from unnecessary handling, but has also provided in a measure for these needs. In the same way a scientific, thorough, and well-integrated public health program for the care of premature infants may be expected not only to save the lives of many of these tiniest persons but to point up principles and strengthen public health mechanisms that should save the lives of many full-term newborn babies and of their mothers as well.

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U.S. Department of Labor
From THE MISSISSIPPI DOCTOR
April, 1941; pp. 626-633

Out of Babyhood Into Childhood

UNITED STATES DEPARTMENT OF LABOR
Frances Perkins, Secretary
CHILDREN'S BUREAU — Katharine F. Lenroot, Chief
C. B. Folder 10
1943

Reprinted by the Iowa State Department of Health, January, 1947

NO LONGER A BABY

When your child begins to walk and talk he is no longer a baby. He still needs you to do a great many things for him, but every day he is doing more and more for himself. Help him to grow up by letting him do as many things as he can. Let him do a new thing just as soon as he shows that he wants to try it.

Between the first and sixth birthdays a child grows up so fast, not only in size but also in understanding and ability, that it is hard for his parents to keep up with him.

During these years the child needs to learn many things.—Remember that he is learning, and do not be impatient with him when he makes mistakes. Help him learn to do things the right way. Do not laugh one day at something he does and then scold him for the same thing the next day, so that he is not sure whether or not you wish him to do it.

Always treat your child honestly.—It is the only way he will learn to be honest himself. Do not leave him with the promise that you will be back soon unless you intend to *be* back soon. He will learn to be truthful by copying you. Try to set him an example that will please you when you see him follow it.

Are You Helping Your Child to Grow Up?

FOODS THAT CHILDREN NEED AFTER THE FIRST YEAR

Milk.—One and one-half pints to a quart a day.

Fruit.—Oranges, grapefruit, or raw or canned tomatoes (or their juice) every day. Other raw or cooked fruit at least once a day.

Vegetables.—A serving of potatoes and at least one other vegetable daily (green or yellow vegetables often).

Eggs.—One egg daily or at least five times a week.

Lean meat, liver, fish or poultry.—Once a day, or at least three times a week. Cheese, dried beans, or dried peas may be used occasionally in place of meat.

Bread, whole-grain or enriched.—Two or more servings a day. (Enriched bread contains more vitamins and minerals than other white bread.)

Cereal, whole-grain or restored.—One or two servings a day. (Restored cereals contain more vitamins and minerals than other refined cereals.)

Butter, or margarine with added vitamin A.—Two or three times a day.

Cod-liver oil (or other source of vitamins A and D).—About 2 teaspoonfuls of cod-liver oil or its equivalent daily during the child's second year. After that ask the doctor. (See Substitutes for the Sun, Children's Bureau Folder 25.)

Additional foods to satisfy the child's appetite and provide energy.—Additional portions of the foods listed above, or other foods such as simple desserts. The kinds and amounts of food will differ according to the age and size of the child.

Vary Your Child's Food

NO LONGER A BABY

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Are You Helping Your Child to Grow Up?

FORMING GOOD HABITS

Children, like grown-ups, will repeat a thing that gives them satisfaction and pleasure, and in this way they develop a habit.

Almost every child likes to have grown-ups pay attention to him. Most children will do deliberately the things that make them the center of attention.

It seems strange to many parents, but many a young child enjoys the attention he gets when he is scolded.

He will repeat something for which you have praised him, but also he will repeat something for which you have scolded him. In both cases the child wants your attention, and he seems willing to take either praise or scolding, so long as he gets the attention.

If your child carries his empty bowl to the kitchen and everybody praises him, he will probably do it again willingly and begin to form a good habit.

If he throws his cup of milk on the floor and everybody makes a fuss over this, he will probably do it again in order to enjoy being the center of a fuss.

Try to pay no attention to a child when you want him to forget something that he has done.

Praise him and make him the center of interest when you want him to repeat it.

Parents Should Work Together to Help the Child Form Good Habits

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EATING HABITS

Almost every child will enjoy eating if he is hungry and if the food tastes good.

Of course, if he is sick, or very tired, or upset, he will not be hungry.

Serve meals at regular times, and do not allow nibbling between meals. Some children may need more than three meals a day, but this is different from irregular nibbling.

See that the child has plenty of exercise in the fresh air, and plenty of sleep. Do not expect a child who is tired or angry to eat. Better delay his meal a little until he is rested and quieted.

Children, like grown-ups, are hungrier at some times than at others. Sometimes they want second helpings; sometimes they do not want all that is served them—just like grown people. Give a child small portions so that he can have the satisfaction of emptying his plate; then give him more if he wants it. Never insist that he eat.

Prepare foods so that they are attractive to the child and not too difficult for him to manage. Don't expect him to enjoy lumpy cereal or burned toast or stringy vegetables.

Your child will copy you.—Let him see that you enjoy your food. Eat it all. Praise him when he eats well and say nothing when he does not eat.

Make Mealtimes Happy Times

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Milk.—One and one-half pint

Fruit.—Oranges, grapefruit, o
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Eggs.—One egg daily or at le

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l copy you.—Let him see that you
Eat it all. Praise him when he eats
ing when he does not eat.

Mealtimes Happy Times

FOODS THAT CHILDREN NEED AFTER THE FIRST YEAR

Milk.—One and one-half pints to a quart a day.

Fruit.—Oranges, grapefruit, or raw or canned tomatoes (or their juice) every day. Other raw or cooked fruit at least once a day.

Vegetables.—A serving of potatoes and at least one other vegetable daily (green or yellow vegetables often).

Eggs.—One egg daily or at least five times a week.

Lean meat, liver, fish or poultry.—Once a day, or at least three times a week. Cheese, dried beans, or dried peas may be used occasionally in place of meat.

Bread, whole-grain or enriched.—Two or more servings a day. (Enriched bread contains more vitamins and minerals than other white bread.)

Cereal, whole-grain or restored.—One or two servings a day. (Restored cereals contain more vitamins and minerals than other refined cereals.)

Butter, or margarine with added vitamin A.—Two or three times a day.

Cod-liver oil (or other source of vitamins A and D).—About 2 teaspoonfuls of cod-liver oil or its equivalent daily during the child's second year. After that ask the doctor. (See Substitutes for the Sun, Children's Bureau Folder 25.)

Additional foods to satisfy the child's appetite and provide energy.—Additional portions of the foods listed above, or other foods such as simple desserts. The kinds and amounts of food will differ according to the age and size of the child.

Vary Your Child's Food

SLEEPING

Every little child should—

- Have a long sleep at night. Most little children will sleep 11 or 12 hours.
- Take a nap or rest in bed in the middle of the day—usually 1 or 2 hours.
- Always go to bed at a regular early hour—usually about 6 or 7 in the evening and not much later than 7:30 when 5 or 6 years old.
- Sleep in a bed by himself in a room with plenty of fresh air and no light burning.
- Expect no help in getting to sleep.

Bedtime is more likely to be pleasant if the child is warned in advance that in a few minutes play should be coming to an end because bedtime will soon be here.

When putting the child to bed the mother should have a calm, pleasant, unhurried manner, and it is well to stay for a minute or two for a little chat before the final good night.

CARE OF THE BODY

Every child should—

- Have a daily bath.
- Brush his teeth morning and night.
- Wash his hands before meals.
- Wash his hands after going to the toilet.
- Have his fingernails kept short and cleaned regularly.
- Have his hair washed once a week.

PLANNING THE CLOTHING

When planning a child's clothes ask yourself the following questions:

- Can he play freely in them?
- Are they warm enough but not too warm?
- Do they allow freedom for his body—for growth, circulation of the blood, and muscle activity?
- Do they allow him to stand well?
- Are they put on and taken off easily and managed easily at the toilet?
- Do they wash well and wear well?
- Does the child like them?

Many Lifetime Habits Begin in Childhood

PLAY AND EXERCISE

Active play teaches the child to use his mind and his body. When he runs, climbs, and throws his ball his muscles are growing strong and quick to act. Toys with which the child can do something—balls, blocks, wagons, tools, dishes, dolls, and crayons—are better than toys that he can only watch, such as the ordinary mechanical toy. Large apparatus, such as a seesaw or a short ladder, helps in developing body balance and muscle control. Every child should have a cupboard or shelves where he may keep his toys and other possessions, and a place—at least a corner—where he may play undisturbed.

Through play with others of his own age the child learns to take his part in the game and wait his turn. Every child should have other children to play with.

SUNSHINE

Every child should get plenty of sunshine. In selecting a house where a child is to live choose one, if you can, with a sunny southern exposure and with a sunny porch or yard where a sand box or other play materials can be kept. In the city select, if possible, a home with a park or playground nearby, or a roof made safe for play, or a sunny back yard.

THE HEALTHY CHILD

A healthy child has an alert, contented expression. His skin is smooth and clear, and he has firm, well-developed muscles. He grows taller and gains weight steadily. He is active and is interested in everything. He plays vigorously, creeping, running, jumping, climbing, according to his age. He is often noisy. He is hungry at mealtime, and he sleeps soundly and long. He has no abnormal discharge from eyes, ears, or nose. He breathes with his mouth closed. He does not have pains nor aches.

A Healthy Child Is a Happy Child

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A Healthy Child Is a Happy Child

HOW TO KEEP YOUR CHILD HEALTHY

Take your child for a regular health examination twice a year, or oftener, to a doctor experienced in the care of children.

If your child has not already been vaccinated against smallpox and immunized against diphtheria, ask your doctor to give him these special protections immediately. Inoculation against diphtheria should have been done at 9 months and should be done *again* 3 to 5 years later. Vaccination against smallpox should be done before the child is a year old, and *again* when he is 6 years old. Ask the doctor how to guard him against other diseases.

Take your child to a dentist regularly, twice a year, beginning at the end of the second year.

Keep him away from any sick person, even if the sickness is "only a cold."

Give him enough of the right kind of food.

Be sure that he goes to bed early every night and has a midday nap or rest every day.

Send him outdoors for play and exercise in the sunshine, in a place where he is protected from traffic and other accidents.

Help him to form good habits of eating, sleeping, exercise, and cleanliness.

Weigh him every 2 months until he is 2 years old, then every 4 months till he is 6. Measure his height twice a year. Keep a record of his weight and height. (Blank forms for keeping such records are printed in Children's Bureau Folder 17, "The Healthy, Well-Nourished Child—1 to 6 Years." Write to the Children's Bureau for a copy.)

Are You Doing All This for Your Child?

For sale by Superintendent of Documents, Washington, D. C.
Price, $1.25 per 100 copies

PB-13312—Spl

A New CHALLENGE

Life Conservation Service of the
JOHN HANCOCK MUTUAL LIFE
INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

A New Challenge

NEVER before were physicians so well equipped to treat syphilis and gonorrhea as they are today.

Never before was our country so thoroughly armed with public diagnostic and treatment centers to deal with these diseases.

Never before have so many young men and women been so thoroughly warned against venereal infection.

Never before were there so many health and welfare agencies joined in a determined effort to stamp out syphilis and gonorrhea.

What doctors and health officials need now to finish the job is public understanding and the active support of every single one of us.

Venereal Diseases Can Be Cured

NEW drugs — or combinations of new and old drugs — have put into your doctor's hands the means to cure both syphilis and gonorrhea.

Before the new medical weapons were perfected, the treatment of syphilis called for at least a full year of weekly injections and, for all but the earliest cases, the treatment had to be stretched out for longer periods. Even then cure could not always be assured and ex-patients were kept under observation for years. The treatment of gonorrhea, too, was long-drawn-out and often painful. Despite the best of care then available, the disease frequently developed into a chronic condition in which it became next to impossible to clear up the infection.

EVERY THIRD PERSON WITH UNTREATED SYPHILIS BECOMES A BURDEN ON THE TAXPAYERS, SOONER OR LATER.

Today all this is changed. With the use of "sulfa" drugs or penicillin, gonorrhea can be cured. For syphilis, too, penicillin — alone, or combined with formerly used drugs — is effecting more prompt relief. So we can say truly, never before were physicians so well equipped to treat these two diseases.

Diagnostic and Treatment Facilities

Have Been Set Up

TODAY there are more than three thousand well-equipped, public clinics in the United States. In them, laboratory tests of great reliability are now offered to those who think they may be infected. For recently contracted syphilis a special microscopic examination makes immediate diagnosis possible. The blood tests which the clinics give for longer-established syphilitic infection are the most reliable of all laboratory procedures. For gonorrhea, too, the modern diagnostic tests are of great dependability.

These three thousand clinics now offer their laboratory services to physicians to aid them with the treatment of their private patients, and are open to anyone who desires advice, examination or treatment. In addition to the clinics, the public health authorities have established many new "intensive treatment centers" in the various metropolitan areas of our country. At these centers the newly-perfected, rapid treatment with penicillin — alone or in combination

with other measures — is given to all who need it. So, it is true to say that never before has the country been so thoroughly organized with diagnostic and treatment facilities.

Young Men and Women Know the Dangers of the Venereal Diseases

FIFTEEN million, and more, young men and women inducted into the armed services during World War II were reminded of the dangers of syphilis and gonorrhea. By means of specially prepared pamphlets, and motion pictures, and talks by medical officers and chaplains, the warnings were repeated at intervals throughout their service. More than just the facts about disease was presented, for frequent appeals were made to the soldier's common sense, and his pride in himself, his family, and his country. Though this military program was the most thorough educational plan ever attempted, other health authorities were not idle during the war years, and community agencies throughout the country have continued since then to spread

the word to others not in uniform. What have these millions been told?

Syphilis, Though Curable, is Catching and is Still a Killer

SYPHILIS is a catching disease and there are still millions in the United States who are infected at this moment. The disease is caused by a spiral shaped germ which enters the body usually as a result of sex contact.

One exception is the baby, born of a syphilitic mother, who may be infected before birth. In many states the law requires that physicians take specimens from all pregnant women who come to them for prenatal care, and in those states it is now more difficult to be born with syphilis. But not all expectant mothers are blood tested, and many infants even today are coming into this world infected with the disease. These infected newborn are dangerous to handle, for they have sores in which syphilis germs abound. However, the danger clears up under modern treatment, and the sores will disappear in time without it.

The usual way to catch syphilis is by intimate contact with someone who has the disease. To understand the manner in which infection may be contracted one must know how syphilis behaves in the body. From ten days to a few weeks after a person has been exposed to the disease, a sore — called a chancre — appears usually near the place where the germs entered into the body tissue. The serum oozing from this sore is teeming with germs and terribly infectious. (It is this serum that is used for the special microscopic examinations at the clinics.) If the sore is on the genitals, then the germs from it are transferred during sexual intercourse. If the sore is on the lips or some other exposed part of the body, the disease may be contracted by another person who comes closely in contact with the chancre. Wherever the lesion is located, it is quickly rendered non-infectious by the modern treatment with penicillin.

PROMPT DIAGNOSIS MEANS BETTER CHANCE OF CURE, LESS CHANCE OF SPREADING THE INFECTION.

But even if syphilis is not treated during this first stage — while it is still readily curable — the sore heals in time and the disease passes into a secondary condition, marked by a rash

which may appear anywhere, or everywhere, on the body. Other sores, which also teem with syphilis germs, may appear on the mucous linings or on the sweaty folds of the skin. During this second stage it is highly dangerous to kiss, to sleep with, to have intercourse with, or to come in any intimate contact with the patient.

If treatment is begun, these secondary sores become non-infectious quickly. Even though the condition remains untreated while in this stage, eventually the sores disappear and the disease enters a quiet state that may last for years. Should the disease be neglected until this dormant stage is reached, cure can no longer be assured whether the newer or the older drugs are used in treatment.

During these years the disease may show few outward signs of its presence although there may be occasional skin eruptions or mouth sores. But these are years which are the real danger period to the patient for, unseen and unsuspected, permanent damage is caused by the syphilis germs to the vital organs, the heart and blood vessels or the nerves. Blindness, deafness, or a disease of the brain or spinal cord that leads to insanity and death may be the end result.

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Gonorrhea, Though Curable, is Catching

and is a Crippler

GONORRHEA, too, is a communicable disease but is passed on, generally speaking, in only one way. The germ grows on the mucous lining of the genital organs — and the eye. Except in the rarest of cases, the disease is caught only through sexual intercourse with an infected person. Infection does not occur through the skin, and the disease is not spread through the usual daily contacts with infected people — contrary to gossip. The eyes of babies born of mothers with gonorrhea may become infected at birth, so that is the reason laws have been passed in most states requiring that protective "drops" be placed in the eyes of the newborn.

Modern, intensive treatment which may clear up gonorrhea in a matter of hours requires almost continuous care during the time the

medicine is being given, so people infected by the disease usually remain at public treatment centers, or at their doctor's office, until the cure is completed.

In the Effectiveness of the New

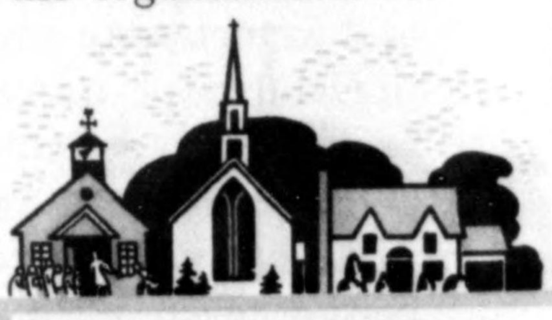
Treatment Lies a New Hazard

OVER-CONFIDENCE in the ability of the new drugs to cure venereal infections creates added danger. Because both diseases may be acquired at one exposure, the shorter treatment for gonorrhea may mask, but not prevent, the slower developing syphilis infection, making it impossible to diagnose the latter condition until the disease has become deep-seated and difficult, if not impossible, to cure. So modern treatment has, in one way, increased the old hazards. In the military services our young men and women were reminded that there is no sure preventive of infection except avoidance of exposure. Repeatedly they were warned that every sexually promiscuous man or woman is a possible carrier of both diseases, so the prudent person, even if he is not moved by loftier motives, avoids the danger of infection because he values his health.

Our country's welfare demands that every man and woman, and every adolescent boy and girl understand these facts. But knowledge and high purpose are not enough, if an end is to be put to these enemies of health. Only vigorous community action can stamp out the venereal diseases.

The Means to End Venereal Diseases Are at Hand

YOUR local health department and your State Department of Public Health are joining with the U. S. Public Health Service and community health and welfare agencies to stamp out the venereal diseases in your own home town. They have the medical means to cure the diseases now, but it will be difficult for them to finish the job without your backing. The new challenge to you, and to the organizations of which you are a member, is to support your local health and welfare departments and the agencies that promote better recreational facilities or that are attacking



FROM THESE SOURCES COME THE CHARACTER-BUILDING INFLUENCES THAT MAKE FOR HIGHER STANDARDS OF SEXUAL BEHAVIOR.

the conditions that foster sexual delinquency. You must know what is being done.

Your officials need the understanding help of every local group — church, service club, parent-teacher, board of trade, and labor union, to name a few to which you may belong. One or the other of the health or welfare agencies will gladly send a speaker to your club to tell about the present-day conditions in your own home town which may be helping to spread the venereal diseases. Your group will be told of the steps that are being taken to stamp out syphilis and gonorrhea and how you can help. The point of the matter is this: the public health and welfare officials must be *invited* to tell their story, they cannot do it otherwise. Therein is your first chance to help. Have your club ask to learn the truth about syphilis and gonorrhea in your own community.

What One City Did

RECENTLY a Southern city decided to do something really effective about controlling the venereal diseases. In conjunction with the State Health Department and the Federal Health Service an extensive program was conducted in which the whole population was offered blood tests, with follow-up and treatment of those found to be infected.

Wide publicity utilized all the resources of the newspapers and the radio. Hundreds of public spirited, civic leaders carried messages to many groups. In all 826 volunteers participated. Large, inescapable street signs lined all thoroughfares. Venereal diseases were discussed publicly in open meetings, large groups and small. A special laboratory was equipped to make twenty thousand blood tests each day, and centers to take blood specimens were set up in convenient places throughout the city. A special hospital was enlarged from 190 to 900 beds, and even then its capacity was taxed by the large number of infected persons who voluntarily sought treatment.

Nine of every ten people in the 14–50 age group were blood tested within a period of forty-two days — 260,159 in all, not including those younger or older, of which there were many. Within a matter of six weeks, more than 10,500 patients were treated. This Herculean task would have required many years of routine work. As an aftermath of this program, early cases of venereal disease are now receiving prompt medical treatment — because the dangers are recognized by every one.

Your own town could do as much to meet its special needs, whatever they may be.

A TRAIL OF SYPHILIS

This man brought his infection home with him from abroad. (It was not necessary for him to go so far to get it, however.)

She is a high-school girl, a "bit wild," but you would not brand her a delinquent. (She never thought that the man could have infected her.)

This fellow sought her "favors" a few weeks after the first man. (He noticed a sore, but neglected to go to a doctor: it disappeared of itself, anyway.)

The state, in which the girl he later married lived, had no blood-test law. (There are still some that have none.)

Their first baby died of syphilis — even though the mother did not know she was infected. (Her doctor was not required by law, in that state, to take a blood specimen.)

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Life Conservation Service
of the

John Hancock
MUTUAL
LIFE INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

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LITHO. IN U. S. A.

Happy Eating for Babies

STATE OF ILLINOIS • DEPARTMENT OF PUBLIC HEALTH
DWIGHT H. GREEN, Governor ROLAND R. CROSS, M.D., Dir.
Educational Health Circular No. 77

A Healthy Baby
Is A Happy Baby

To Keep Your Baby Healthy—

The *Right* Food

The *Right* Way

The *Right* Time

HOW TO FEED YOUR NEW BABY

When you feed your baby, why not sit in a comfortable chair and hold the baby in your arms? Make him feel warm and cuddled and protected.

Take this feeding time to rest yourself. You might even sing a little song to your baby. If you relax while the baby is eating, you will feel fresher and happier—and you will be able to do your work better afterwards.

Never rush your baby through the feeding just because you have other work to do.

As your baby grows older and eats new foods, never force him to eat more than he wants. Let your baby decide how much he wants to eat. Every baby is a little different from every other baby.

Always remember: **Your Baby is Not a Machine.**

Sit in a comfortable chair

Hum a little tune

Cuddle and protect him

Read this page while you are resting

after your baby is born

MILK

Milk is the most nearly perfect food for a tiny baby. Milk has calcium, to make the baby's bones and teeth strong.

Your baby should have milk as often as he cries for it. This is usually every three or four hours.

Breast milk is the very best milk for your baby. But if you do not have enough breast milk, or if you are not healthy enough to breast-feed your baby, ask your doctor or the well-baby clinic to give you a bottle-formula.

Be sure you **boil** the milk before you make the bottle-formula. Store it in a refrigerator or a cold ice box to keep it from spoiling. Always **warm** the bottle-formula before giving it to your baby.

Sometimes your baby will want more or less formula than your doctor ordered. Sometimes he will want it a little sooner or later. Let your baby decide, but tell your doctor about it at your next visit.

Ask your doctor for a formula

Boil milk for formula

Always keep milk in icebox

Read these pages again when your baby is

two weeks old

ORANGE JUICE

Now your baby is two weeks old! He needs orange juice every single day. The Vitamin C in orange juice will help him have healthy teeth and gums.

If your baby does not get enough Vitamin C, he may become ill with scurvy. Babies with scurvy have poor teeth, gums that bleed, and bones that hurt and are weak.

When your baby is two weeks old, squeeze an orange and give him five drops of the juice. On the second day give him 10 drops, on the third day 15 drops, and so on until the baby is getting three ounces. After that give your baby three ounces of freshly prepared orange juice every day.

There are several ways of giving orange juice to your baby:

1. You can put it into a spoon and pour it way back on the baby's tongue.
2. You can pour the orange juice into a clean bottle with a little boiled water and let the baby drink it.
3. You can put the orange juice right into the baby's bottle-formula. To keep the juice from curdling the formula, pour it into the bottle a little at a time, and shake it after you pour in each little bit.

Some babies may develop a skin rash when they drink orange juice. If this should happen to your baby, go to your doctor or well-baby clinic. Ask them to give you the name of a substitute or tablets or drops of Vitamin C. Your baby **must** have Vitamin C—either in orange juice or in some substitute—every day.

FEED YOUR BABY ORANGE JUICE THE FIRST THING EVERY MORNING

Read these pages again when your baby is

two weeks old

COD LIVER OIL

Now your baby is two weeks old! He needs cod liver oil every day. The Vitamin D in cod liver oil will help him have strong teeth and straight bones.

Cod liver oil has Vitamin D. A baby that does not get Vitamin D may develop rickets, and have bow legs and soft bones, and may have poor teeth with many cavities and toothaches. There are several kinds of cod liver oil—some plain and some stronger (or concentrated). Ask your doctor or the well-baby clinic which kind is best for your baby.

If you use plain cod liver oil, begin by giving your baby 30 drops when he is two weeks old. Add five drops more each day until he is getting three teaspoonsful. This means that you will give him 30 drops of cod liver oil on the first day, 35 drops on the second, 40 drops on the third and so on until he is getting three teaspoonsful. Each day after that give him three teaspoonsful.

There are three ways of giving cod liver oil:

1. You may put it into a spoon and pour it way back on your baby's tongue.
2. You may mix it with orange juice on a spoon and give the two together.

3. You may mix the oil into the baby's bottle-formula. Put in a few drops at a time and shake the bottle after you add each little bit. Be sure to mix it well—the oil that is left on the sides of the bottle will not do your baby any good!

If you use the stronger (or concentrated) cod liver oil, your baby will not need as much. Your doctor will tell you how much to use. Begin with a few drops a day and add a few more drops daily until you are giving the amount the doctor ordered.

FEED YOUR BABY COD LIVER OIL FIRST THING EVERY MORNING AT THE SAME TIME AS THE ORANGE JUICE

Read these pages again when your baby is

two months old

CEREAL

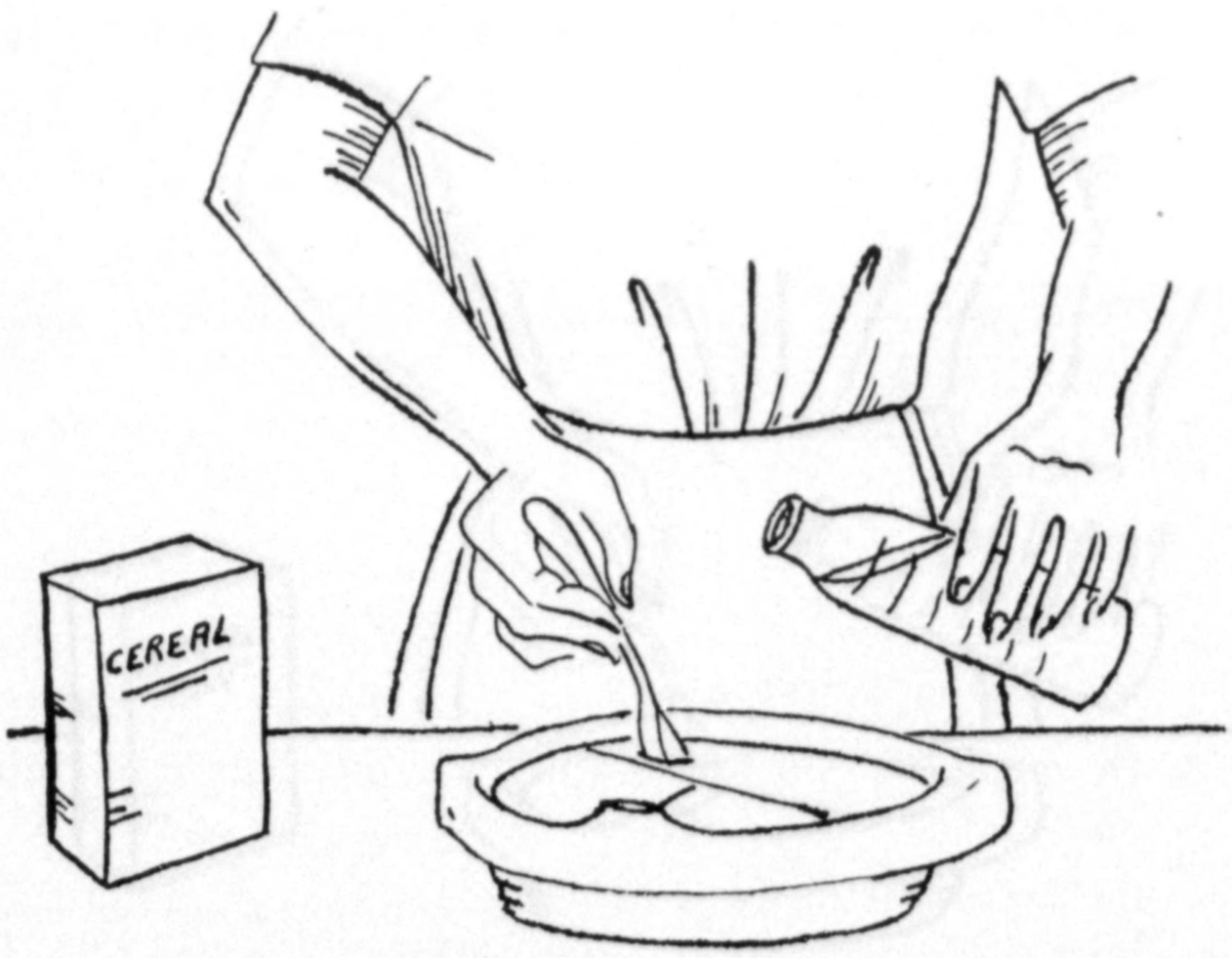
Your baby needs cereal now. Most cereals have Vitamin B, and minerals like iron and copper. Cereals will give your baby steady nerves, rich blood and strong bones.

The best cereals for your baby are oatmeal, farina, cream of wheat, pettijohn, rice and others like these. When you make them at home for your baby, cook them twice as long as you do for grown-ups. Strain them so that no large or coarse pieces are left and pour a little boiled milk or bottle-formula (warmed) over the strained cereal.

If you do not want to cook your baby's cereal, ask your doctor or the well-baby clinic for the names of prepared cereals to buy. These are made especially for babies. Just pour a little boiled milk or bottle-formula (warmed) over the ready-made cereals and they are ready for use.

Feed your baby slowly from a spoon. The first few times, make the cereal very thin with milk. Each day make it a little thicker. Finally your baby will take it just as you eat it yourself.

Most babies, when they are about 2 months old, can eat 2 tablespoonsful of cereal a day. The first few times give your baby just a little bit. Give him more and more each day until he is eating about 2 tablespoonsful. Some babies will want more than this—some less. Let your baby eat as much as he wants but if it is too much or too little, tell your doctor about it.



FEED YOUR BABY CEREAL AT ABOUT 9 OR 10 O'CLOCK IN THE MORNING

Read these pages again when your baby is

three months old

VEGETABLES

See how your baby is growing! Now it's time for him to eat vegetables. He needs the vitamins and the minerals which are in many vegetables so that he will have white teeth and strong bones, rich blood and smooth soft skin.

The best vegetables for your baby are spinach, carrot, peas, lima beans, turnip greens, tomatoes, string beans, lentils, squash and others like these. You can cook vegetables at home for your baby for very little money. It is important to cook them correctly so that your baby will get all the good from them.

First, wash the vegetables carefully. Cook them in very little water just until they are soft. If you cook them too long, you will spoil the vitamins. When the vegetables are soft, strain them until all the large coarse pieces are out. Try pouring some of the pot liquor over them to make them easier to eat. (The pot liquor contains many of the vitamins that go out of vegetables when you cook them.) Or pour a little boiled milk or bottle-formula (warmed) over the vegetables.

If you do not wish to cook vegetables at home for your baby, then ask your doctor or the well-baby clinic for the names of baby vegetables to buy. They are easy to fix—just pour a little bit of boiled milk or bottle-formula (warmed) over the vegetables as they come from the can or jar.

The first few times make the vegetables very thin, just as you did the cereal. After the baby gets used to eating these new foods, make them thicker until they are soft and pasty.

Begin by feeding your baby only one vegetable a day for a few days. Try another kind for the next few days and so on until you have fed your baby many different kinds. If by chance one of the vegetables should not be right for your baby and should cause

diarrhea, vomiting, or skin rash, you will know which vegetable it was. Better not feed that one to him again for a long time!

After you have tried out many different vegetables, feed him one vegetable one day and a different one the next. Later, if you wish, you may feed your baby mixtures of vegetables. Your baby will enjoy the taste of new foods.

If you have a good refrigerator or cold ice box, you may keep part of the vegetables for the next day. Never try to keep them longer than this—spoiled foods will make your baby sick!

Most babies, when they are about three months old, can eat about two tablespoonsful of vegetables each day (or ½ can). Your baby may want a little more than this—or a little less. Let your baby eat as much as he wants, but if it is too much more or too little, tell your doctor about it.

FEED YOUR BABY VEGETABLES AT ABOUT 1 OR 2 O'CLOCK IN THE AFTERNOON

Read these pages again when your baby is

four months old

SOUPS

"Soup's on"—for baby, too! Soups are good for him because they have the juices of many vegetables or meats. These will help your baby to have rich blood and strong healthy muscles.

For very little money you may cook soups at home for your baby. If you wish to make soup with meat in it, cook a small piece of red meat, or liver, or chicken, or soup bone in a little water until it is done. Add the vegetables. Cook them only long enough to make them soft. Strain the vegetables and meat or mash them until they are broken into a paste that your baby can swallow without choking. You may add a little salt, but, please—no pepper or spices!

If you don't wish to cook soups at home for your baby, ask your doctor or the well-baby clinic for the names of baby soups you can buy. Just warm them and they are ready to feed your baby.

If you have a cold ice box or a refrigerator, part of the soup will keep for the next day—but no longer.

Most babies, when they are about four months old, can eat about two or three ounces of soup (½ can).

Feed your baby soup in the same way as you began feeding him cereal and vegetables. The first few times, feed him just a little bit. Give him more and more each day until he is eating about two or three ounces.

Your baby may want more soup than this—or less. Let him eat as much as he wants, but tell your doctor about it if it is too much or too little.

FEED YOUR BABY SOUP AT ABOUT 2 O'CLOCK IN THE AFTERNOON, OR AT ABOUT 5 OR 6 O'CLOCK IN THE EVENING

Read this page again when your baby is

four or five months old

EGG YOLK (YELLOW)

Why not give your baby a new food today? Give him egg yolk (the yellow part of the egg). Egg yolk has very good vitamins and minerals, especially iron. These will help him have strong bones and rich blood.

Your baby can eat the egg yolk either raw or boiled. You may soft-boil it for two or three minutes. Or, you may hard-boil it and mash it with a little bit of butter or milk, and a pinch of salt. If your baby does not like the egg yolk plain, try mixing it with his cereal or vegetables or soup. Be sure the egg you use is fresh!

Give your baby only a little taste of the egg yolk for the first day or two. Add more day by day until he is eating a whole egg yolk **every day.**

DO NOT FEED YOUR BABY EGG WHITE AT THIS TIME. IT MAY MAKE HIS SKIN VERY SORE. MANY BABIES CANNOT EAT EGG WHITE UNTIL THEY ARE ABOUT ONE YEAR OLD.

FEED YOUR BABY EGG YOLK AT ABOUT 10 O'CLOCK IN THE MORNING OR AT ABOUT 2 O'CLOCK IN THE AFTERNOON

Read these pages again when your baby is

five months old

FRUITS

Your baby needs fruits when he is about five months old. Vitamins and minerals are in fruits. They will help keep your baby well and strong.

The best fruits for your baby are banana, apple or applesauce, cooked apricot, pear, prune, peach or pineapple, fresh orange, and grapefruit and others like these. Feed your baby one of these fruits each day.

You may give your baby raw banana and raw apple. Give him one-quarter to one-half ripe banana mashed up very finely. Wash and peel the apple, and scrape or grate it.

The other fruits may be cooked in a little bit of water just until they are tender. Strain or mash them so that your baby can eat them without choking.

If you do not wish to cook fruits in your home, ask your doctor for the names of baby fruits that you can buy. These are ready to feed your baby when you open the can.

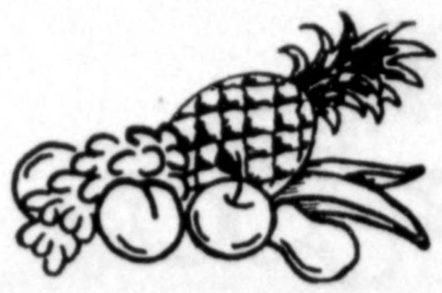
Feed your baby one fruit at a time, just like you fed him vegetables one at a time. Give him the same fruit every day for a few days. Try another kind

the next few days and so on until you have fed him many different kinds of fruits. Then if one of the fruits should happen to cause diarrhea or vomiting or skin rash, you will know which fruit it was and can stop feeding it to him.

After you have tried out many different fruits, you can feed him one fruit one day and another the next. Later, if you wish, you may give him mixtures of fruits.

You may keep part of the fruit for the next day if you have a good refrigerator or a cold ice box—but no longer, please!

Most babies, when they are about five months old, can eat about two tablespoonsful of fruit at a meal, or one-half can. The first few times, give your baby just a little bit. Give him more each day until he is getting about two tablespoonsful every day. Your baby may want more than this—he may want less. Let your baby eat as much as he wants, but if it is too much or too little, tell your doctor about it.



FEED YOUR BABY FRUIT ABOUT 6 O'CLOCK IN THE EVENING

Read this page again when your baby is

five months old

BREAD, CRACKERS and COOKIES

How wonderful—your baby is cutting a tooth! Now he will want food he can chew.

Give your baby toast, graham crackers, zweiback, oatmeal cookies or others like these. First soak them in a little bit of boiled milk or bottle-formula (warmed) until they are soft so that he can swallow them without choking.

Your baby will like to hold a small crust of soft bread in his hand and chew on it. You may put a little butter or fortified margarine on the bread. Butter and fortified margarine have Vitamin A, which is very good for your baby's eyes.

At first your baby may have trouble finding his mouth. He may get more toast on his face than in his mouth! But he will learn by trying.

FEED YOUR BABY TOAST OR COOKIES OR ZWEIBACK AT ABOUT 2 O'CLOCK IN THE AFTERNOON OR AT 6 O'CLOCK IN THE EVENING

Read these pages again when your baby is

six months old

CUSTARDS, GELATINE DESSERTS and PUDDINGS

Do you know that your baby needs custards, gelatine desserts, and puddings? This is because he needs the extra food and extra energy which are in these desserts. Give them to him when he is about 6 months old. Just see how they will help him have chubby cheeks and a husky body.

You may cook these custards and gelatine desserts and puddings at home. Cook them the same way that you do for grown-ups BUT DO NOT USE THE WHITE OF THE EGG. Use only the yellow part (yolk).

Perhaps you will not want to cook these desserts at home. Then ask your doctor or the well-baby clinic for the names of baby custards and puddings to buy. They are ready to feed your baby when you open the can.

Remember how you began feeding your baby fruits and vegetables? Begin feeding your baby desserts this same way. At first feed him only one kind of dessert for a few days. For the next few days give

him another kind and so on until he has eaten many different kinds of custards and puddings.

Do this so that if any one of the foods should cause your baby to have diarrhea, vomiting or skin rash, you will know which dessert it was. You will not want to feed that one to him again for several months.

You may keep desserts for one day if you have a good refrigerator or cold ice box. Never keep them longer—spoiled foods will make your baby sick!

Feed your baby a little bit of dessert at first. Give him more and more each day until he is getting about 2 tablespoonsful every day. This is the amount most babies can eat when they are about 6 months old. Your baby may want more or less. Let your baby eat as much as he wants, but if it is too much or too little, tell your doctor about it.

FEED YOUR BABY CUSTARD OR PUDDING OR GELATINE DESSERT AT ABOUT 6 O'CLOCK IN THE EVENING

Read these pages again when your baby is about

six or seven months old

HOW TO FEED YOUR BABY WHEN HE GROWS OLDER

Do you eat the same foods every day? No—because you would grow tired of them. Your baby is the same way. He does not need to eat the same foods every single day.

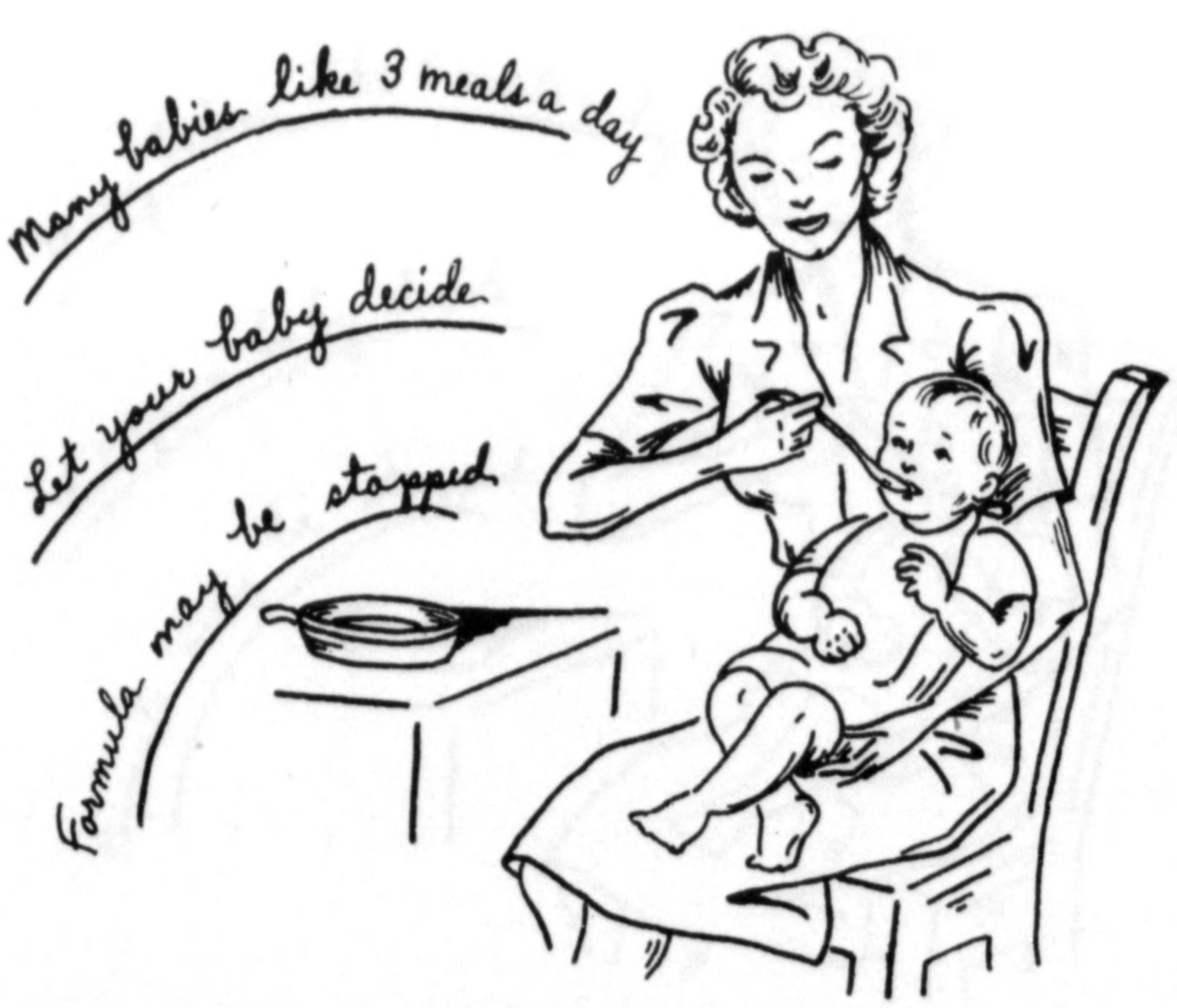
The only foods your baby **must** have every day are orange juice, cod liver oil, egg yolk, milk, and vegetables. The other foods may be changed. Why not feed him some foods one day and others the next day?

If your baby sleeps through his 6 A. M. feeding or refuses his bedtime feeding at 10 P. M., try feeding him 3 meals a day just like a grown-up. You may give him breakfast at about 8 o'clock in the morning, lunch at about noon, and supper at about 5 or 6 o'clock in the evening. If your baby cries for more food, you will want to give him more than three meals a day.

Many babies can stop drinking a bottle-formula when they are 6 or 7 months old. They can start drinking straight boiled cow's milk. If your baby seems

to be healthy, ask your doctor or well-baby clinic about giving him straight boiled cow's milk.

Have you been breast feeding your baby? If you have, now is a good time to start weaning him. Begin by giving him one feeding of boiled cow's milk each day from a bottle or little cup, and gradually add more bottle or cup feedings in place of breast feedings. Keep doing this until he is drinking all of his milk from a bottle or cup. Before you know it your baby will be weaned—and without a bit of trouble!



Read this page again when your baby is about

nine or ten months old

MEAT

Meat has special food energy. It also has iron and other minerals, which are very important for your baby's blood. Begin feeding your baby meat when he is about 9 or 10 months old.

Broiled bacon, broiled lamb, broiled liver, and cooked chicken are good meats for your baby.

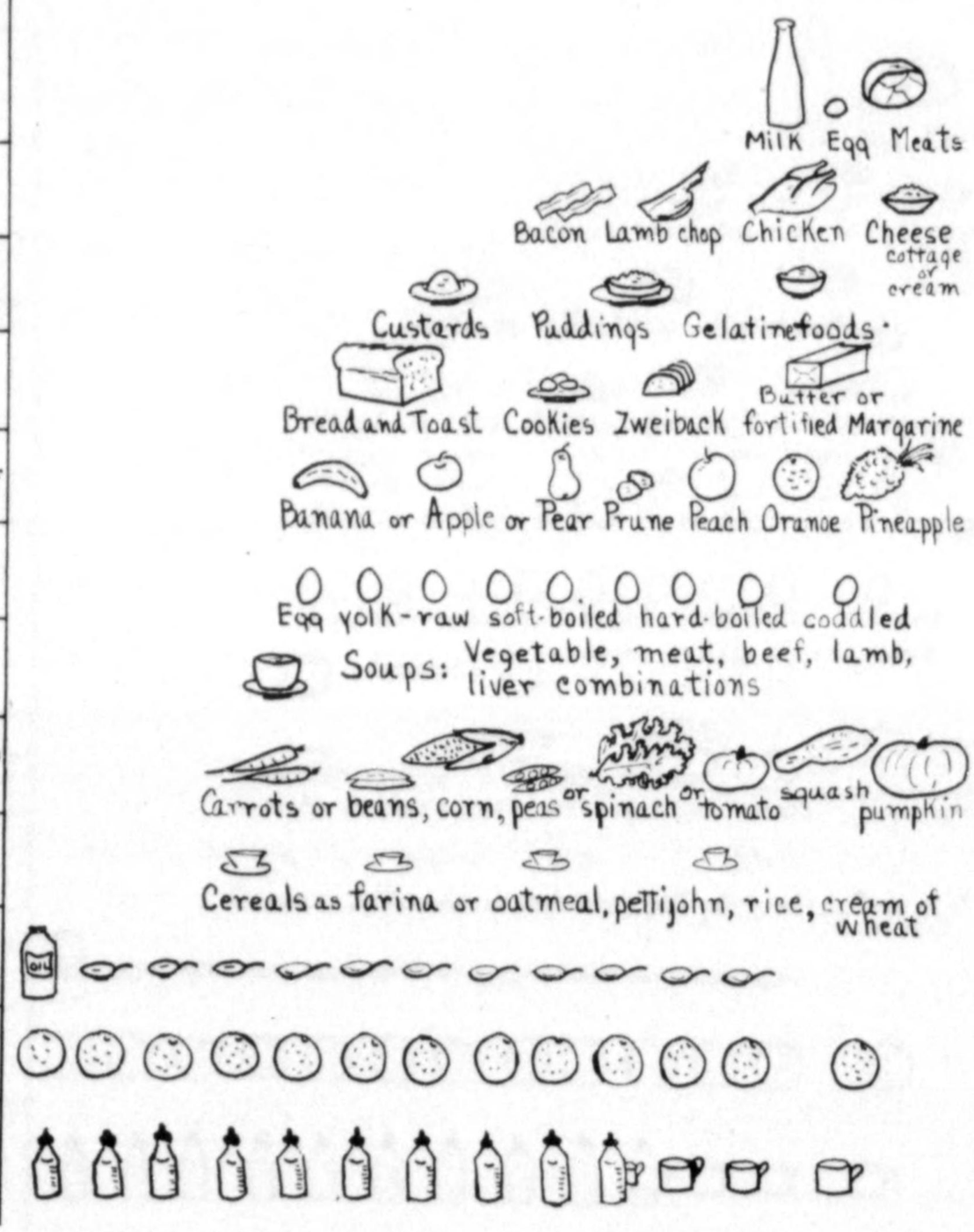
When you broil bacon for your baby make it just medium soft—if it is too dry he may choke and vomit. Feed him tiny pieces of the white meat of the chicken. If you broil liver or lamb chop for him, always cut or mash it up into small pieces. Be sure to cook the meat for a long time; meat which is underdone may make your baby very sick. You won't feed your baby fat meats (like pork or greasy roast), will you? They are bad for him!

Most babies, when they are about 9 or 10 months old, can eat about one tablespoonful of tiny pieces of meat. Feed your baby just a little at first, and then give him more and more each day until he is getting one tablespoonful every day.

Your baby may want more than this—he may want less. Let your baby eat as much as he wants, but if it is too much or too little, tell your doctor about it.

FEED YOUR BABY MEAT AT ABOUT 12 OR 1 O'CLOCK IN THE AFTERNOON

Month	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	After 1 year
Other: Whole egg Whole milk General diet of soft simple foods													
Meat Fish Cheese													
Custard Pudding Gelatines													
Bread Toast Butter Cookies													
Fruit (Fresh or cooked)													
Egg yolk													
Soup													
Vegetables (cooked)													
Cereal													
Cod Liver Oil													
Orange juice													
Milk													



Read this page again when your baby is about

one year old

AFTER ONE YEAR

Your baby has had his first birthday! He can eat most foods that are soft and easy to swallow. He can eat three meals a day. He can drink regular boiled cow's milk.

Be sure that the foods you give him are not too hot or too cold. Be sure that they are not too hard to chew—that they will not make him vomit or choke. Do not give him foods that have pepper or spices.

Now your baby may want to try to feed himself. Let him hold a little spoon or cup in his hands and help you with his feeding. Let him do this even though he is clumsy and messy and may take a long time. Remember that he is just learning to use his fingers. He is not yet very clever with his hands. He will enjoy eating more and will learn to use his hands better if you let him help himself. Help him only enough to make sure he eats enough food.

And, please—never hurry your baby through a feeding—or scold him because he spills his food. He will learn. Be patient with your baby—and watch him grow strong and healthy and happy!

Let him feed himself

Never hurry him

Don't scold if he's clumsy

The

PREMATURE BABY

✦

Separate from
INFANT CARE
PUBLICATION NO. 8

United States Department of Labor
FRANCES PERKINS, *Secretary*

CHILDREN'S BUREAU
KATHARINE F. LENROOT, *Chief*

The PREMATURE BABY

✦

Separate from Infant Care, Publication No. 8

UNITED STATES
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WASHINGTON : 1938

The Premature Baby

A BABY who is born more than 2 weeks before the end of 9 months of pregnancy is called a premature baby. He is not so well developed at birth as the baby who is born at full term. Since the eighth and ninth months of prenatal life are especially important in the growth of the baby, every effort should be made to prevent premature birth. However, in spite of such effort and for some causes that are unavoidable, a certain number of babies are born prematurely. The earlier the baby is born, the more difficult it is to keep him alive. A baby born only 2 or 3 weeks before the expected date of birth may be quite strong and little different from a full-term baby. A baby born 7 or 8 or more weeks early may be very small and difficult to save. Occasionally a baby born at full term is exceptionally small and feeble. All babies weighing less than 5½ pounds at birth should be treated as if premature.

As the premature infant grows older he should gradually become more and more like a full-term baby. Though small, he should have good color, his muscles should be firm, and he should gradually become active and alert. He may be slower than a full-term baby in learning to do some things like holding up his head and sitting up. If he is protected from infection and gets the proper food and care he will catch up to the full-term baby in course of time. The time that this will take will depend on how many weeks before term he was born.

CARE IMMEDIATELY AFTER BIRTH

A premature baby should be given proper care immediately after birth or he may die from exposure. He should be wrapped at once in a clean, soft blanket that has been warmed. The cord should be cut and dressed with sterile gauze. Mucus should be removed from his mouth and upper throat by means of a small rubber suction bulb. He should then be placed in a warm bed, and his head should be turned to one side and lowered slightly by raising the foot of the bed. A pad of absorbent cotton covered with soft gauze should be used as a diaper.

If the baby is born at home the decision must now be made whether he is to be cared for at home or in a hospital.

Premature babies that weigh more than 4 pounds and are vigorous can usually be taken care of satisfactorily at home if the conditions are favorable and certain precautions are taken. Some smaller babies also do well at home; in fact, they are often cared for best at home unless a hospital suitably equipped for the care of such babies is available. If, however, the baby is feeble and difficulty is encountered in making him breathe, very special care is needed which can usually best be had in a hospital.

A hospital properly equipped for the care of premature babies will have a room in which these babies can be cared for separately from other babies. It will have

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doctors and nurses on the staff who are trained to care for premature babies and who will be able to feed them properly. Some premature babies have cyanotic attacks (blue spells) and must be given oxygen. Oxygen is always available in a well-equipped hospital, but it may also be obtained in tanks and administered in the home, under the supervision of the doctor or the nurse.

The baby should not be taken to the hospital until his breathing is sufficiently well established to make such a trip safe. Great care should be taken to keep him warm during the trip, as chilling at this time decreases the chances of saving his life. To prevent him from losing any of his body heat he should be wrapped in several soft, clean blankets which have been warmed and he may be carried in a basket lined with warm-water bottles (115° F.). To prevent burns, a folded blanket or towel should be placed between the baby and the bottles.

If the premature baby is to be cared for at home, he should be put at once into a warm bed which has been already prepared for him in a warm room. (See p. 6 for home-made heated bed.) A physician, preferably one specially trained in the care of babies, should be called at once and his directions should be followed closely. If a nurse who has been trained in the care of premature babies can be engaged, her experience will be a great help to the mother.

The baby's temperature should be taken by rectum soon after birth. The baby should not be bathed with water. He may be given an oil bath when his temperature becomes normal (98° to 99.6° F.) and stays normal, but only if his general condition is good and the room temperature is not lower than 80° F. It is much more important to keep him warm than to give him a bath. The complete oil bath need not be given for several hours or even several days after birth.

A premature baby should be exposed and handled as little as possible—only when it is necessary to feed him, give him drinking water, change his diaper, and give an oil bath. These can be done when he is in bed. The baby's head should be raised for feeding. He should be turned from one side to the other as often as every 2 to 3 hours but should not be picked up and handled unnecessarily.

In caring for a premature baby there are three main problems which must be kept in mind constantly:

1. How can he be kept warm?
2. How can he be protected from infections?
3. How can he best be fed?

KEEPING THE PREMATURE BABY WARM

As the premature baby's body temperature is easily influenced by his surroundings, it is important to keep him warm and at a constant temperature. The temperature of the room must be maintained between 75° and 80° F. day and night. A thermometer should be hung on the wall over the baby's bed but not near a radiator or a window. Frequent readings of the thermometer should be made and recorded on a chart. Proper clothing must be used to prevent loss of heat (see p. 7), and the use of external heat also may be required. The proper maintenance of body temperature is most important in the first hours and days of life.

The temperature inside the crib should be between 80° and 90° F. A thermometer should be kept in the crib near the baby so that the temperature in the bed can be known at any time. The baby's body temperature should be taken by rectum every 4 to 8 hours and recorded on a chart. The body temperature should be kept between 98° and 99° F. If it goes as low as 97° or as high as 100°, this need not cause alarm. Overheating, however, may be as dangerous as chilling.

The amount of moisture in the air in relation to its temperature is important to the welfare of the premature baby. In cold weather the air in rooms heated artificially becomes dry. When the temperature of an artificially heated room is 75° or over it is well to increase the moisture in the air by boiling water in an open pan or teakettle or by putting some other type of vaporizer in the room. In hot weather the air may become too moist. To decrease moisture is difficult, but an electric fan running slowly will keep the air in motion and make the room more comfortable. It should be placed so that the air does not blow on the baby's bed.

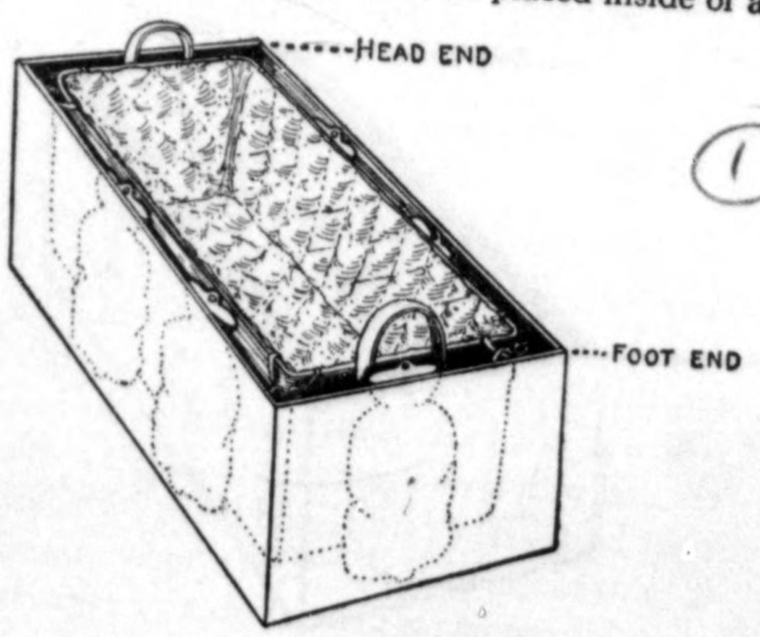
THE PREMATURE BABY'S ROOM

The premature baby's room should be small and should have a good source of heat, preferably hot-water radiators. A small room is easily heated and is easier to maintain at a constant temperature than a large room. One window, or preferably two, allows for sunlight and for ventilation by opening at the top. A narrow cloth screen (2 inches or more, according to the climate) may be used at the top of the window. (See Infant Care, p. 17, for construction of screens.)

HEATED BEDS

Some provision must be made for keeping the premature baby's bed warm. It is important to keep the temperature constant, at a point to be decided on from about 80° to 90° F., or even higher, depending on the size and vigor of the baby. In many hospitals special beds are used, which are heated electrically and regulated automatically. In the hospital or the home less expensive and simpler types of heated beds may be used with success.

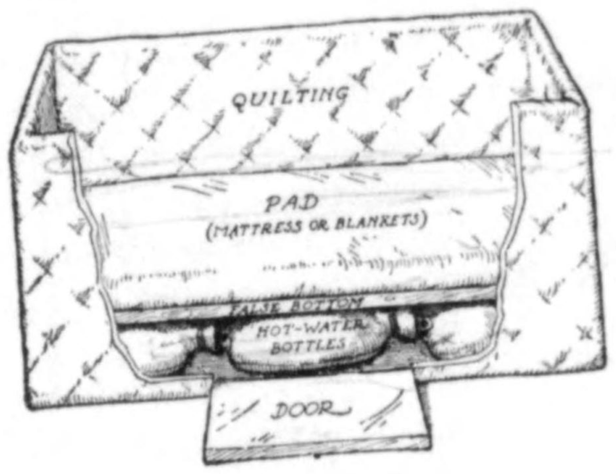
The simplest type of warm bed for a small baby is a small clothes basket lined with cotton cloth or a thin blanket. This basket may then be placed inside of a bassinet or a box lined with quilting or a blanket (see illustration). Between the sides of the basket and the box, hot-water bottles of rubber or metal, heated bricks, or bags of heated sand should be put. In this way the source of heat will be kept in place and there will be no danger of its coming in contact with the infant. Bricks or bags of sand should not be made so hot that they cannot



be handled with bare hands. If hot-water bottles are used they must be refilled frequently to keep the temperature inside the bed constantly between 80° and 90° F. It is best to refill one bag at a time, so as not to cool the bed. The bottles should be at 120° to 130° F. (Electric pads are not safe for this purpose.)

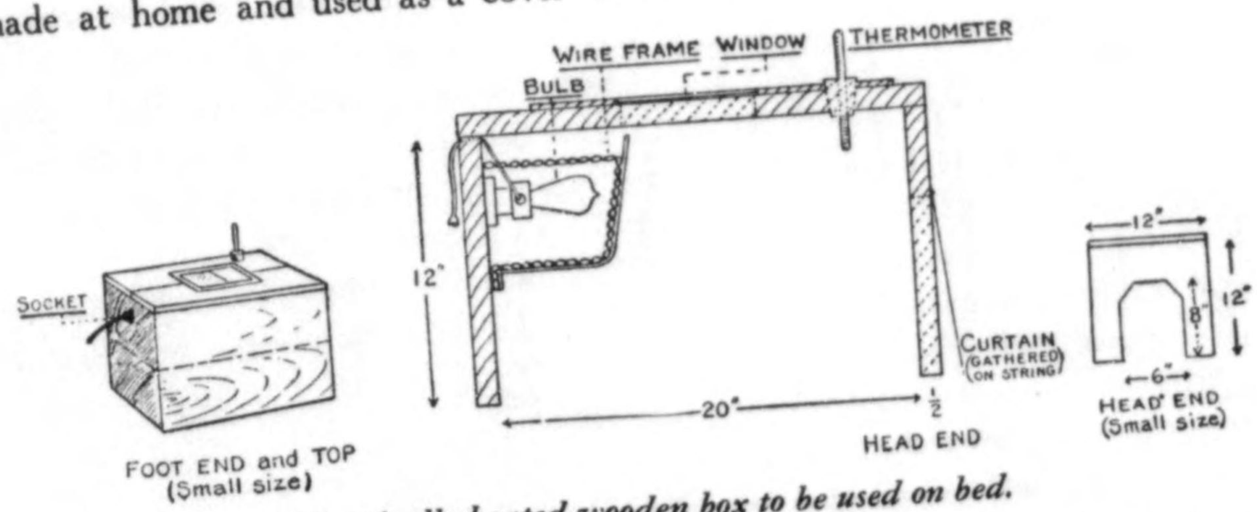
A folded sheet or blanket should be put over the baby, but not over his head.

Another type of warm bed can be arranged by using a small box, well padded inside and outside with quilting, into which is fitted a removable platform about 4 inches above the padded floor. A thin, flat hair pillow or several layers of wool blankets should be used as a mattress to cover the platform. Beneath the platform, on the floor of the box, two or three hot-water bottles may be placed. An opening should be cut in the side of the box below the platform so that the hot-water bottles can be removed for refilling without disturbing the baby. (See illustration.)



If, in an emergency, warm-water bottles must be placed beside the baby they should never be warmer than 115° F. and should be so arranged that they will not come in contact with the baby. The baby should be well wrapped in a blanket to keep the bottles from touching any part of him. A rolled bath towel placed between the baby and the warm-water bottles will give added protection.

If the house is wired for electricity, an electrically heated wooden box can be made at home and used as a cover or hood by inverting it over an ordinary



Electrically heated wooden box to be used on bed.

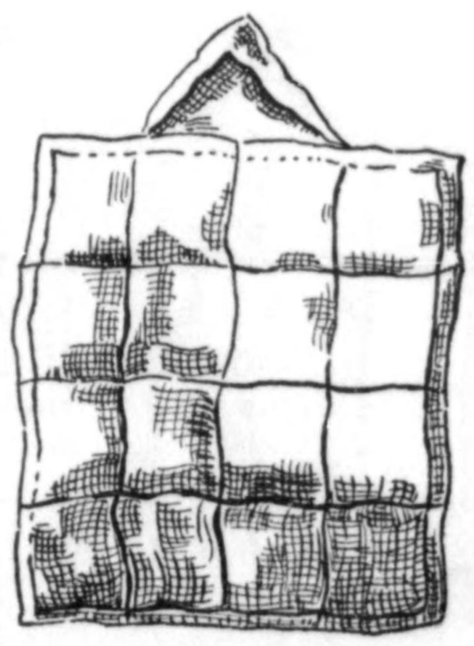
crib or bed. One end of the box should have an opening—about 6 by 8 inches—large enough to allow the baby's head to be outside the box. Hang or tack over this opening a washable cotton curtain, the end of which should be tucked in around the baby's neck to keep the warmth from escaping. (See illustration.) There should be an electric socket at the foot end of the box, into which a bulb covered with a wire guard is fitted. As a rule a 40-watt bulb will produce sufficient heat. The cord should be well insulated, especially at the point at which it passes into the bed. Cut a square opening in the top of the box and lay over this opening a piece of glass or mica, large enough to be pushed back and

forth so that the size of the opening can be altered. The heat can then be regulated by turning the bulb on or off and by opening or closing the top window.

The temperature inside the box should be determined by means of a long thermometer, which is inserted through a cork placed in a hole in the top of the box and pushed down 2 to 3 inches into the box. Place the thermometer at about the middle of the box away from the electric bulb. Readings can be made from the outside if the section above the 70° mark remains above the cork. Since the baby's head is outside the box he will be breathing the air of the room. The room should be kept warm but it should be ventilated, when possible, by having the window open a little way at the top.

CLOTHING

The premature baby should be wrapped in a warm blanket immediately after birth. A sleeveless padded jacket may be prepared, and it may be best to continue the use of such a jacket for a week or two after the baby's birth. The jacket may be made of two squares of cheesecloth or of some very soft cotton material (18 inches square) with a thick layer of cotton batting stitched between and a piece of the padded material arranged as a hood. It should be long enough to cover the feet well and wide enough to lap over and be pinned in front. (See illustration.) It may be opened at the bottom for changing the baby's diaper. When the jacket is soiled, it may be burned and a new one substituted.



Small squares of absorbent cotton covered with soft gauze may be used as diapers. These pads can be easily changed when they become soiled.

The clothes that have been prepared for the baby are as a rule much too large if he is born prematurely, and substitutes should be prepared which can be put on and taken off with the least possible handling of the baby. Nightgowns of flannel or stockinet are all that the small baby will need for several weeks. They should open in the back and have tape ties. When a special warm bed is no longer necessary, the premature baby may be dressed as any newborn baby would be dressed. (See Infant Care, p. 20.)

BATHING

For very small and weak babies it is advisable not to give any bath for 2 or 3 days, unless it is necessary for the doctor or the nurse to use a warm bath to stimulate the baby because he does not breathe well. Later, when his breathing is well established and his temperature is normal, a partial oil bath may be given daily; only the buttocks, genitals, and folds of the skin are washed—without removing the baby from the heated bed and without exposing the rest of the body. The oil should be warm but not hot and only one part of the body should be exposed at a time to prevent chilling. Care should be taken to apply the oil

gently with cotton and not to rub the skin. The larger and more vigorous premature babies may be given complete oil baths daily after the first few days.

PROTECTING FROM INFECTION

Premature babies have very little resistance to disease. They are particularly subject to infections, especially colds. A cold is serious in a premature baby because it is very likely to develop into pneumonia, which may prove fatal. Every person who cares for a premature baby or comes in contact with him in any way must be careful to wash the hands before touching him lest some infection be carried to him. No one who has even a slight cold or other infectious illness should be allowed to take care of or go near a premature baby. Visitors, especially young children, should never be permitted in the room where a premature baby is kept. These rules cannot be kept too strictly. Colds, ear infections, and pneumonia are common causes of death in premature babies.

FEEDING

HUMAN MILK

The proper feeding of a premature baby is especially important. Until the mother's milk is established, every effort should be made to get at least a few ounces of milk daily from some other nursing mother or from a breast-milk agency. Any milk except that of the premature baby's own mother should be boiled for 1 to 2 minutes in an open saucepan or cooked in a double boiler for 10 minutes.

It is wise to delay putting a premature baby to the breast until his breathing and swallowing are well established; otherwise the effort of nursing may tire him or he may even be smothered. If the baby is too weak to nurse at the breast or to draw milk from the nipple of a bottle, the mother's milk should be expressed by hand or by means of some type of breast pump and fed to the baby slowly by means of a medicine dropper. (For hand expression, see Infant Care, p. 49.) If a medicine dropper is used, it is well to slip a short piece of soft rubber tubing over the end to prevent injury to the baby's mouth. The medicine dropper and rubber tip must be boiled each time before being used and carefully cleaned after use. Care must be taken not to give the milk faster than the baby is able to swallow it. Some babies are so weak that feeding must be given with a stomach tube (so-called catheter feeding); this should be done only by a trained person. A strong premature baby may be able to nurse or to take breast milk from a bottle.

As it may be some weeks before the baby is able to draw even small amounts of milk from the breast it may be necessary for the mother to empty her breasts at regular intervals by hand or by breast pump, not only to obtain milk for the baby during the early weeks of life but to keep up the milk flow until the baby is strong enough to nurse.

Expression of milk from the mother's breasts should be begun at the end of 12 hours; and the colostrum—and the milk when it comes—should be given to the baby.

Care should be taken that the baby is not overtired during feeding.

If breast milk cannot be obtained, artificial feeding will become necessary. (See Infant Care, p. 61.) The doctor will decide upon the milk mixture to be used.

NUMBER AND AMOUNT OF FEEDINGS

The time at which it is safe to begin to give water and milk to a premature baby depends upon his size and vigor. For feeble babies some authorities consider it well to withhold water for as long as 12 hours and then to give small amounts with a medicine dropper (1/2 to 1 teaspoonful) at 3- or 4-hour intervals. If the baby is vigorous he may be given water 6 to 8 hours after birth and then at 3- or 4-hour intervals. Milk feedings may usually be begun after the baby is 18 hours old.

The schedule on page 10 has been prepared for temporary use. The doctor will give a schedule suited to the baby's needs. The premature baby needs daily a total amount of fluid (milk and water) equal to about one-sixth to one-seventh of his body weight in pounds. For instance, if the baby weighs 3 pounds he will need daily one-sixth of 3 pounds, or three-sixths (one-half) of a pound of fluid. As 1 pound is equal to 16 ounces, one-half pound will be equal to 8 ounces. The 3-pound baby's full requirement of fluid during 24 hours therefore will be 8 ounces.

Such quantities, although needed, cannot always be given to the premature baby during the first days of life. The amount given daily will at first be small and the increase gradual. In fact, it is fortunate if the baby can take one-eighth of his body weight in total fluid (2 ounces for each pound of body weight) by the fourth day. If the baby is unable to take sufficient fluid by mouth the doctor may give additional fluid by injecting it under the skin (normal salt, Ringer's, or a comparable solution).

The quantity of milk given to very small babies in 24 hours for the first few days will be half an ounce to an ounce of milk for each pound of body weight. This will be divided into 7 to 12 feedings; each feeding will therefore be very small—1 to 3 teaspoonfuls of breast milk. The total amount of milk given in 24 hours may be increased daily by one-eighth to one-fourth ounce for each pound of body weight, until by the tenth day the total amount of milk taken in 24 hours usually will be 2 to 3 ounces per pound of body weight. The rapidity with which the amounts can be increased will vary with the size and development of the individual baby.

If it is not possible to get breast milk for the premature baby, some form of cow's milk may be used. Various milk mixtures have been used with success, but they must be ordered by the physician. If it is not possible to get the physician's advice at once, one of the following milk mixtures may be used temporarily, in the same amounts and at the same intervals as given in the schedule for breast feeding:

Evaporated milk, 3 ounces.
Water, 6 ounces.
Granulated sugar, 1 level tablespoonful.

or

Half-skimmed cow's milk,* 8 ounces.
Water, 2 ounces.
Granulated sugar, 1 level tablespoonful.

* Half-skimmed cow's milk is obtained by removing half of the cream from the top of the bottle.

SUGGESTED FEEDING SCHEDULE FOR PREMATURE BABIES

Baby weighing less than 3½ lbs.

	Breast milk		Boiled water	
	Number of feedings	Amount	Number of times given	Amount
		Teaspoonfuls		*Teaspoonfuls*
1st 12 hours				
13th hour				½
16th hour				½
18th hour		½		
20th hour				½
22d hour		½		
2d day	8	½–1	6	1 –1½
3d day	8	1 –1½	6	1½–2
4th day	8	1½–2½	6	2 –2½
5th–7th day	8	2 –3	6	2½–3
8th–10th day	8	3 –4	6	2 –3
11th–14th day	8	3½–5	6	2 –3
15th–17th day	8	4 –5½	6	2 –3
18th–21st day	8	4½–6	6	2 –3

Baby weighing 3½–4½ lbs.

Breast milk		Boiled water	
Number of feedings	Amount	Number of times given	Amount
	Teaspoonfuls		*Teaspoonfuls*
		2	½
			½
			½–1
	½		
			½–1
	½–1		
8	1 –2	6	1 –2
8	1½–3	6	2 –2½
8	2½–4	6	2½–3½
8	3 –5	6	3½–4
8	4 –6	6	3
8	5 –7	4	3
	Ounces		*Ounces*
8	1 –1¼	4	½
8	1 –1½	3	½

Baby weighing 4½–5½ lbs.

Breast milk		Boiled water	
Number of feedings	Amount	Number of times given	Amount
	Teaspoonfuls		*Teaspoonfuls*
		3	1
			1
			1
	1		
			1–2
	1 –2		
8	2 –3	6	2–3
8	3 –4	6	2–4
8	4 –6	6	3–4
8	5 –8	6	4
8	6 –9	6	3
8	6 –9	6	3
	Ounces		*Ounces*
8	1¼–1¾	3	½
or 8	1½–1¾	3	½
or 6	2 –2½	3	½

NOTE.—The schedule is arranged so that milk is given every 3 hours, at 3, 6, 9, and 12 o'clock. Water is given midway between feedings except at 1:30 a. m. and 4:30 a. m. It may be necessary to feed very small or weak infants every 2 hours. Increases in the feeding should be made gradually, not more than ½ teaspoonful at a feeding. For infants weighing less than 2½ pounds the increase should not be more than ¼ teaspoonful at a feeding. When the baby is taking 2½ to 2¾ ounces of breast milk per pound he is receiving as much as is usually necessary for gain in weight. Further increase in feeding is made as the baby gains weight and therefore requires more food to supply 2½ to 2¾ ounces per pound. After the baby has begun to gain satisfactorily and is taking his feedings well, the interval between feedings may be increased and more milk given at each feeding.

Sugar may be used in the form of granulated sugar or corn sirup or in any other form ordered by the doctor.

If a cow's milk mixture is used it must be thoroughly cooked for 20 minutes in a double boiler. The boiler should be covered to prevent evaporation. Evaporated milk has been cooked in canning so that it is necessary only to boil the water when making the mixture.

DRINKING WATER

During the period when the baby is receiving very small feedings of breast milk, special care must be taken to give him small quantities (½ to 2 teaspoonfuls) of tepid boiled water between feedings. He will need this to bring his total intake of fluid up to even the lowest requirement—2 ounces for each pound of body weight. As he takes more milk he may take less water, but it is well to offer water to him between feedings even when he is strong enough to take an adequate amount of fluid at his feedings.

WEIGHT OF BABY

Although occasionally premature babies will hold their birth weight, most of them will lose weight and should not be expected to regain their birth weight until the second week or—what is more likely—the end of the third week or even later. For very small premature babies an average daily gain of one-third to one-half ounce, with a doubling of birth weight in 75 to 100 days, may be considered satisfactory. The baby should be weighed daily if he is vigorous; otherwise he should be weighed every 2 to 3 days.

ADDITIONAL FOODS

Premature babies are very likely to develop rickets, and therefore it is important that some form of antirachitic treatment should be begun at the end of the first week of life. Premature babies usually require about twice as many units of vitamin D—1,000 to 1,500 units—as do babies born at term. For the premature baby it is best to give vitamin D in some concentrated form (tested), a few drops of which will contain the necessary number of units. Some form of fish-liver oil that has a high concentration of vitamin D or some other form of vitamin D may be used, but the doctor should be consulted about the form and the exact amount of vitamin D to be given.

If a concentrated form of vitamin D is not available and *if the infant is vigorous and swallows well* pure cod-liver oil may be given. Begin with one-fourth teaspoonful of cod-liver oil twice a day, and after 2 to 3 weeks increase this amount to one-half teaspoonful twice a day. When the baby is 6 weeks old this amount may be increased to 1 teaspoonful twice a day, and in the third month to 1½ teaspoonfuls twice a day. At first the cod-liver oil may be given with a medicine dropper, the tip of which is covered by a short piece of rubber tubing; later a teaspoon may be used.

Orange juice—one-half teaspoonful in water once a day—should be begun when the baby is 2 weeks old and the amount increased gradually, so that at 2 months

the baby receives one-half tablespoonful twice a day and at 3 months, 1 tablespoonful twice a day. As the premature baby grows older other foods should be added to his diet as they are to the diet of the full-term baby. (See Infant Care, p. 57.)

OUTDOOR LIFE

Since changes in temperature are to be avoided for the premature baby, he should not be taken outdoors while very small. The age at which he may be put outdoors varies with the size and degree of prematurity of the baby and with the weather and season of the year. After he has attained the size and vigor of a 2-month-old baby, he may be put outdoors in the same way that a full-term baby of this size would be.

Sun baths cannot be given to small premature babies. When the baby grows larger and more vigorous, sun baths can be given just as they are given to full-term babies. (See Infant Care, p. 33.) Because the sun baths cannot be given early in life, special effort must be made to give some form of tested vitamin D. Sun baths with artificial sun lamps may also be ordered by the doctor.

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Title

Standard Plans for Nurseries for Newborn

In Hospitals of 50 to 200 Beds

ETHEL C. DUNHAM, M.D.; MARSHALL SHAFFER; NEIL F. MacDONALD

HOSPITAL nurseries for newborn infants need especially careful planning at the present time. There are several reasons for this, among them—

The number of women entering hospitals for maternity care has steadily increased in recent years, with the result that nurseries have become overcrowded.

A new impetus to construction of maternity facilities has been given, under the terms of the Lanham Act.

Standards of care have been developed which call for more space per infant and new types of equipment in nurseries.

The plans herein set forth, although they may be adapted to any hospital, new or old, large or small, are for small general hospitals, with bed complements of 50 to 200, which are expected to be built chiefly in rural areas and in small cities. The plans have been developed with the aim of providing for the safety and welfare of the infants and of facilitating their care in the minimum space that conforms with modern standards.

It has been estimated that in different localities the proportion of the bed complement that must be reserved for maternity patients will vary from 10 to 25 per cent. In estimating the number of maternity beds needed, consideration must be given to the local situation; that is, whether there is a maternity hospital in the locality, how many maternity beds are available in other hospitals in that locality or nearby, how many live births occur annually in the community to be served by the hospital, and what are the customs of the people in regard to the use of hospitals for maternity care.

The most recent Census reports available show that in 1940 more than half (56 per cent) of the total live births in the United States took place in hospitals. The percentage of hospital births was much higher in cities (84 per cent) than in rural areas (25 per cent). For white infants in the country as a whole it was 60 per cent; for Negro infants it was 25 per cent; and for Negro infants in rural areas only 3 per cent. It is evident, therefore, that there may be considerable variation in the need for maternity beds, and hence for bassinets, even in hospitals of the same size. For this reason calculation of the number of bassinets needed in hospital nurseries should be based not on the total number of beds but rather on the local number of live births per year expected to occur in the hospital.[1] Consideration should also be given to providing a sufficient number of bassinets to allow for 75 per cent occupancy.

Although in some circumstances, a hospital of relatively small bed capacity may need more bassinets than another hospital of greater bed capacity, still, under average conditions, the four accompanying plans, which are intended to meet the needs of hospitals expecting 235; 470; 700; and 920 live births, should be applicable to 50-bed, 100-bed, 150-bed, and 200-bed acute general hospitals.

Planning of hospital nurseries has been given little consideration in textbooks on obstetrics and pediatrics, even in discussions of the routine for care of infants. The professional journals, however —medical, nursing, and hospital—have in recent years published a number of articles on the planning of such nurseries, largely from the point of view of preventing infection among infants cared for in a single nursery.

As a result of clinical experience and research,

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[1]Dunham, Ethel C., M.D., Tesone, Olivia F., and Tesone, Silver L.: Plans for Hospital Nurseries for Newborn Infants. *The Child*, vol. 7, No. 2. (August 1942), pp. 21-25.

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certain basic standards have been developed for nursery care of newborn full-term and premature infants.[2, 3, 4] The plans for hospital nurseries set forth in this paper meet the most recent standards, which require among other things that each nursery house relatively few infants; that the bassinets be widely spaced, or separated by partitions into cubicles; that facilities be provided for using aseptic technique and for giving individual bedside care to each infant; that optimum conditions of temperature, relative humidity, and ventilation be maintained; and that there be provisions for special care of premature infants, and for isolation of infants who are ill or suspected of being ill.

The Nursery

Location and Size

The nursery should be located in the obstetric division of the hospital, but out of the line of traffic from other services. There should be outside windows to admit daylight and sunlight if provision is made for controlling the sunlight in hot seasons and hot climates.

The size of each nursery should be such that it will provide a minimum of 30 square feet and 300 cubic feet per infant. Although this requirement is slightly in excess of older standards, it is the minimum space that will enable the nurse to give proper bedside care to each infant. (It should be noted that common bathing and dressing tables are intentionally not provided for in the standard plans.) It is preferable that the bassinets be separated by partitions forming cubicles of sufficient size to enable a nurse to give bedside care conveniently to each infant.

Each nursery should house relatively few infants. For full-term infants nurseries have been planned to house not more than eight infants, since this is the maximum number of infants that one nurse can care for satisfactorily. With this arrangement the traffic through the nursery, and consequently the bacterial contamination of the air, will be reduced to a minimum.

For premature infants, who require more specialized care, a nursery has been planned to house not more than four infants, the maximum number of premature infants that one nurse can care for satisfactorily.

If it is anticipated that fewer than four premature infants will, as a rule, be under care at any one time a separate nursery for them will not be practicable, and they may be cared for in the nursery for full-term infants. Suitable environmental temperature and humidity may be maintained in heated bassinets or incubators. Figure 1 shows such an arrangement in a hospital in which 235 live births are expected per year.

In larger hospitals, with 470 or more live births per year, it will be necessary to provide for four or more premature infants at a time, and there must then be one or more separate nurseries for these infants. Each nursery for premature infants should contain not more than four heated bassinets or incubators.

Control of Atmospheric Conditions

Adequate ventilation, and control of temperature and humidity, contribute to the welfare of newborn infants, especially premature ones. The ideal arrangement is complete air conditioning, that is, controlled temperature, humidity, and air motion, with filtering of air and sterilization by ultraviolet light or by some other method.

In the absence of air conditioning, windows or air ducts must be depended on as the source of fresh air, and they should be so arranged that there will be circulation of air without drafts around bassinets and with the air currents so directed that they will not strike the infant. In a nonair-conditioned nursery, partitions forming cubicles should reach only part way to the ceiling, so as to allow for ventilation. There should be thermostatic control of temperature. Sterilization of air at entrances to cubicles will provide additional protection. For premature infants, who require relatively high temperature and humidity, the environment may be controlled by the use of especially equipped incubators.

In plans for new hospitals, if air conditioning is not possible, the necessary ducts at least should be provided, so that later installation of air conditioning will be facilitated.

Walls, Ceilings, and Floors

The walls and floors of the nurseries and accessory rooms should be constructed of nonabsorbent material, and it is preferable to have all corners rounded to facilitate cleaning with soap and water. The ceilings should be acoustically treated with material which is easily washable.

If the nursery is air-conditioned, partitions should extend from floor to ceiling; if not, each partition should be about 5 feet high, leaving space between the top of the partition and the ceiling, to provide ventilation.

A section of each partition, extending about 18 to 24 inches above the bassinet level should be glazed and transparent, so that the nurse can see through it.

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[2] Crane, Marian M., M.D.: Standards for Care of Newborn and Premature Infants in Hospitals. *Hospitals*, Journal of the American Hospital Association, vol. 14, no. 12 (December 1940), pp. 57-61.

[3] Standards for Care of Premature Infants in Hospitals Having a Maternity Service. U. S. Department of Labor, Children's Bureau, Washington, 1941. 8 pp. (Mimeographed)

[4] Standards and Recommendations for the Care of Newborn Full-Term and Premature Infants. U. S. Department of Labor, Children's Bureau, Washington, 1942. 15 pp. (Mimeographed)

The plans have been drawn up in an effort to facilitate the work of physicians and nurses in providing for the safety and welfare of the infants in accordance with these principles, in the minimum space practicable. Some of the characteristics of a nursery unit that conform with these plans are:

The number of persons entering the nursery is reduced to a minimum. An examining room is provided, just outside the nursery, for the use of the physician. A closed window between the nursery and the corridor permits relatives to view the infants (visitors are not, of course, admitted to the nursery). *Thus the danger of air contamination is reduced.*

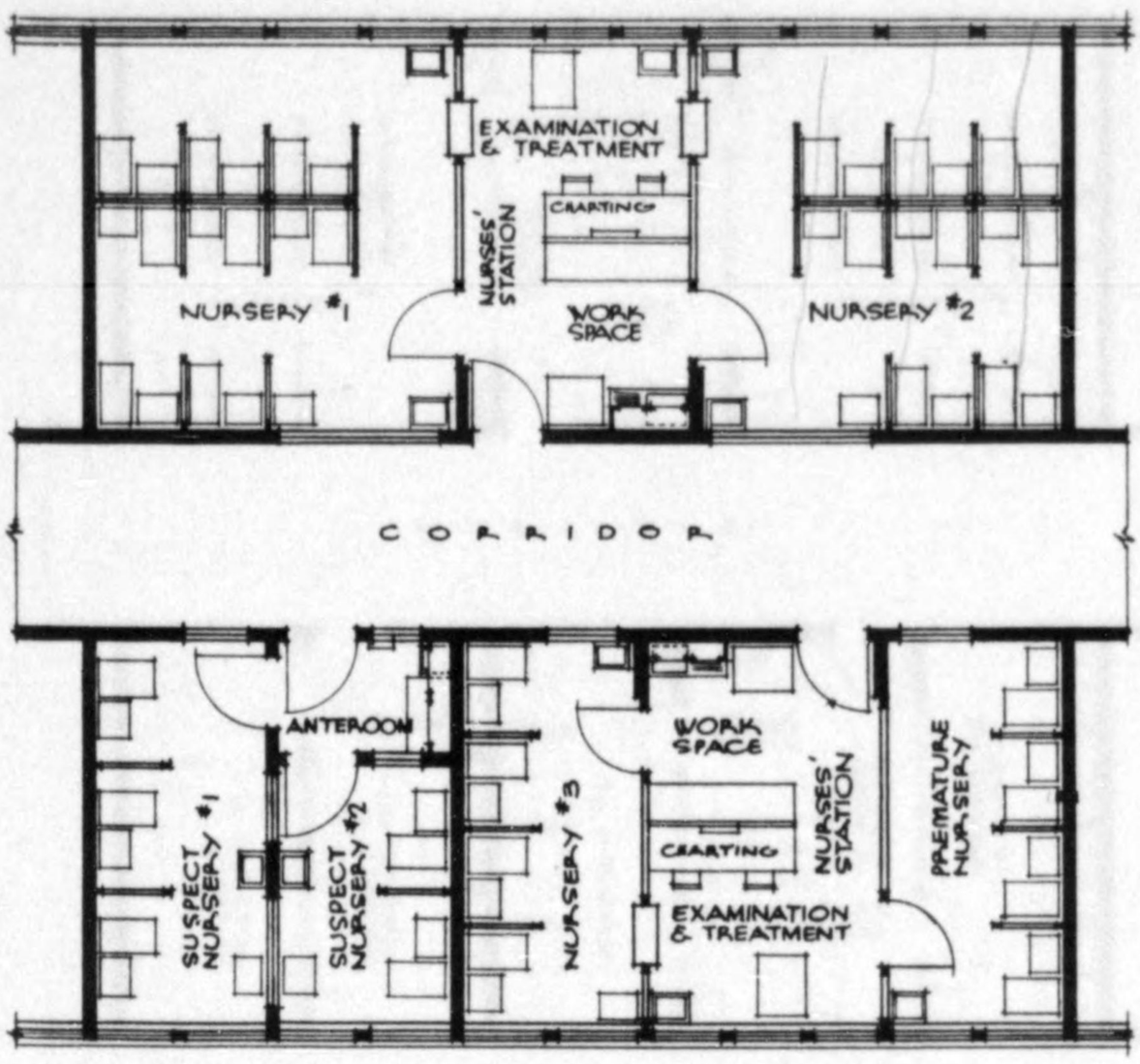

Figure 3—Nursery Layout for 700 Expected Live Births Per Year

The bassinets are separated by partitions into cubicles large enough to permit bedside care to be given. There is a suspect nursery, completely separated from the nursery proper. Lavatories that have hot and cold running water and faucets with knee or elbow control are conveniently placed in all nurseries and accessory rooms. *Thus the danger of cross infection is further reduced.*

The nurse's station is so situated that she is in a strategic position to control traffic and to work with a minimum of effort, because (1) the only entrances to the nursery are through her station, (2) windows in partitions make it possible for her to observe the main nursery and the suspect nursery, and (3) the work space is a part of the station. In addition, the bedside tables are stocked with a twenty-four-hour supply of clothing, bedclothes, and diapers, and feedings are delivered to the unit at regular intervals. All this should make it unnecessary for the nurse to leave the nursery in the course of her eight-hour period of duty.

Thus the work of the nurse is greatly facilitated, and her time can be used to the greatest advantage for the care of the infants.

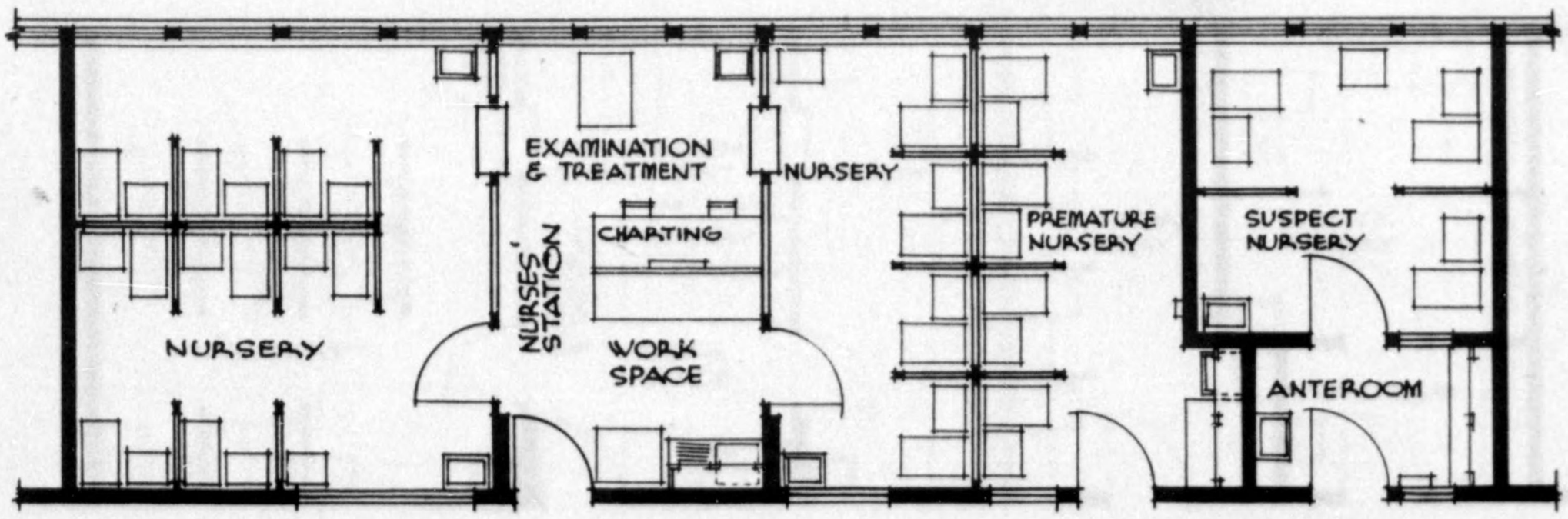

Figure 2—Nursery Layout for 470 Expected Live Births Per Year

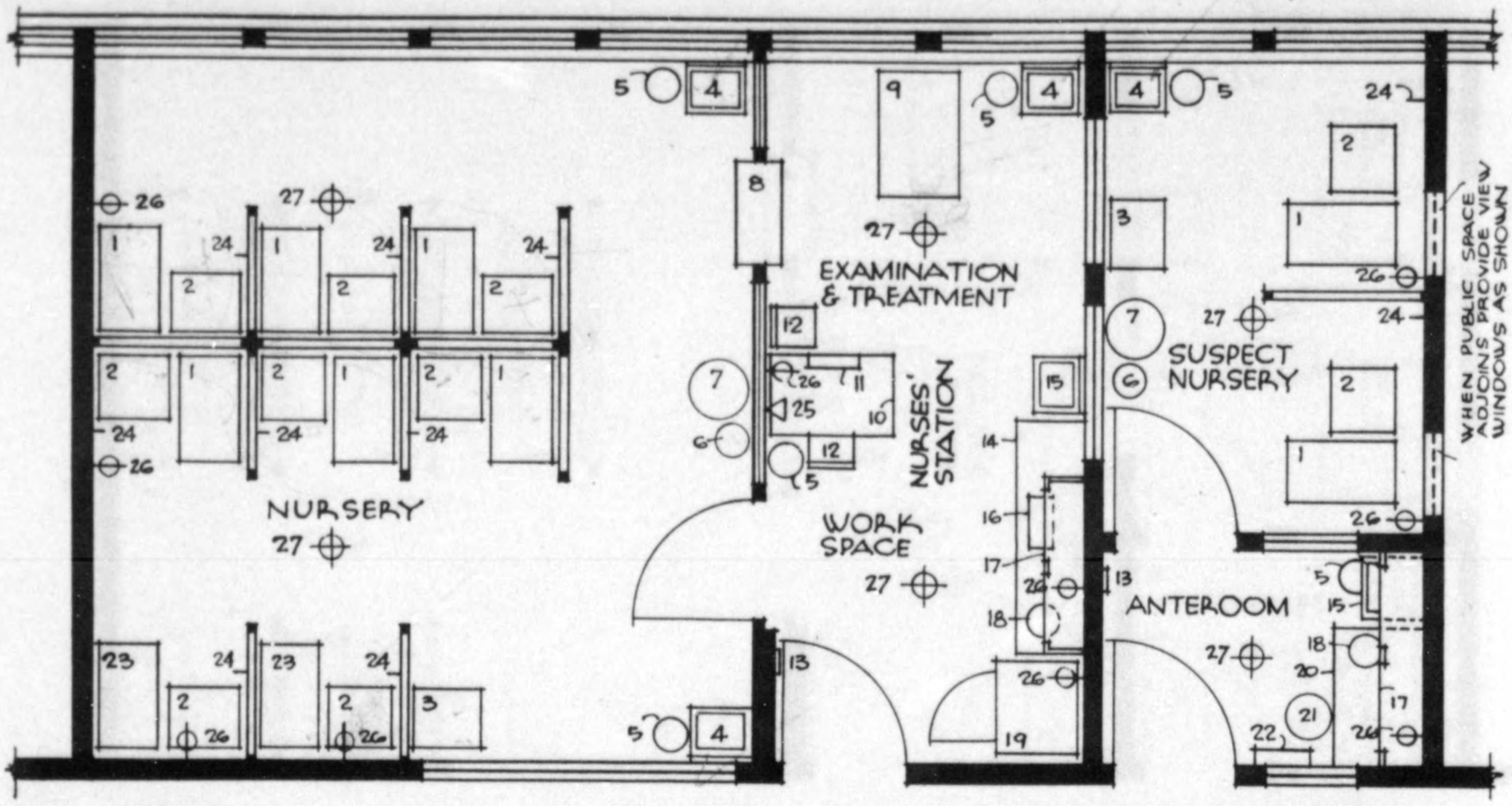

Figure 1—Nursery Layout For 235 Expected Live Births Per Year. (1) Bassinet; (2) Bedside Table; (3) Scales Table; (4) Lavatory; (5) Waste Receptacle; (6) Sanitary Receptacle; (7) Linen Hamper; (8) Pass Window with Shelf; (9) Treatment Table; (10) Nurse's Charting Desk; (11) Chart Rack for Ten Charts; (12) Chair; (13) Hook Strip; (14) Counter—Cabinets Below; (15) Sink; (16) Instrument Sterilizer; (17) Cabinet Above Counter; (18) Single Hot Plate; (19) Refrigerator, six cubic foot; (20) Counter and Desk, open below; (21) Charting Stool; (22) Rack for Two Charts; (23) Incubator; (24) Gown Hook; (25) Telephone Outlet; (26) Convenience Outlet; (27) Ceiling Light (Indirect)

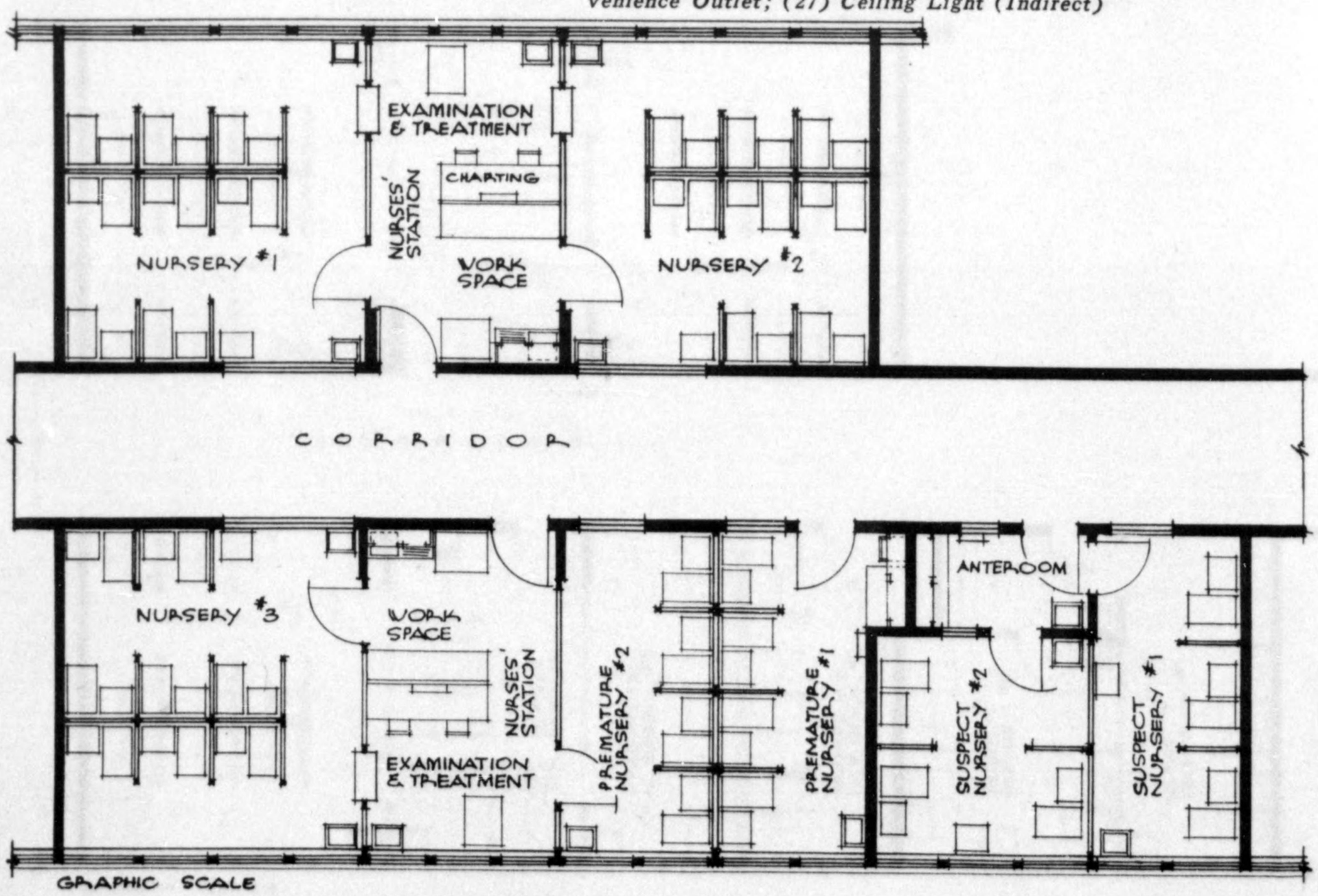

Figure 4—Nursery Layout for 920 Expected Live Births Per Year

A viewing window should be provided on the corridor side of each nursery, so that relatives may see the infants without entering the nursery.

Furnishings

The furnishings of the nursery should include the following:

Bassinets—Each bassinet should be of the type that consists of a single metal stand with a steel-band removable basket, to permit washing with soap and water.

Bedside table—A bedside table should be furnished for each bassinet, to serve as a work table and for storage of a 24-hour supply of equipment needed for care of the infant. Each table should have a top 16 inches by 20 inches, a drawer, a lower compartment with shelf, and a door. A "unit type" of bassinet is preferable but is relatively expensive. In this type there is a cabinet below the basket, which can be pulled out so that the top may be used as a work table; if the cabinet is stationary, there is a shelf that can be pulled out or up at one end to serve as a work table.

Incubators—The incubators may be either a commercial or a home-made type. They should conform to specifications that have been published.[5]

Lavatory—A lavatory with hot and cold running water should be in each nursery. Faucets should have elbow, knee, or foot control.

Sanitary can—There should be at least one metal sanitary can for diapers, with the top controlled by foot pedal.

Linen hamper—There should be at least one linen hamper with removable bag, for soiled linen other than diapers.

Accessory Rooms

Certain accessory rooms are essential; those used frequently should be so situated that traffic to and from the nursery will be reduced to a minimum.

Nurse's Station

The nurse's station shown in these plans is designed as a "control station," with provision for a work space and an area for the doctor to use for examinations and treatment. The nurse's desk is placed so that she occupies a strategic position from which she can guard the entrances from the corridor to the station and from the station to the nurseries for full-term infants. These nurseries are visible through observation windows in the walls. The nurse's station is provided with a desk, a rack for charts, a waste basket, and two chairs—one for the nurse and the other for the physician. In the plans for larger hospitals a double desk is provided, for two nurses.

Work space—In these plans, the nurse's work space is shown as a separate area, but as part of the nurse's station. This arrangement will enable the nurse to carry on nearly all of her activities without losing sight of the infants. In addition, the distance she has to travel in giving care will be reduced to a minimum. The work space should be provided with a refrigerator, a sink, a work table, an instrument sterilizer, a bottle warmer, and a hot plate.

Examining room—The examining room, which may serve also as the treatment room, is shown as a separate area of the nurse's station. It is separated from the nursery by a sliding window, or by a Dutch door with a shelf about 18 inches wide and 30 inches long for use in examining the infant. A table about 24 inches wide, 30 inches long, and 36 inches high, should be provided for use in giving treatments. In this area there should be a lavatory and a waste receptacle.

Suspect nursery—The suspect nursery should be a completely separate unit. A minimum of 40 square feet and 400 cubic feet should be provided for each suspect bassinet. This will give adequate space not only for bedside care but for treatment of the isolated infant.

There should be a minimum of two suspect bassinets even in the smaller hospitals. Suspect bassinets should be provided in the ratio of one for each five bassinets for well infants. No suspect nursery should have more than three bassinets. When positive diagnosis has been made, the infant may be removed elsewhere in the hospital.

It is important to have an anteroom between the corridor and the suspect nursery. It should be provided with a lavatory, a desk or shelf, a hot plate, and a cabinet for necessary supplies. Two viewing windows should be provided, one in the corridor wall, for visitors, and one in the wall between the work space and the nursery.

Accessory Rooms Not Shown in the Standard Plan

Milk room—The location of the milk room and the supervision of the work of making up the feedings will vary with the type of hospital, its personnel, and its special administrative problems. Under any circumstances it is essential that a separate room be provided for preparing the milk mixtures and that this room be used for no other purpose. The room should be situated where the danger of contamination is least and where the most adequate supervision can be given, by a dietitian or a nurse who is experienced in milk-room procedures. If the hospital has a dietitian it may

[5]Dunham, Ethel C., M.D., Dickinson, H. C., Ph.D., Gowens, Grace J., and Withers, Juanita: Incubators for Premature Infants. *American Journal of Public Health*, vol. 30, no. 12 (December 1940), pp. 1415-1421.

be best to locate the milk room near the general diet kitchen and to have the preparation of the milk mixtures supervised by the dietitian.

Physicians' locker room—It is assumed that a physicians' locker room will be provided near the entrance to the hospital, where the physician may leave his hat and overcoat. In the nurse's station a rack or hook is provided so that he may remove his suit coat before he enters the examining room to scrub and gown.

Nurses' locker room—It is also assumed that a nurses' locker room will be provided.

Demonstration room—A demonstration room in which the nurse may teach the mother, before she leaves the hospital, how to bathe and feed her infant, is not provided for in the plans for these small hospitals. Such a demonstration may, however, be given in the nursery while the mother observes from the corridor through the viewing window. Provision of a loud speaker would make it possible for the mother to hear the nurse's discussion of the procedures she is demonstrating.

Summary

In an effort to facilitate the work of physicians and nurses in providing for the safety and welfare of newborn infants in accordance with modern standards, in the minimum space practicable, the United States Public Health Service, Federal Security Agency, and the Children's Bureau, United States Department of Labor, have developed plans for hospital nurseries. Four nursery layouts have been drawn, for hospitals expecting 235; 470; 700; and 920 live births per year. Although in some circumstances a hospital with a relatively small bed capacity may need more bassinets than one with a larger bed capacity, still, under average conditions, and allowing for 75 per cent occupancy, these layouts should be applicable to 50-bed, 100-bed, 150-bed, and 200-bed hospitals.

The plans meet standards requiring, among other things, that each nursery house no more infants than can be cared for satisfactorily by one nurse; that bassinets be widely spaced, or, preferably, separated by partitions forming cubicles; that optimum atmospheric conditions be maintained; that facilities be provided for using aseptic technique and for giving individual bedside care to each infant; and that provision be made for the special care of premature infants and for isolation of infants who are ill or suspected of being ill.

The nurseries should be located in the obstetric division of the hospital, but out of the line of traffic from other services. There should be outside windows to admit daylight and sunlight. Provision should be made for controlling the sunlight in hot seasons and hot climates.

Optimum atmospheric conditions may be provided by complete air conditioning, including filtering and sterilizing of air. In the absence of air conditioning, air should be circulated without drafts striking the infant, there should be thermostatic control of room temperature, and partitions forming cubicles should reach only part way to the ceiling, so as to allow for ventilation.

The minimum space provided in the plan is, for each well infant, 30 square feet and 300 cubic feet; for each infant who is ill or suspected of being ill, 40 square feet and 400 cubic feet. Not more than eight bassinets are planned in each nursery for full-term infants, as this is the largest number that can be cared for satisfactorily by one nurse. Except in the smallest hospital, at least one separate nursery for premature infants is provided, with not more than four heated bassinets or incubators in a nursery, as four is the largest number of premature infants that can be cared for satisfactorily by one nurse.

Each plan includes at least one suspect nursery, completely separated from all other nurseries, with a minimum of two and a maximum of three bassinets.

In these plans the bassinets are separated by partitions, with transparent upper sections, forming cubicles large enough to permit the nurse to give bedside care to each infant conveniently. Common bathing and dressing tables are intentionally not provided for in the plans. Instead a combination bedside table and cabinet is placed next to each bassinet, to serve as a work table and for storage of a 24-hour supply of equipment for the care of the infant.

A lavatory with hot and cold running water is provided in each nursery. Faucets should have elbow, knee, or foot control.

In order to reduce the traffic into nurseries, and thus to lessen the danger of air contamination, a Dutch door or a sliding window is placed between each full-term nursery and the area where physicians examine and treat the infants, so that the physicians need not enter the nurseries. Observation windows are planned for, so that the nurse from her station can guard the entrances into the nurseries for full-term infants and can see the bassinets. A viewing window is also provided between each nursery and the corridor, so that visitors may see the infants without entering the nursery.

The milk room is not shown in the plan. It is essential that this be a separate room, used for no other purpose. Its situation should be such that there will be the most adequate supervision of the preparation of the feedings and the least possible danger of contamination.