Obstetrics for nurses / by Joseph B. De Lee.

Contributors

De Lee, Joseph B. 1869-1942.

Publication/Creation

Philadelphia ; London : W.B. Saunders, 1913.

Persistent URL

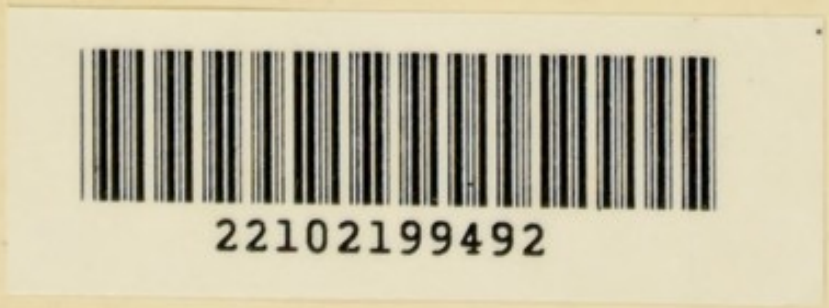
https://wellcomecollection.org/works/huxnpphw

License and attribution

Conditions of use: it is possible this item is protected by copyright and/or related rights. You are free to use this item in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s).

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org


22102199492

Special Prize
awarded to
Nurse Sharp
for the Senior Probationer
obtaining most marks
in all round work
during the past year.
77%.

January 24th 1917.

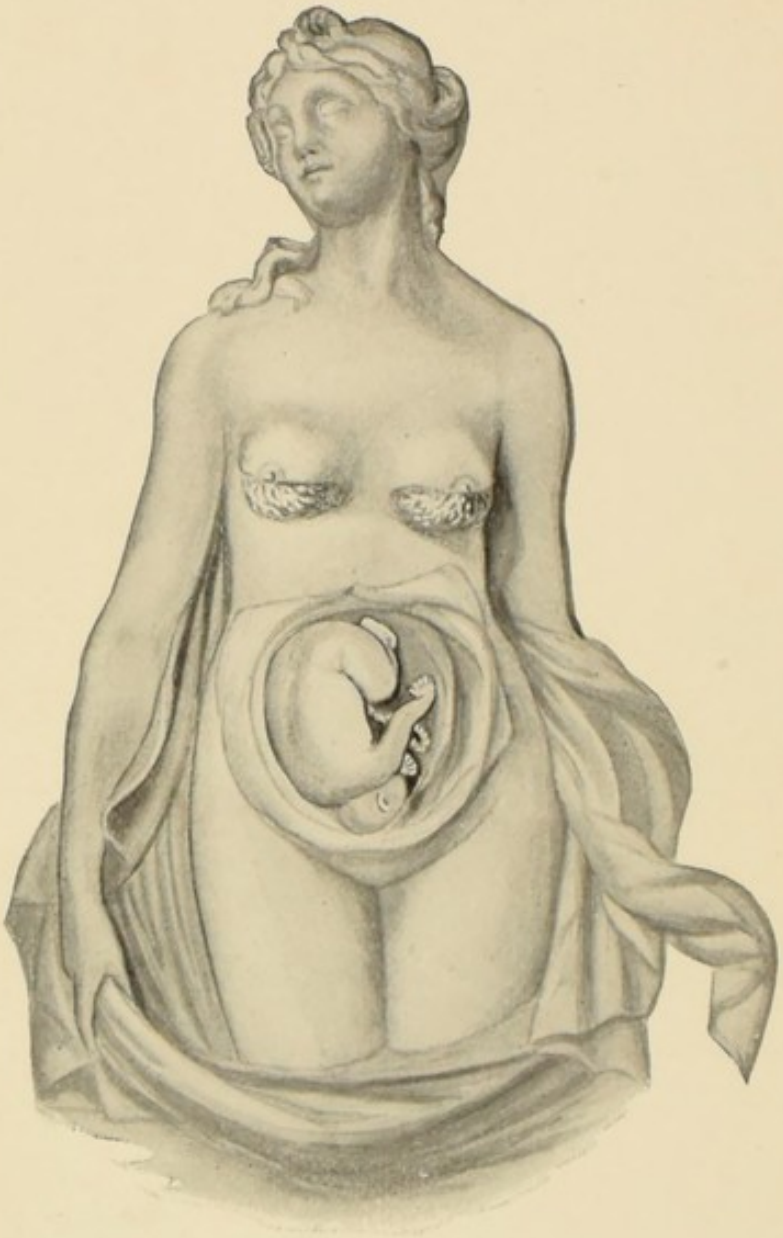
Med
K50795

Harold Buckell.
M.D.

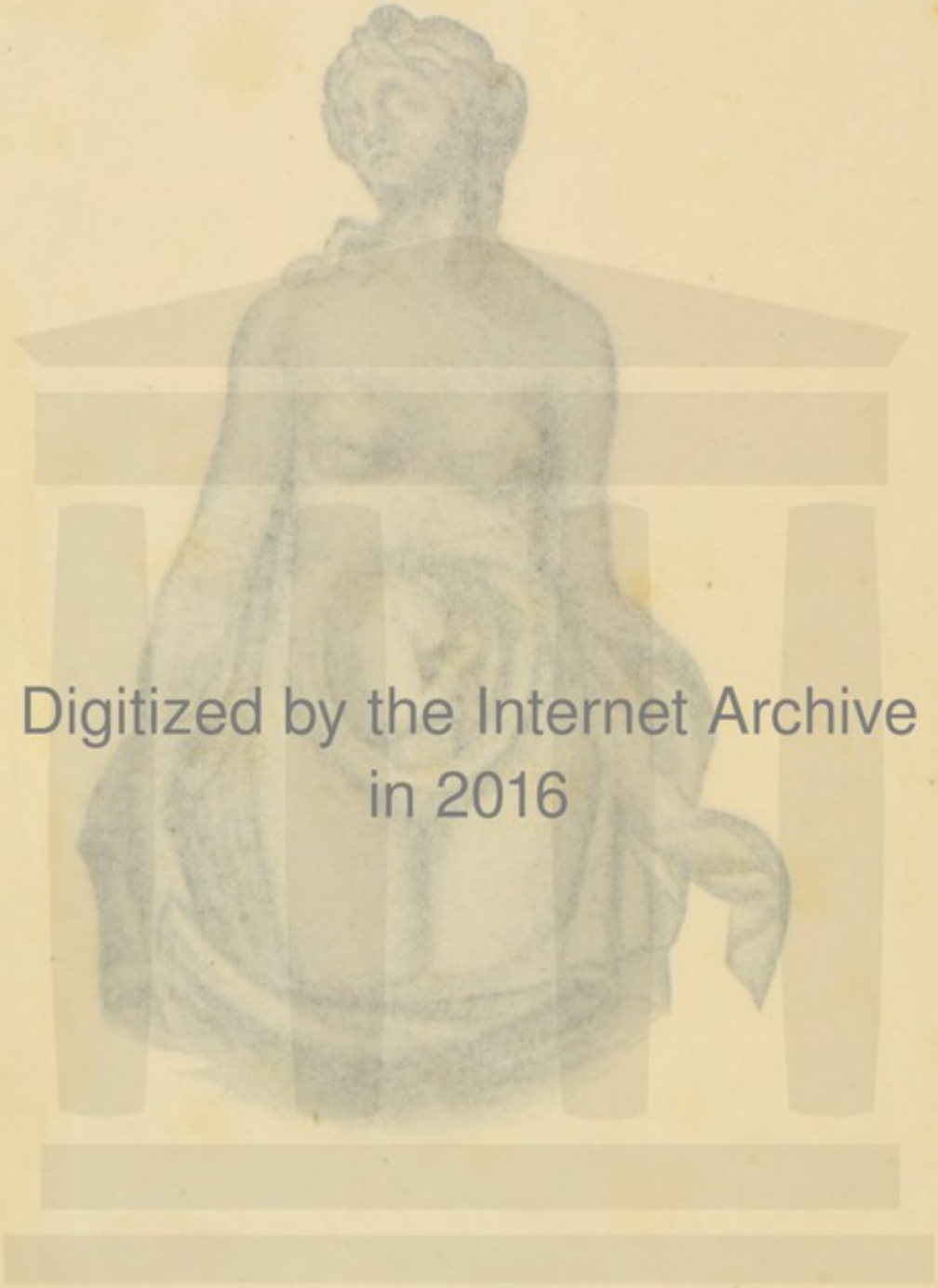
M. J. Turner.
Supt. Nurse

E1|265|1





From an old Italian wax carving, evidently modeled after one of Hunter's plates.



From an old Italian wax carving, evidently modeled after one of Hunter's plates.

Digitized by the Internet Archive
in 2016

https://archive.org/details/b28049652

OBSTETRICS

FOR

NURSES

BY

JOSEPH B. DE LEE, A.M., M.D.

Professor of Obstetrics, Northwestern University Medical School; Obstetrician to Mercy, Wesley, Provident, Cook County, and Chicago Lying-in Hospitals; Lecturer in the Nurses' Training Schools for Same

---

FOURTH EDITION, THOROUGHLY REVISED

PHILADELPHIA AND LONDON

W. B. SAUNDERS COMPANY

1915



Copyright, 1904, by W. B. Saunders and Company. Reprinted October, 1904. Revised, reprinted, and recopyrighted July, 1906. Reprinted February, 1907, and November, 1907. Revised, reprinted, and recopyrighted June, 1908. Reprinted January, 1909, June, 1909, January, July and October, 1910, March, August and November, 1911. Reprinted March, 1912, October, 1912, and February, 1913. Revised, entirely reset, reprinted, and recopyrighted July, 1913. Reprinted August, 1914, November, 1914, January, 1915, and August, 1915.

Copyright, 1913, by W. B. Saunders Company.

Reprinted September, 1915.

PRINTED IN AMERICA

PRESS OF
W. B. SAUNDERS COMPANY
PHILADELPHIA



TO

"THE WOMAN ABOUT TO BECOME A MOTHER

OR WITH THE NEW-BORN INFANT UPON HER BOSOM,

WHEREVER SHE BEARS HER TENDER BURDEN,"

THIS BOOK IS RESPECTFULLY DEDICATED.

8468 635

WELLCOME INSTITUTE LIBRARY
Coll. welMOmec
Call No. WY

PREFACE TO THE FOURTH EDITION

For this, the fourth edition, both text and illustrations were thoroughly worked over. In the text few changes were necessary, the fundamentals of obstetric nursing remaining about the same from year to year. Several subjects were added, such as the after-care of fistula operations, Momburg's treatment for hemorrhage, and blood transfusion. The chapter on Infant Feeding was revised by Dr. F. X. Walls; that on Cesarean Section was much amplified in view of the more generalized performance of the operation, and the latest scientific discoveries of interest to the nurse were mentioned.

A number of new illustrations have been added, and some of the old replaced by improved drawings and photographs. Four new colored plates also have been inserted.

Joseph B. De Lee.

5028 Ellis Avenue, Chicago, Ill.

PREFACE

ALTHOUGH this book is intended primarily for nurses, the author believes that medical students will find something of value in it, since the duties of a nurse often devolve upon them in their early years of obstetric practice.

There are really two subjects considered in the book,—obstetrics for nurses and the actual obstetric nursing,—and the author has sought to combine them so that the relations of one to the other might be natural and mutually helpful in presenting this branch of medicine in a clear and interesting form.

The illustrations are nearly all original, and were made expressly for the work. The photographs were taken by the author from actual scenes, and the reader is invited to study the details, as especial care was taken to render the pictures true to life in every respect.

The text is the outgrowth of eight years' lecturing to the nurses of four different training schools.

For the preparation of the dietary the author acknowledges his thanks to Mrs. E. E. Koch, Superintending Nurse of the Chicago Lying-in Hospital, and for the chapter on the Infant's Layette he is indebted to Miss Katherine DeWitt, who does private nursing for many of his cases.

Dr. F. X. Walls kindly allowed the publication of a method of milk modification devised by him.

Further, the author thanks those nurses and internes who have aided and posed in the settings for the photographs, and the publishers, who have spared no effort in the production of the illustrations.

JOSEPH B. DeLEE.

CONTENTS

PAGE

INTRODUCTION 17

PART I

Anatomy and Physiology of the Reproductive System

CHAPTER I

ANATOMY OF THE FEMALE GENERATIVE ORGANS 21

The Bony Pelvis, 21—Varieties of Pelves, 26—The Soft Parts, 28—The Uterus, 28—The Bladder, 31—The Rectum, 31—The Peritoneum, 31—The External Genitals, 31—The Vulva, 32—The Perineum, 33—The Anus, 34—The Breasts, 35.

CHAPTER II

PHYSIOLOGY 37

The Function of Reproduction, 37—Ovulation, 37—Puberty, 37—Menstruation, 38—Conception, 40—The Physiology of the Fetus in the Uterus, 46—The Placenta, 46.

CHAPTER III

PREGNANCY, LABOR, AND THE PUERPERIUM 49

Maternal Changes in Pregnancy, 49—Labor, 54—Lightening, 55—False Pains, 56—The Show, 57—The Labor Pains, 58—The Bag of Waters, 59—The Puerperium, 61—The Uterus, 61—The Lochia, 63—The Breasts, 65—General Changes in the Puerperium, 66—The Kidneys, 66—The Bowels, 67—The Skin, 67—The Mental Condition, 67.

CHAPTER IV

THE NEWBORN INFANT 68

The Baby in the First Weeks, 68—The Cry of a Newborn Infant, 68—Sleep, 69—Temperature, 69—The Skin, 69—The Navel, 70—The Baby's Bowels, 70—The Kidneys, 70—The Weight, 71.

CHAPTER V

PAGE

THE HYGIENE OF PREGNANCY 73

Diagnosis of Pregnancy, 73—Diagnosis of Time of Confinement, 74—Mode of Living for the Pregnant Woman, 75—Dress, 75—Preservation of the Figure, 78—The Diet, 80—Exercise, 81—The Mind during Pregnancy, and Maternal Impressions, 82—The Determination of Sex, 83—The Bowels, 84—The Kidneys, 86—Toxemia, 87—Bathing, 87—Care of the Genitals, 89—Care of the Breasts, 89—The Engagement of the Nurse, 90—Rules for the Obstetric Nurse, 92—Sterilizing, 92—The Nurse's Visit, 95.

CHAPTER VI

THE INFANT'S LAYETTE 97

The Wardrobe, 97—Nursery Conveniences, 100.

PART II

Nursing During Labor and in the Puerperium

CHAPTER I

CARE DURING LABOR 103

Care during the First Stage, 103—Preparation of the Room, 105—Preparation of the Bed, 107—Preparation of the Patient, 109—Preparation for the Doctor, 110—The Diet in the First Stage, 113—The History-sheet, 114—General Instructions, 114—The Husband, 117—When to Summon the Doctor, 117—Care during Second Stage, 118—Scopolamin and other Anesthetics, 120—Care during Third Stage, 125—Perineorrhaphy, 129—The First Care of the Newborn Child, 132—Care after the Third Stage, 134.

CHAPTER II

CARE DURING THE PUERPERIUM 135

Daily Care of the Mother, 135—The Breasts, 135—Care of the Genitals, 138—Special Care in Cases of Complete Laceration of Perineum, 140—The History-sheet, 141—Diet, 141—The Bowels, 144—The Bladder, 145—Catheterization, 146—Sleep, 147—General Treatment, 147—Visitors, 148—The Time of Getting Up, 148—Nursing after Patient is Up, 150.

CHAPTER III

CARE OF THE CHILD 151

Visitors, 151—Bathing, 151—Care of the Navel, 154—The Eyes, 155—The Bowels, 156—The Diaper, 159—Urination, 159—Nursing, 160—The Diet, 164—Weighing the Infant, 166—The Temperature, Pulse, and Respiration, 167—Training the Baby, 167.

CHAPTER IV

PAGE
PRESENTATIONS AND POSITIONS 169

The Diagnosis of Presentation and Position, 173—Breech Cases, Shoulder, or Transverse Presentation, 177.

CHAPTER V

OBSTETRIC OPERATIONS 178

Preparation for Operation, 180—Preparation of the Room, 183—Preparation of the Patient, 184—Preparation of Instruments, 187—Light and Heat, 187—Anesthesia, 188—Care after Operations, 188—Care of the Child, 189—Care of the Mother, 190—Major Operations, 190—The Forceps, 190—Duties of Nurse during Forceps Operation, 193—The Walcher Position, 195—The Breech Extraction, 196—Version, 197—Decapitation, 197—Craniotomy, 198—Preparation for Mutilating Operations, 200—Baptism, 200—Cesarean Section, 201—Preparation for Cesarean Section, 203—Light, Heat, and Anesthetic, 207—The Operation, 208—The After-care, 209—Convalescence, 210—Vaginal Cesarean Section, 210—Symphysiotomy, 211—Pubiotomy or Hebosteotomy, 211—The Operation, 212—After-care of Symphysiotomy and Pubiotomy, 214—Minor Operations, 217—Preparation of Patient for Examination, 217—Perineorrhaphy, 218—Removal of Sutures, 220—Uterine Tamponade, 220—The Douche, 222—The Vaginal Douche, 223—The Uterine Douche, 224—Uterine Curettage, 224—The Administration of Saline Solution, 225—The Induction of Premature Labor, 230—Therapeutic Abortion, 234.

PART III

The Pathology of Pregnancy, Labor, and the Puerperium

CHAPTER I

OBSTETRIC COMPLICATIONS 237

Disorders of Pregnancy, 237—Nausea and Vomiting, 237—Hyperemesis Gravidarum, 238—Prevention of Decubitus, 242—Toxemia of Pregnancy, 242—Edema of the Extremities, 243—Varicose Veins, 243—Leukorrhea, 245—Pruritus, 245—Pendulous Abdomen, 246—Pain in the Abdomen, 247—Heartburn, 248—The Teeth, 248—Frequent Urination, 248—Fainting, 248—Melancholia, 249—Hemorrhages during Pregnancy, 249—Abortion, 249—Placenta Prævia, 250—Premature Detachment of the Placenta, 251—Extra-uterine Pregnancy, 252—Duties of the Nurse, 255—Eclampsia, 256.

CHAPTER II

COMPLICATIONS DURING LABOR 262

Breech Presentation, 269—Prolapse of the Cord, 270—Hemorrhages during Labor, 272—Postpartum Hemorrhage, 272.

CHAPTER III

PAGE

COMPLICATIONS OF THE PUERPERIUM 279

Puerperal Infection, 279—Frequency and Source, 283—The Prevention of Puerperal Infection, 284—The Asepsis of the Nurse, 285—Symptoms, 286—Treatment of Puerperal Infection, 287—Nourishment, 289—Rectal Infusion of Saline Solution, 289—Medicinal Treatment, 293—Surgical Treatment, 293—The Child, 293—The Nurse, 294—The History-sheet, 295—Disinfection, 296—Puerperal Thrombosis, 297—Phlegmasia alba dolens, 297—After-pains, 299—Tympany, 299—Constipation, 300—Vesico-vaginal Fistula, 301—Cystitis, 303—Headache, 304—Puerperal Insanity, 304.

CHAPTER IV

COMPLICATIONS OF THE PUERPERIUM (*Continued*) 307

Diseases of the Breasts, 307—Simple Engorgements, 307—Abnormalities of the Nipples, 312—Cracks, Fissures, and Blisters of the Nipple, 313—Mastitis, 315—Galactorrhea or Excess of Milk, 321—Agalactia or Scarcity of Milk, 321—Abnormal Milk, 325—Drying up the Milk, 326—Care of a Wet-nurse, 326.

CHAPTER V

THE DISORDERS OF THE FIRST WEEKS OF LIFE 328

Affections of the Digestive Organs, 328—Indigestion, 328—Colic, 329—Difficult Nursing, 330—Vomiting, 330—Constipation, 330—Diarrhea, 331—Green Stools, 332—Inanition Fever, 333—Thrush or Sprue, 333—Bednar's Aphthæ, 334—Marasmus, 334—Affections of the Respiratory Tract, 335—Snuffles, 335—Coryza, 336—Bronchitis and Pneumonia, 336—Cyanosis or Blue Babies, 337—Affections of the Urinary Organs, 337—Delayed Urination, 337—Uric Acid, 338—Phimosis, 338—Circumcision, 338—Dilatation, 341—Affections of the Skin, 341—Jaundice, 341—Eruptions of the Skin, 342—Vesicular Eruptions, 342—Chafing, or Eczema Intertrigo, 343—Other Affections of the Newborn Infant, 344—Enlargement of the Breasts, 344—Vulvitis, 345—Menstruation, 345—Delayed Separation of the Cord, 345—Granulations of the Navel, 345—Infections of the Newborn, 346—Infection of the Umbilicus, 346—Infection of the Eyes, or Ophthalmia Neonatorum, 347—Care of the Nurse Herself, 352—Infection of the Mouth and Throat, 352—Hemorrhages in the Newborn, 352—Operative Injuries, 353—Injuries to the Brain, 355—Caput Succedaneum, 356—Cephalhematoma, 356—Congenital Deformities, 356—Monstrosities, 356—Harelip, 356—Cleft Palate, 356—Occlusion of the Anus or Imperforate Anus, 356—Tongue-tie, 357—Supernumerary Fingers and Toes, 358—Hernia, 358—Sundry Complications, 358—Convulsions, 358—Lockjaw or Tetanus, 359—Complications due to the Use of Hot-water Bags, 359—Overlying the Child, 360—Asphyxia Neonatorum, 360.

CHAPTER VI

PAGE

THE CARE OF PREMATURE INFANTS 365

The Incubator or Couveuse, 368—Care of the Incubator, 373—The Ventilation, 375—The Bed, 375—The Dress, 376—Warm Feet, 377—The Diet, 378—Method of Feeding, 380—The Bath, 384—The Care of the Eyes, Nose, Mouth, etc., 385—General Care, 386—Removal from the Incubator, 386—The Particular Diseases of Premature Infants, 387—Thrush or Sprue, 388—Nasal Infection, 388—Cyanosis, 389—Atelectasis Pulmonum, 390—Convulsions, 390.

CHAPTER VII

INFANT FEEDING 392

Contraindications to Maternal Nursing, 393—Obtaining Milk for Analysis, 394—Substitutes for Mothers' Milk, 395—Amount of Food at a Feeding, 400—The Caloric Method of Feeding, 402—Filling the Bottles, 403—Sterilization of Milk, 403—Quality of the Milk, 404—Whey, 406—Peptonized Milk, 407—Barley-water, 407—Beef-juice, 408—Artificial Infant Foods, 408.

APPENDIX

VISITING NURSING IN OBSTETRIC PRACTICE 411

Care during Labor Among the Destitute, 411—Duties during the Puerperium, 414.

HOSPITAL *vs.* HOME NURSING 419

Ward Care, 419—In the Nursery, 420—Recording of Symptoms, 421—Prevention of Accidents, 421—Orders, 422—Relations to the Patient, 423—Economy, 423—Methods of Sterilization, 424—Sterilization of the Hands, 424—Fürbringer's Method, 425—Hot-water and Alcohol Method of Ahlfeld, 425—Halsted's Permanganate Method, 425—Author's Method, 426—Rubber Gloves, 426—Sterilizers, 430—Sterilization by Dry Heat, 431—Preparation of Instruments, 432—Sterilization of Brushes, 433—Preparation of Dressings, 433—Newspapers, 435—Lysol Gauze for Tamponade, 435—Plain Sterilized Gauze, 437—Iodoform Gauze, 437—Gelatin Gauze, 437—Suture Material, 438—Catgut, 438—Silk, 438—Linen Suture Yarn, 439—Linen Bobbin for Tying the Cord, 439—Basins, Pitchers, Douche-cans, Bedpans, etc., 439—Gowns, Aprons, Leggins, Towels, Sheets, and Pillow-slips, 440—Tables, Chairs, the Bed, and other Furniture, 440—Sterilizing Apartments, 440—Preparation of Solutions, 441—Sterile Water, 441—Bichlorid of Mercury Solutions, 442—Carbolic Acid Solution, 443—Lysol Solution, 443—Formalin Solution, 443—Chinosol, 443—Creolin, 443—Salt Solution, 443—Boric Acid Solution, 444.

PAGE

THE OBSTETRIC NURSE 444

The Nurse's Dress, 446—Deportment, 446—Venereal Diseases, 448—Gonorrhea, 448—Syphilis or "Specific Disease," 449—General Consideration of Venereal Disease, 451.

DIETARY 452

List of Diets, 452—Absolute Milk Diet, 452—Liquid Diet, 452—Semisolid Diet, 452—Diet for the Prevention of Overgrowth of the Child, 452—Prochownik's Diet, 452—Recipes, 453—Albumin or Egg-water, 453—Barley-water, 453—Beef-tea, 453—Beef-juice, 453—Beef-tea with Acid, 453—Cereal Extract, 454—Chicken Broth, 454—Clam Broth, 454—Champagne Whey, 454—Egg Lemonade, 454—Eggnog, 454—Flaxseed Tea, 455—Flour-ball, 455—Gum-arabic Water, 455—Junket, 455—Koumiss, 455—Meat Cure, 455—Meat Diet, Raw, 456—Meat-extract Ice, 456—Milk and Egg, 456—Milk Digested with Acid, 456—Milk, Peptonized, Cold Process, 456—Warm Process, 457—Milk-toast, Peptonized, 457—Milk, Sterilized, 457—Milk-shake, 457—Mutton Broth, 457—Nutritious Coffee, 457—Rice-water, 458—Rum Punch, 458—Toast-water, 458—Whey, 458—Wine Whey, 458—Rectal Feeding, 459—General Rules, 459—Salt Solution, 459—Peptonized Milk, 459—Peptonized Milk with Egg, 459—Digested Beef, 460—Feeding Through the Skin, 460—Nasal Feeding, 461.

GLOSSARY 463

INDEX 489



Obstetrics for Nurses

INTRODUCTION

Statistics show that of every 250 women who become pregnant, at least 1 dies. Seven per cent. of the deaths of women between the ages of twenty and forty years are due to puerperal infection. Conservatively estimated, 20,000 women die every year in the United States from the immediate and remote effects of childbirth.

Thousands of women enter our hospitals each year for the repair of injuries acquired during delivery, and seeking relief from the diseases caused by child-bearing.

Nearly one-third of the blind people in this world have lost the light of day because of the ignorance or the carelessness of the attendants at the time of birth.

What are the causes of these evils? The standard of obstetric practice is low. The people are allowed to believe that labor is a natural process and requires no special care. Therefore men with the best minds, with the greatest skill, find their endeavors better rewarded in other fields of medical practice.

The public will not recognize, either with appreciation or with remuneration, the strenuous labors of the accoucheur, the nights' rest lost, the interference with his other practice, the nervous wear and tear, and the actual technical skill he exhibits. Small wonder then

that the field is deserted save by those who do the work to maintain a family clientele.

The nurse may do much to aid the physician in obtaining from the public that recognition for obstetrics that the specialty so justly deserves.

First, she may urge on the woman the importance of consulting the accoucheur early in pregnancy, so that complications may be anticipated and avoided. Second, she may aid the physician in obtaining aseptic conditions during the labor. The nurse should prepare for a confinement just as she would prepare for a vaginal hysterectomy. She will meet opposition in this endeavor, especially from the older members of the family, but quiet insistence will be successful. She may explain to the patient that all the preparations are not because trouble is expected, but for the purpose of preventing trouble, and that accidents are more likely to occur if such preparations are not made.

The nurse may allay the alarm of the parturient and the family when the accoucheur asks for sufficient medical assistance. Most deliveries are accomplished by the physician alone, with the nurse and such help as the husband and a courageous neighbor may give. The accoucheur often has to work over a low bed, and in a small room with insufficient light. The people, from long custom, regard this proceeding as good. It is bad. This makeshift method is unjust—unjust to the parturient, to the unborn child, and to the doctor and the nurse. No surgeon tolerates such conditions.

Compare the advantages of the surgeon in his capacious operating room, with good light, sterile utensils, many nurses and assistants, with the plight of the obstetrician. Thus it is not far to go to explain the existence of the evils referred to in the opening paragraphs.

Why should not the woman about to perform the



highest function of the race, at the most interesting, most endearing, and the crucial moment of her life, enjoy the greatest benefits, the finest art that the science of medicine affords?

Thus in many ways the nurse may smooth the path for the advance of the obstetric art. She becomes really a missionary, spreading the gospel of good obstetrics.

By the power of good example and by precept she will instil in the public mind a knowledge of the importance of obstetrics and will engender a respect for the art which will soon result in a demand for higher standards of practice, and this demand will draw to the specialty the best medical and nursing talent the community possesses.

Thus her efforts will redound to the benefit of the medical profession, of which she is a part, and lastly and mostly to the community—the people. Only in this way may we hope to see the frightful mortality tables shrink, and our hospitals emptied of women seeking relief from the injuries and diseases caused by pregnancy and labor.

In this book the subject is divided into three parts. In the first part the anatomy and physiology of the whole reproductive cycle is considered—that is, a description is given of the various processes, the changes in the genitals and general system, occurring during pregnancy, labor, and the puerperium.

The second part deals with the conduct or management of pregnancy, labor, and the puerperium. The nurse is told how to care for a woman during each of these periods of the normal reproductive cycle.

The third part treats of the pathology of pregnancy, labor, and the puerperium. In this part are considered, from the nurse's standpoint, the complications which may disturb the normal course of the three stages of

reproduction, and how the nurse may do her share of the work of saving both patients from their baneful effects.

In addition, there follow a few chapters on allied subjects, such as dietary, visiting nursing, and hospital and home nursing.

By keeping these divisions of the subject in mind the nurse will find the study much simplified, and the book will be more easily grasped and rendered applicable to every-day practice.

It is not to be understood that the treatment recommended in this book is to take the place of the doctor's orders. The nurse should learn the practice of the physician with whom she works, and carry out this practice in his cases. The author hopes that the book will be of help to her when she is on her own responsibility and for her general information.

PART I

ANATOMY AND PHYSIOLOGY OF THE REPRODUCTIVE SYSTEM

CHAPTER I

ANATOMY OF THE FEMALE GENERATIVE ORGANS

THE parts of the woman's person with which the obstetric nurse has particularly to do are the pelvis, including the soft parts, and the breasts.

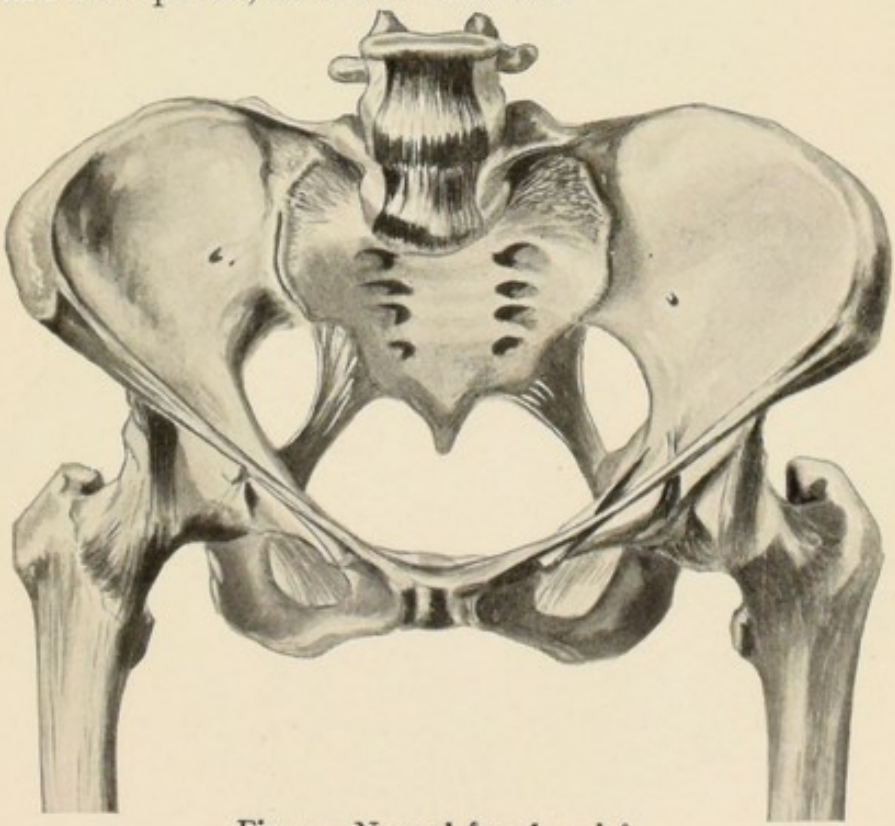


Fig. 1.—Normal female pelvis.

The Bony Pelvis.—The bony pelvis (Figs. 1–3) is that part of the skeleton interposed between the trunk

and the thighs. It consists of four bones—two *ossa innominata*, the *sacrum*, and the *coccyx*. These are so

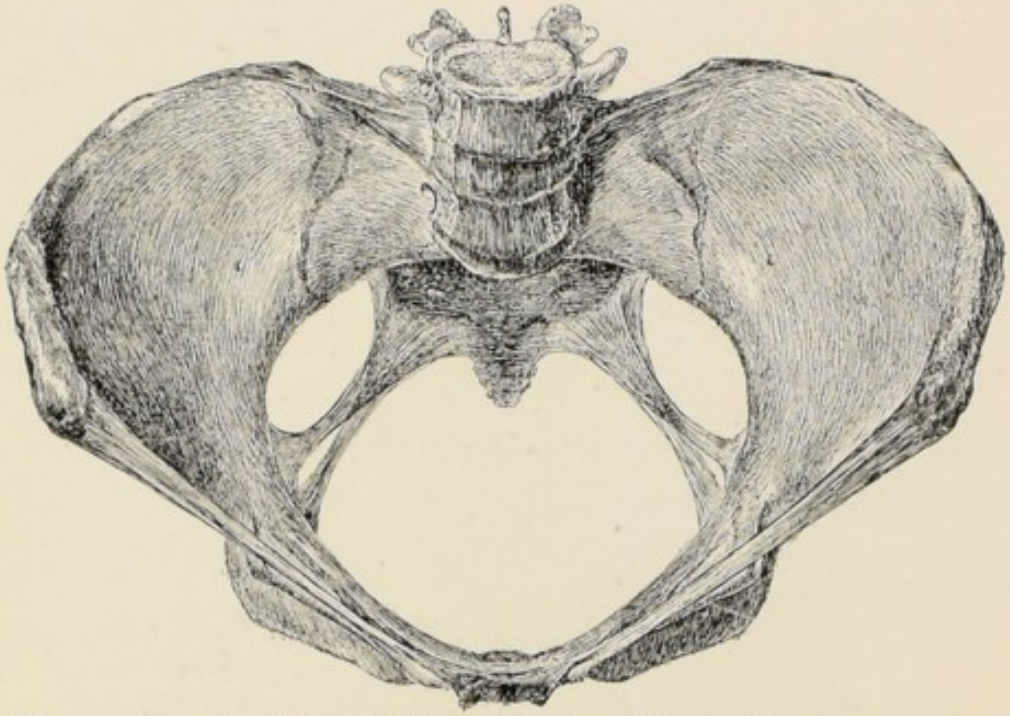


Fig. 2.—Female pelvis with ligaments, viewed from above (Dickinson).

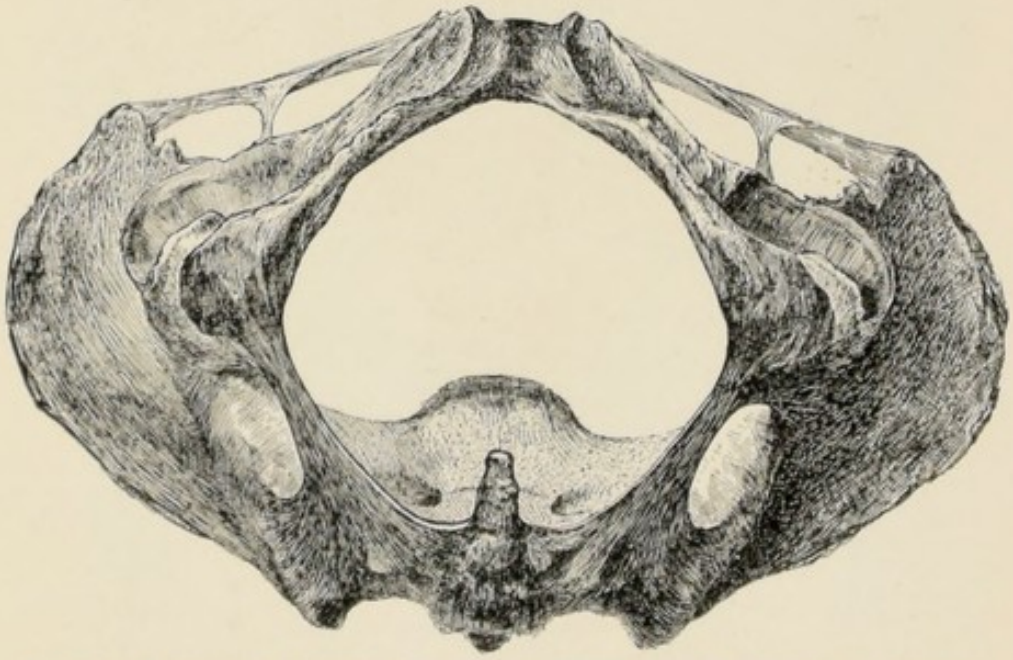


Fig. 3.—Female pelvis with ligaments, viewed from below (Dickinson).

united that they form two cavities—a greater or upper, or *false pelvis*, a smaller or lower, or *true pelvis*.

The *innominate bones* flare outward like flanges, and leave a space in front which is filled out by the abdominal muscles, and behind, above the sacrum, the spinal column completes the false pelvis. The *false pelvis* is

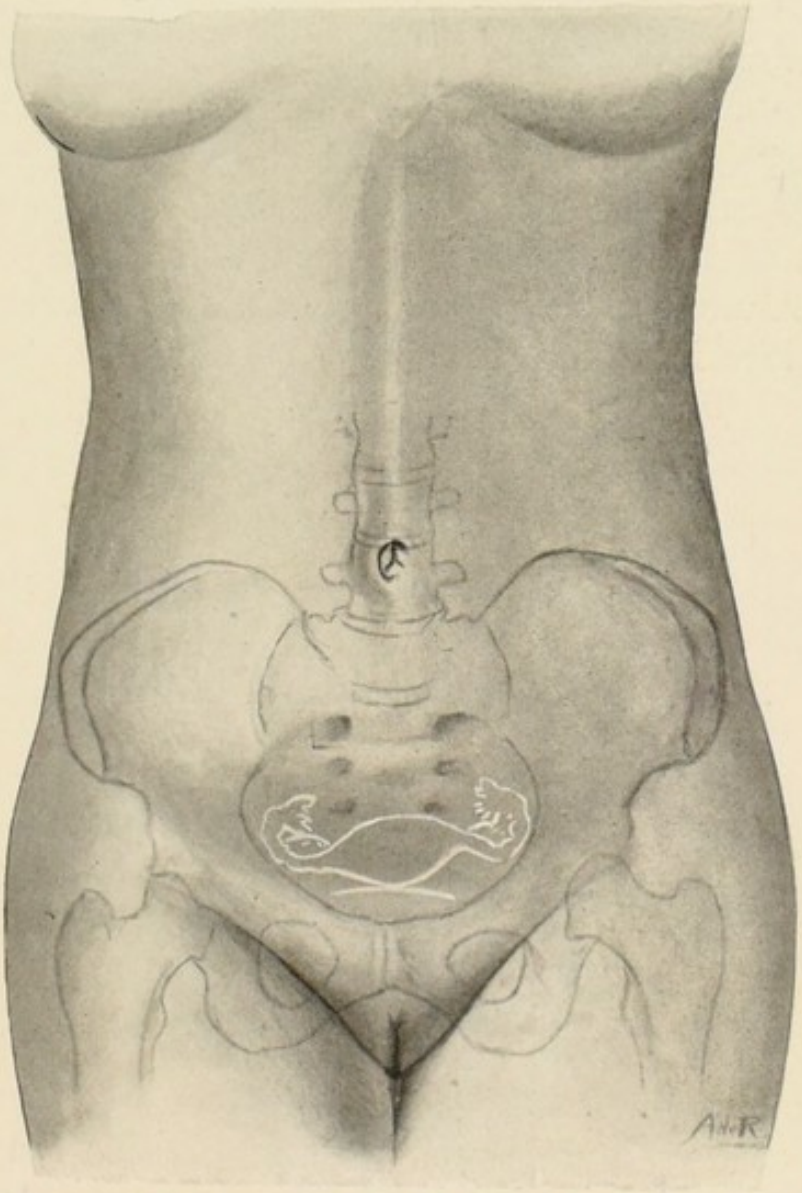


Fig. 4.—Female pelvis showing through torso. The uterus and adnexa are indicated in white.

like a flat funnel, and has the function of directing bodies in the abdomen into the true pelvis. The broad flanging ossa innominata, with the abdominal wall, support the abdominal contents.

The *true* or *small pelvis* is just below the large pelvis; behind, it is made up of the sacrum and the coccyx; at the sides, by the innominate bones; and in front, by the rami of the innominate bones. In front it is only 2 inches high, but behind it is 6 inches. The bony pelvis is exceedingly irregular in outline, having many notches, and several openings through which various structures—muscles, nerves, blood-vessels, etc.—pass.

In general, the shape of the cavity of the true pelvis is that of an elbow of stovepipe. Where the true and false pelves join there is a more or less marked rim. This place is called the *inlet*, *brim*, or *upper strait*, the

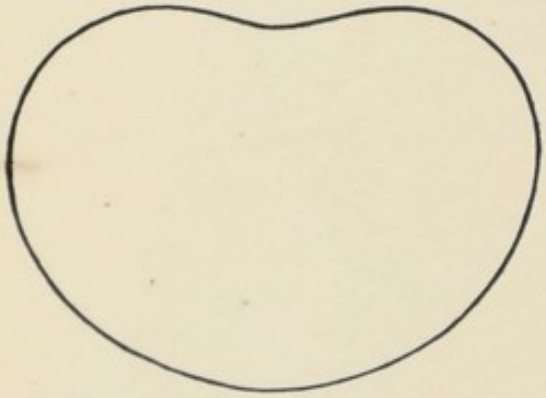


Fig. 5.—Outline of the pelvic inlet.

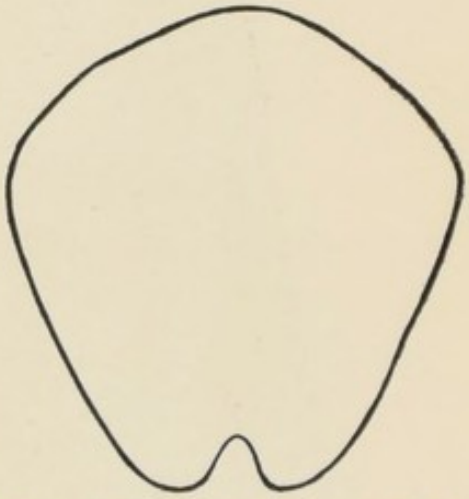


Fig. 6.—Outline of the pelvic outlet.

pelvis being narrower here (Figs. 2, 5). At the lower end of the true pelvis is the *outlet* (Figs. 3, 6). The inlet is shaped like a flattened heart; the outlet, an antero-posterior ellipse, so that an ovoid body like the baby's head, passing through the inlet in the transverse diameter, in order to escape from the outlet must turn its long diameter to correspond with the long diameter of the outlet (Figs. 7, 8). This occurs during labor and is called "rotation."

Since the cavity of the pelvis is curved—a bent canal—the head must slide along it, taking a curved course;

and since the anterior part of the curve is shorter than the posterior, the part of the head lying behind will have

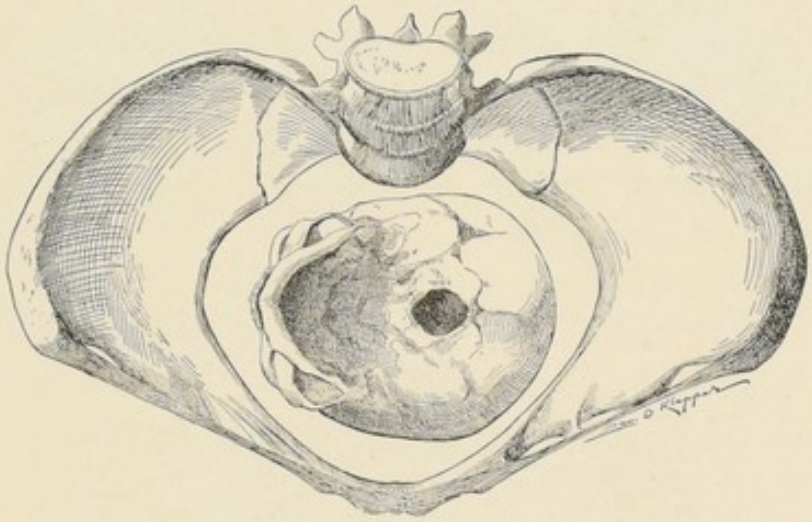


Fig. 7.—Head of fetus at the inlet of the pelvis. Long diameter of head lies transversely.

to travel a greater distance than the part lying in front. These are the things which the doctor must consider when he studies the mechanism of labor.

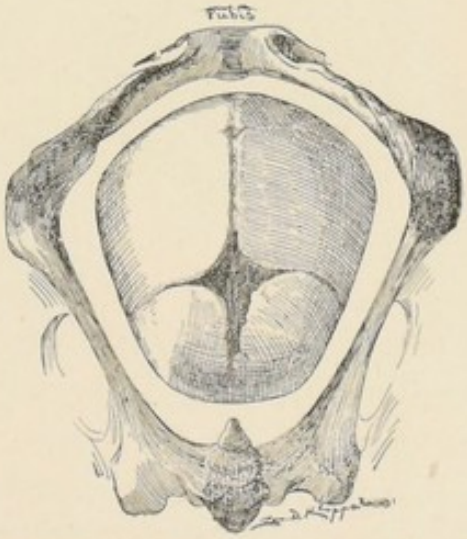


Fig. 8.—Head of fetus at the outlet of the pelvis. Long diameter of head lies anteroposteriorly, ready to escape from pelvis.

The pelvis is set into the body in such a way that when the woman is standing not all the weight of the

abdominal viscera is forced down into its cavity: part is borne by the abdominal wall and pubis. When a woman constricts the abdomen in any way, as by a corset or a girdle, the viscera are forced downward, and since the false pelvis is a funnel leading into the true pelvis, the organs here are pressed down, and this may bring about prolapse of the uterus, bladder, etc. (See Fig. 36.)

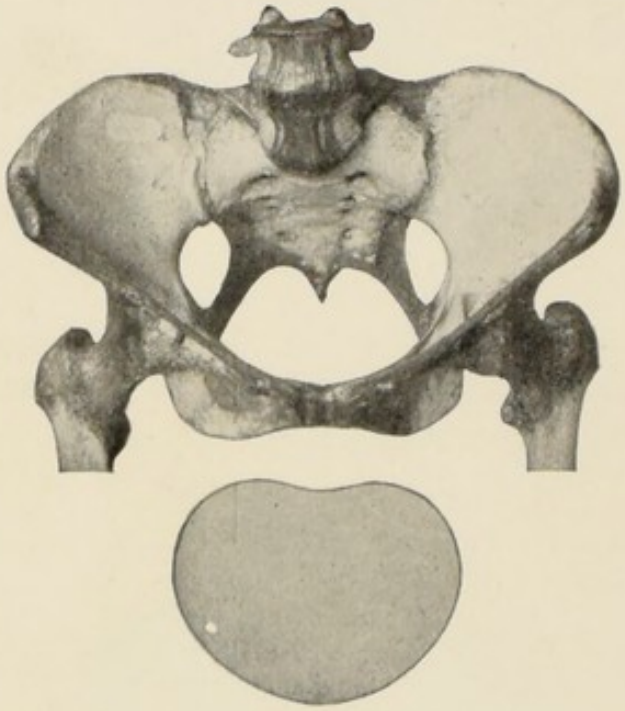


Fig. 9.—Normal pelvis. Inlet in solid color.

The *pubes* or *symphysis pubis* is the anterior junction of the two innominate bones. It is covered by a thick pad of fat, the mons veneris, and is strongly hirsute in most women. The pelves of two women are never exactly alike. Not one pelvis in 20,000 is exactly symmetric. There are characteristics in pelves as regards race, age, environment, occupation, and disease.

Varieties of Pelves.—In general, there are four varieties of pelves—large, small, flattened, and distorted.

Finally, there are all sorts of combinations of these. A description of the various forms of pelves would fill

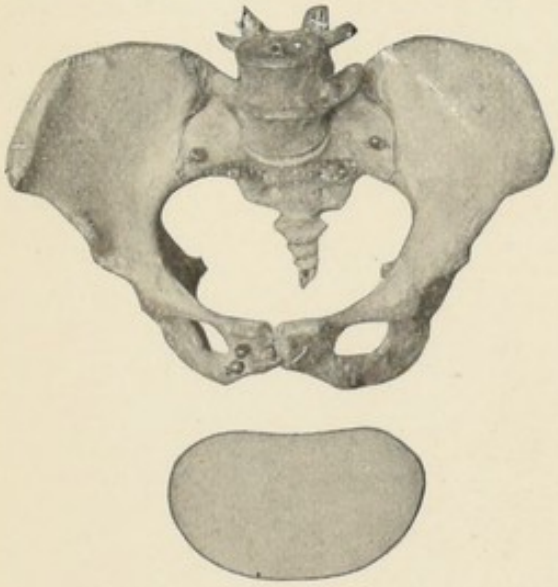


Fig. 10.

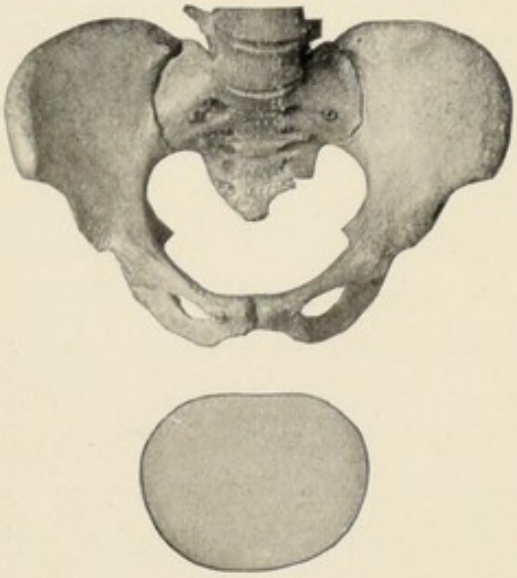


Fig. 11.

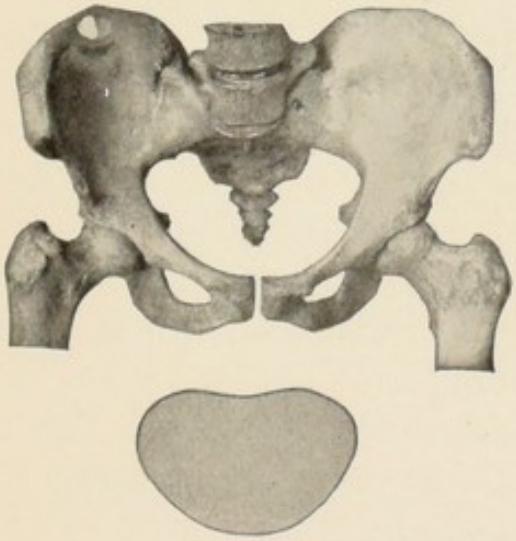


Fig. 12.

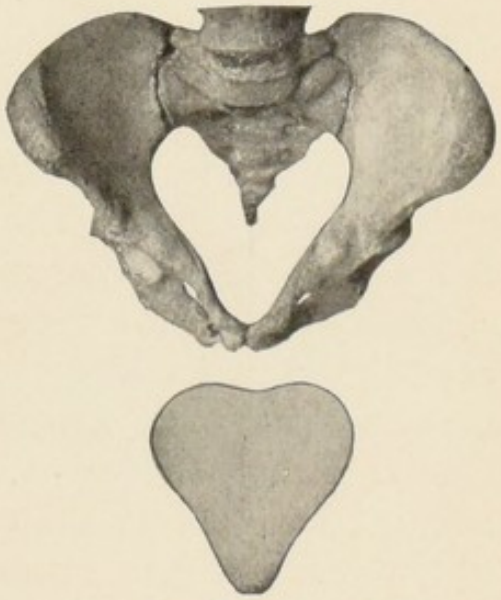


Fig. 13.

Figs. 10–13.—Fig. 10. Flat pelvis. Fig. 11. Generally contracted pelvis. Fig. 12. Generally contracted and flat pelvis. Fig. 13. Osteomalacic pelvis. The inlet in each case is shown in solid color. All were photographed to same scale.

several volumes, and cannot be given here, but pictures of a few of the most marked deformities are presented (Figs. 10–13). The importance of deformed pelves is

great. If a pelvis is too large, the child may be forced through too quickly and tear the soft parts, or may come in anomalous positions. If the pelvis is too small, the mechanical disproportion between the size of the pelvis and of the baby may make the delivery of the latter impossible, or so difficult as to endanger its life or that of its mother. The same may be said of the other forms of contracted pelvis. Everything depends on the kind of contraction and its degree. A large woman seldom has a small pelvis; a very small woman seldom has a large pelvis.

The Soft Parts.—The pelvis is lined and covered with soft tissues, some of which act simply as fillers; others are muscles for various working functions. Then there are special organs, as the bladder, uterus, vagina, rectum, and finally there are the blood-vessels and nerves.

The large pelvis is lined with muscles, and is completed in front by the abdominal muscles. These serve to increase the funnel shape and to support somewhat the abdominal contents. The small pelvis has few muscles, but many important organs, vessels, nerves, etc.

The Uterus.—This organ (Figs. 14, 15) occupies the middle of the pelvis, being suspended in the connective tissue and peritoneum from the walls of the pelvis. It is a flattened, pear-shaped body, $2\frac{1}{2}$ inches long, $1\frac{1}{4}$ inches wide, $\frac{3}{4}$ inch thick, and weighs from 2 to $2\frac{1}{2}$ ounces. It is a firm organ, but when pregnant it grows very soft and increases enormously in size and capacity. It has two parts—the *fundus* and the *cervix*. The cavity of the uterus is usually closed by apposition of the walls; it is long, narrow, and flattened. The cervix has a little round opening called the *os*, through which the uterine secretions, the menstrual blood, during labor the ovum, and during the puer-

perium the lochial discharges, pass. In virgins it is a round opening; in women who have had children, a transverse slit.

The uterus is attached at the middle of the cervix to the *vagina*, a sheath 4 inches long, terminating at an

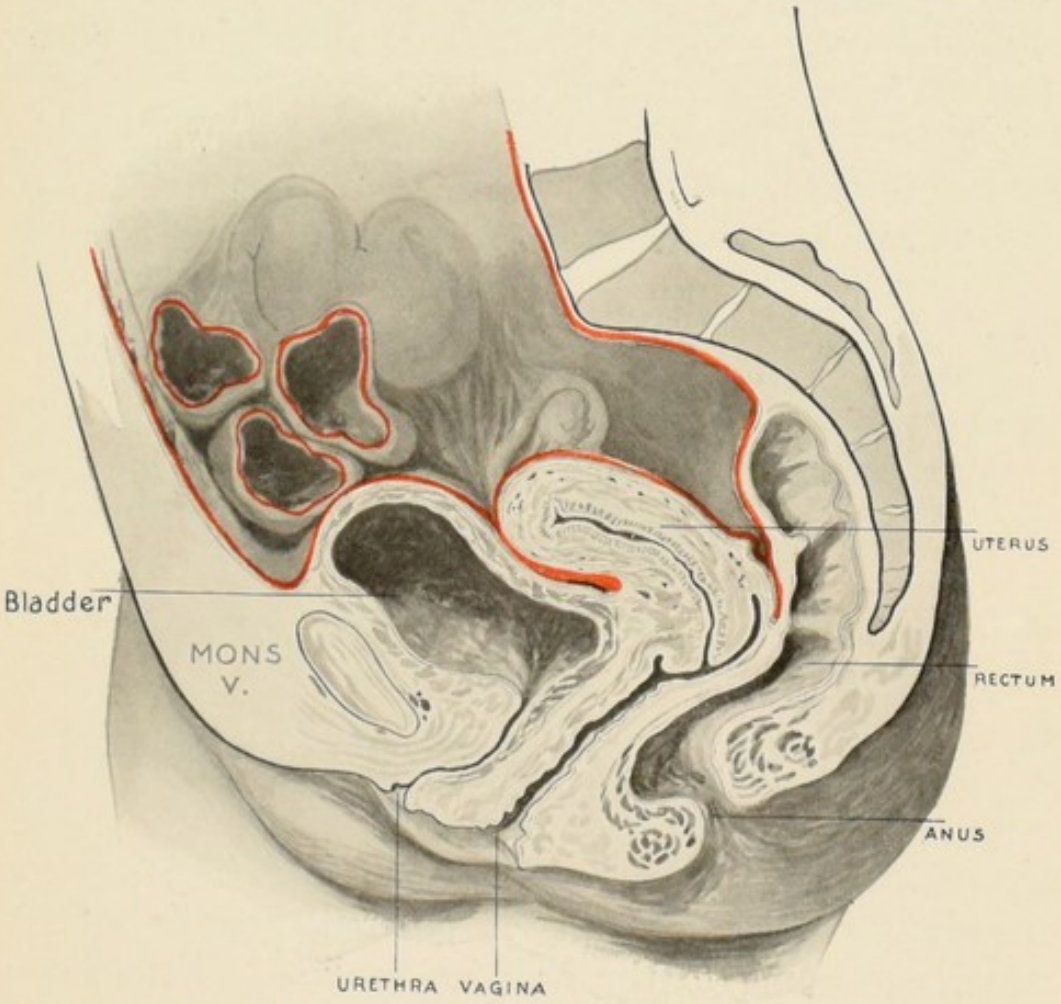


Fig. 14.—Section showing bladder, uterus, and rectum. Red line indicates the peritoneum.

opening in the skin called the *vulva*. The vagina is a very elastic tube and lies between the bladder and the rectum. In ordinary conditions it will admit one or two fingers, but during labor it stretches to 4 or 5 inches in diameter. The uterus has, leading outward from its upper corners, two tubes—the *Fallopian tubes*. These

are about the size of a crow's quill, are tortuous, growing larger as they leave the uterus, to terminate in trumpet-shaped ends fringed with delicate streamers called *fimbriæ*. The canal of the tube likewise grows larger after it leaves the uterus. Thus there is a free passage through the vulva, the vagina, the os, the cervix, the uterine body, and the tubes to the fimbriated ends opening out into the peritoneal cavity.

The organs just named are composed of walls more or less thick, made up of muscle and connective tissue, lined throughout with mucous membrane, and covered

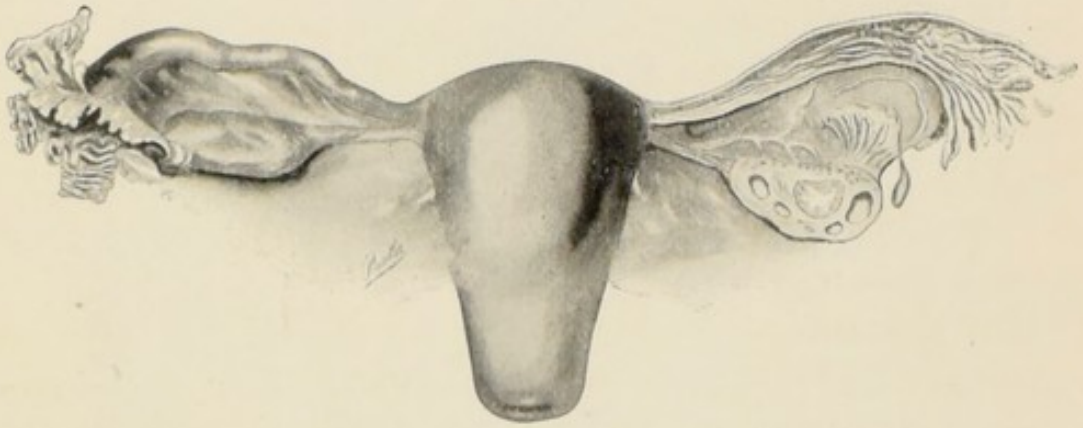


Fig. 15.—Uterus, tubes, and ovaries. On the right the ovary and tube have been laid open

by peritoneum for part of the distance. The mucous membrane varies in quality in different portions of the canal, according to the function required of the part: at the vulva it is delicate and very sensitive; in the vagina, rough and strong; in the cervix and uterus, very vascular and velvety. In the uterus and tubes the epithelium is covered with a microscopic down which has the function of automatic waving like a field of wheat in the wind, thus propelling toward the outlet any object lying on the surface.

The layers of peritoneum covering the anterior and posterior walls of the uterus meet at the sides of the organ

and form flattened bands stretching to the side walls of the pelvis, containing vessels, nerves, and a little fat, and called the *broad ligaments*. These have great importance in obstetrics. Attached to the posterior side of each broad ligament, and connected with one of the fimbriæ or streamers of the Fallopian tube, is a little body, in shape and size like an almond, hard, fibrous, and dimpled—this is the *ovary*.

The Bladder.—This organ (Fig. 14) lies in front of the uterus, behind the pubis. From the bladder, lying along the side of the cervix, the *ureters* run up out of the pelvis to the kidneys. In front of the vagina, just behind and below the pubis, lies the *urethra*, a small tube about the size of a lead-pencil, leading from the bladder to open in the upper part of the vulva The bladder empties itself through the urethra. The urethra ends in the vestibule of the vulva, the opening being called the *meatus urinarius*.

The Rectum.—Behind the uterus, to the left side, lies the rectum (Fig. 14), or the last portion of the intestinal canal. It is continuous with the sigmoid flexure of the colon above, and terminates at the skin below in the *anus*. The rectum is a large, slightly convoluted tube, of much strength and great distensibility. Its course upward and to the left is noteworthy. A rectal tube in passing should take these directions.

The Peritoneum.—The pelvic peritoneum, a thin, glistening, veil-like structure, a part of the general abdominal peritoneum, comes down from above and covers the top of the bladder, the uterus, the tubes, and the rectum. Thus a woman who has an infection of the genital organs may develop general peritonitis by simple continuity of surface. (See red line in Fig. 14.)

The External Genitals.—The outlet of the bony pelvis is filled in by muscles and covered by skin. At

the sides of the lower end of the trunk the thighs are inserted, and between the two thighs lies a space called the *genital crease* or fold. This area extends anteriorly to the pubis and posteriorly to the sacrum, and when the thighs are separated it presents a small extent of surface, but when the legs lie close together the space is reduced to a deep groove. The front part of this region is occupied by the vulva, or external genitalia, the back part by the anus, while between these two is a small body composed of skin and muscle, called the *perineum*.

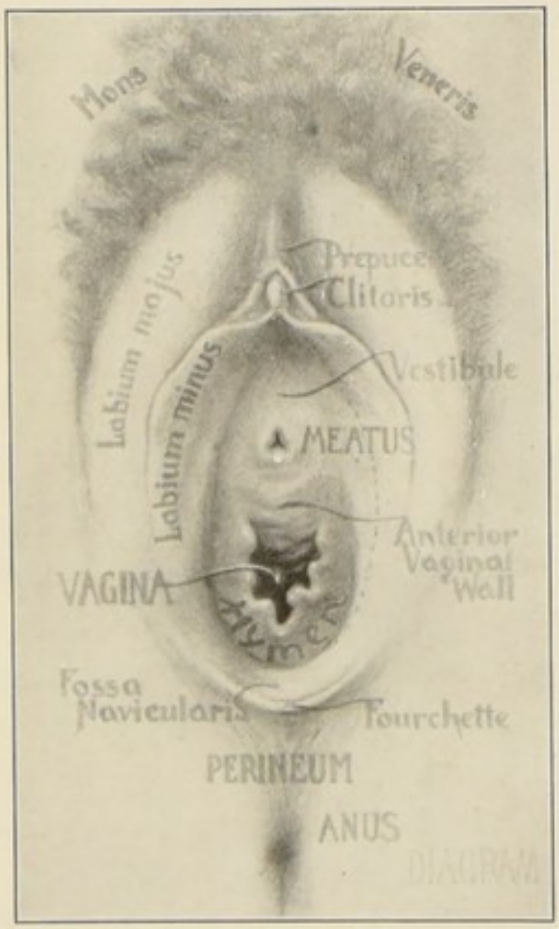


Fig. 16.—Diagram of female external genitals (Dickinson).

The Vulva (Fig. 16). —This is made up of two more or less heavy lips or labia—the *labia majora*—composed of skin and fat, covered with hair, and abundantly supplied with sebaceous glands. The labia terminate anteriorly in the *mons veneris*, a pad of fat covering the pubis. Behind they spread out in the *perineum*. Beneath and between the labia majora are two smaller labia, called, in contradistinction, the *labia minora*, made up of thin skin and mucous membrane. Anteriorly the labia minora meet and form a hood, which covers a little erectile organ, the *clitoris;* posteriorly they disappear at the sides of the outlet of the vagina. The clitoris is attached to the under surface of

the pubis, and is a little elongated mass of blood-vessels covered by mucous membrane. It is protected by the hood aforementioned. It is very sensitive. Under the hood, smegma, a whitish, flaky material, being the dried secretions, is likely to collect and form a lodging place for germs, an important point for the nurse to know. It is a serious error of technic for the nurse to leave smegma under the hood of the clitoris in her preparation of the patient for labor or operation.

Below the clitoris is a flat, triangular area, covered by mucous membrane—the *vestibule*—at the lower part of which are two little raised ridges with an opening between them—the mouth of the urethra, the *meatus urinarius*—through which the urine is voided.

Below this opening is the outlet of the vagina, surrounded by a fringe of mucous membrane called the *hymen*. The hymen lies at the opening of the junction of the vagina with the vulva, is a thin, circular structure, and tears when the child pushes through if it has not been torn during the first conjugal relation. The shape of the hymen varies in different women: some have hardly any; in others it covers the opening of the vagina and may have only a pin-hole perforation, or, in rare cases, no opening at all. It may be sickle-shaped or have several perforations.

Between the hymen and the terminations of the two labia majora in the perineum is a boat-shaped depression —the *fossa navicularis;* and at the junction of the two labia majora is the posterior commissure or *fourchet*, a band of skin forming part of the fossa navicularis.

The Perineum.—The perineum lies between the vagina and the anus. It is composed of skin, connective tissue, and muscle, separating the vulva from the anus, Since the vagina leads forward and the anus backward. there is a triangular space between their outer termina-

tions. This space is filled up by the triangular *perineal body*. During labor, when the head comes down through the vagina, it stretches the vulva open and pushes the perineum backward against the anus and rectum, flattening it out. During the passage of the child the perineum is often torn, which is unfortunate, as the integrity of the tissues and organs above it is partly dependent upon this structure. Of more importance are the tears of the pelvic floor, which are hard to find and are usually overlooked by the general practitioner. When the perineum is torn deeply the anus and rectum may be laid open. This is a sad accident, as the woman may thus lose control of the bowel. Immediate repair of all injuries should be made.

The Anus.—About $1\frac{1}{2}$ inches below the fourchet is a deep, pigmented, puckered opening—the *anus*. This is the outlet of the rectum. The skin of the perineum dips down into the anus a short distance to meet the mucous membrane of the rectum. Underneath the skin and mucous membrane lies a network of large veins. If these veins become overdistended with blood, as occurs sometimes during labor, they form very painful masses, called *hemorrhoids*, or piles.

The anus is held closed by a circular muscle, in size and shape not unlike a broad wedding ring—the *sphincter ani*. This muscle controls the passage of feces and gas. It is occasionally torn during delivery, the so-called "complete laceration," and if not successfully repaired allows the rectal contents to escape unhindered. This condemns the patient to social ostracism, and the accoucheur, therefore, bends every effort to preserve this small but important muscle.

THE BREASTS

The breasts belong to the genitalia, since they take an important part in generation. They are located over the anterior part of the chest, but in very rare cases may be located in other parts of the body or be more than two in number. One woman had five—on the chest, back, side, and thigh. They are glands modified from skin glands to perform a different function, and belong to the compound racemose clustering type. Each breast is made up of lobes; these are divided into lobules, and each lobule is composed of minute cells or *acini*. A tube from each lobule leads into a main canal, which opens on the surface of the nipple as a fine duct. These tubes collect the milk from the acini and discharge it through the nipple (Fig. 17). Before opening on the nipple each duct enlarges, forming a spindle-shaped cavity, called the *sinus lactiferus*.

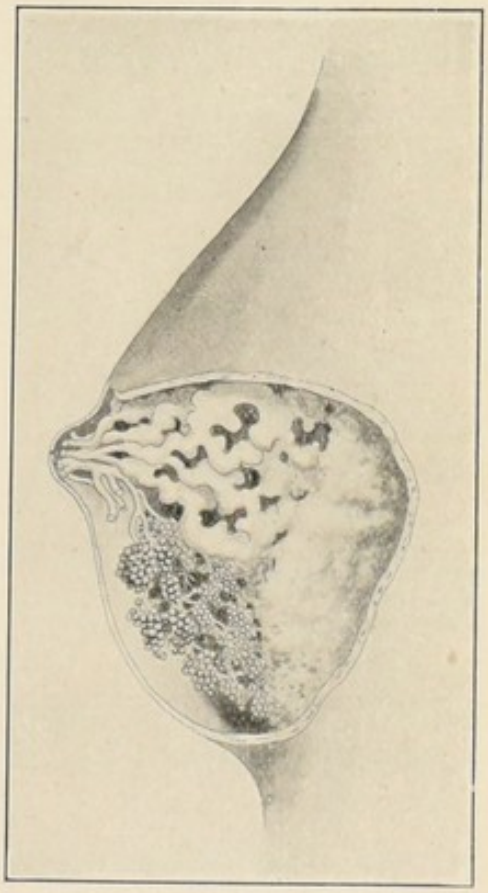


Fig. 17.—Semidiagrammatic section of a functionating female breast.

Each lobe of the breast may be likened to a bunch of grapes, and the milk-ducts to the stems. Each breast has from fifteen to twenty lobes, and the ducts leading from these lobes are all brought together in the nipple. Between the lobes or bunches the irregular spaces are filled with fat and connective tissue. The gland rests on a bed of connective tissue, which

separates it from the chest muscles, ribs, and intercostal spaces. The outside of the gland is covered by skin which is more delicate than that of the remainder of the body, and allows the blue veins to show through. The *nipple* is raised $\frac{1}{4}$ to $\frac{1}{2}$ inch above the surface. In brunets it is darkly pigmented, in blondes it is pink. At its base is a circular area, likewise pink or pigmented —the *areola*. This area contains small nodules, the *tubercles of Montgomery*, which grow more prominent during pregnancy. These are little glands, and occasionally a few drops of milk may be squeezed from them. They also are liable to infection.

CHAPTER II

PHYSIOLOGY

THE FUNCTION OF REPRODUCTION

Ovulation.—The main function of the ovary is the production of ova or eggs. It probably possesses other functions as a blood and nerve regulator, but we do not understand them. It elaborates an internal secretion and this affects other organs of the body, particularly the uterus. The ovary of a newborn child contains from 20,000 to 50,000 ova. These ova remain quiescent until the girl is about eight or ten years old, when they begin to develop to maturity and are periodically expelled from the ovary. This function is called ovulation. Ovulation is the ripening of an ovum and its discharge from the ovary. The greatest activity of the ovary occurs at the time of puberty—that is, from the twelfth to the sixteenth year.

Puberty.—This is the period at which the individual becomes capable of reproduction. It begins in males from the fourteenth to the seventeenth year; in females, from the twelfth to the fifteenth year. The changes occur more rapidly and are more marked in the female. They are both physical and psychical. The body develops quickly and the breasts enlarge. The external genitals increase in size and become covered with hair.

The mind changes in the three parts: the will, the intellect, and the emotions. The will becomes uncertain and hysteric manifestations are common The emotions develop, together with a sense of modesty.

This transformation is the outward expression of the changes going on in the internal organs of generation—the ovaries, uterus, and tubes. Though ability to reproduce is present at puberty, fitness is not. The best year for the woman's first child is about the twenty-third, but children have been born to mothers of nine and of sixty-two years. The advent of puberty is marked by the inauguration of a new function—menstruation.

Menstruation may be defined as the appearance, monthly, of a discharge of blood from the genitals, attended by general symptoms of malaise and disturbed nerve equilibrium and local symptoms of congestion of the uterus and neighboring organs. It is one of the



Fig. 18.—Three weeks' ovum in sac (natural size). Note the fine shaggy coat, the threadlike villi.

external indications of the changes in the ovary produced by ovulation and the stimulation of the whole nervous system which this function causes. The uterus presents most marked changes during menstruation. It is enlarged, softened, and turgid with blood. The mucous membrane is much thickened, soft, presenting a deep-red, velvety appearance. Blood oozes from the surface, mixes with the natural, but augmented secretions from the whole genital tract, and altered in color and odor, escapes from the vulva. After from three to seven days the discharge ceases, the tumefaction of the uterus and mucosa disappears, and the latter has resumed its smooth, pink appearance.

Menstruation presents many peculiarities as to frequency, duration, amount, and quality in different women. In some women it recurs every twenty-one days; in others, every twenty-eight or thirty days. It lasts from three to seven days—usually five days. In some races, as the Orientals, the first menses appear at the age of thirteen; in others, as the Europeans, at fourteen and fifteen years. Normally there is no actual



Fig. 19.—Six weeks' ovum in sac (natural size). The little fetus, about the size and shape of a kidney bean, is inside the translucent sac.

pain, though many women do suffer some soreness and distress. Women are more nervous and irritable during the period, more subject to cold, headaches, etc. Some women experience about midway between the periods symptoms resembling those of the menses, but without any bloody discharge.

Ovulation usually occurs every month at the time of menstruation, and the ovum is expelled from the ovary, passes down the Fallopian tube through the uterus, and

is lost with the menstrual blood. The changes in the mucosa of the uterus were designed to prepare it for the reception of the ovum, in case it should be made fertile by union with a male element, and to favor its attachment to the uterus and its further development there. This preparation of the mucous membrane of the uterus is called *nest-building*.

Conception.—The union of the female element, the ovum, with the male element, the spermatozoid, is called

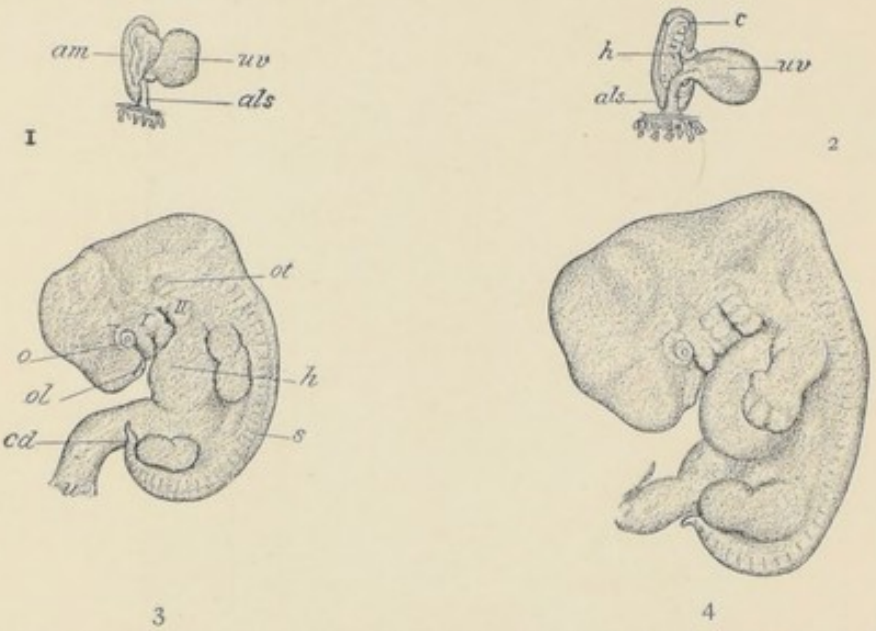


Fig. 20.—Early human embryos, all enlarged about two and a half times: 1, Second week; 2, third week; 3, fourth week; 4, fifth week; *am*, amnion; *uv*, umbilical or vitelline vesicle; *als*, allantoic or abdominal stalk; *c*, brain-vesicles; *h*, heart; *o*, optic vesicle; *ot*, otic vesicle; *ol*, olfactory pit; *s*, somites; *cd*, caudal process (His).

fertilization, fecundation, impregnation, or conception. This union may occur in the tube or in the uterus—presumably in the tube. After it occurs, and only then, the ovum thus fertilized readily becomes attached to the velvety uterine mucosa. No menstruation occurs, and the mucosa undergoes the changes incident to pregnancy. The woman is now pregnant, and mighty changes are inaugurated in the little ovum clinging weakly to the

mucous membrane of the uterus, and also in nearly every part of the woman's body.

At the very beginning the ovum is a tiny vesicle, hardly visible to the naked eye; in two weeks it has grown to the size of a large pea, and in four weeks to that of a walnut. It is a sac covered with a shaggy coat of delicate branched threads called *villi*. (See Fig. 18.) These villi dip into the uterine surface and bring nutrition and

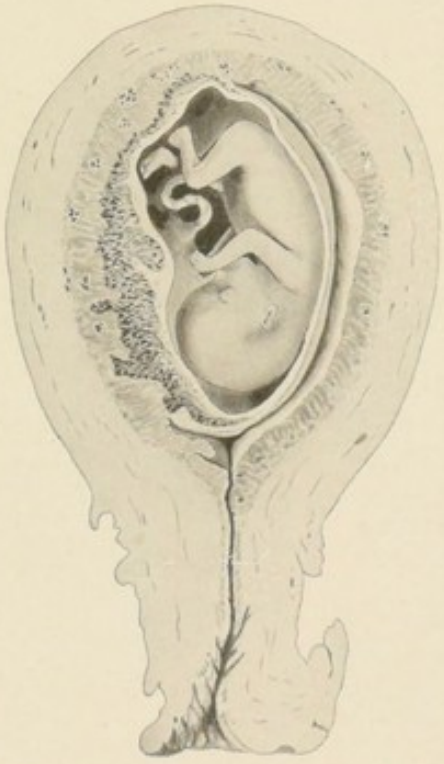


Fig. 21.—Two months' pregnancy, showing the fetus in the uterus (one-half natural size).

oxygen from the mother to the child. At this time the child is hardly recognizable as such. At eight weeks the ovum has attained the size of a lemon, and the surface has become differentiated into a protecting part and a nutritive part—the placenta. The villi at one portion of the ovum have grown enormously, are intertwined into a compact mass attached to the uterus, supplied with blood from the maternal circulation, and communicating

by means of the umbilical cord with the body of the child. The mass of intertwined villi is called the *placenta*. The rest of the covering of the ovum not occupied by the placenta is simply the membranes, serving to contain a fluid in which the child swims, and shutting the interior off from the outside world. The fluid is called *liquor amnii*. The child at this time is completely formed; it is

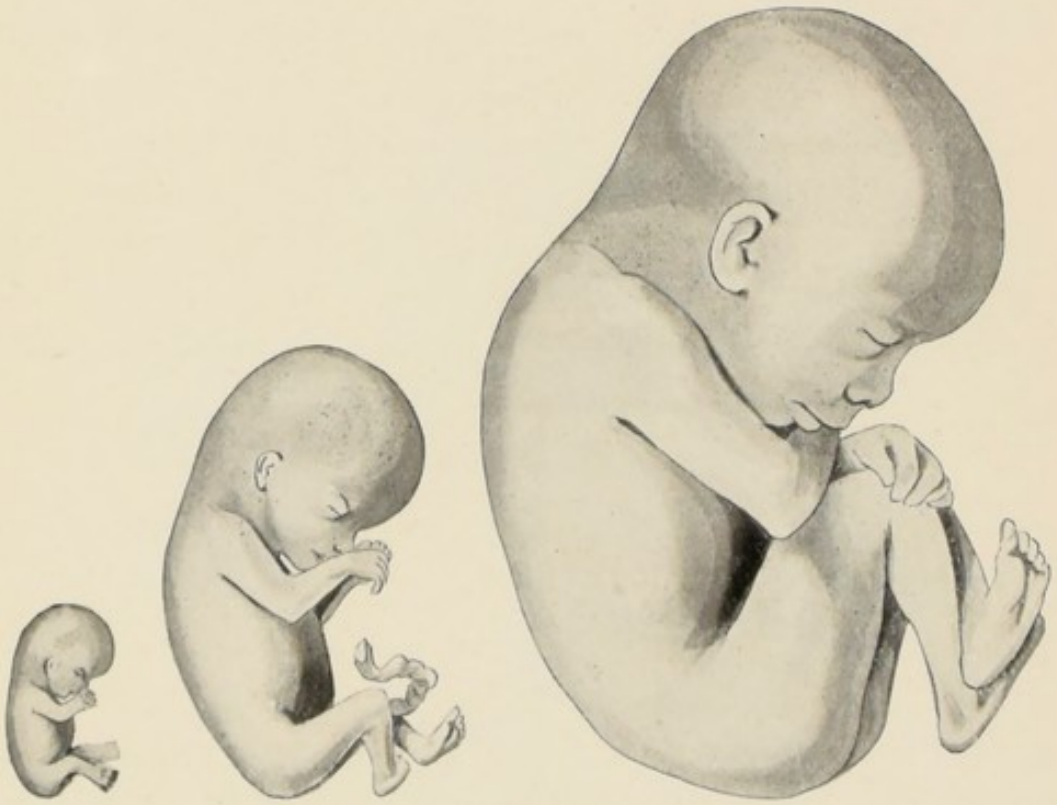


Fig. 22.—Fetuses of the second, third, and fourth months of pregnancy (three-fifths natural size).

about 3 inches long, the head being nearly as large as the rest of the body.

At sixteen weeks the ovum is about as large as a man's two fists, and presents in miniature all the appearances of the ovum at term. At nine months, or "term," or "full time," the completion of pregnancy, the uterus resembles in size and shape a watermelon. The child lies in it, usually with head down, completely formed,

ready for delivery. (See Frontispiece and Plate II.) The placenta is well developed, lying usually on one side of the uterus, far from the internal os. The *umbilical cord* connects the placenta with the child; it is as thick as the little finger and much twisted. The liquor amnii is usually about enough to fill up the spaces left between the body of the child and the uterine walls lying against it.

The *head of the fetus* throughout pregnancy is markedly developed, and during delivery usually gives more trouble than the body. The vault of the skull is made up of four bones: at the sides are the parietal bones; at the front, the frontal; at the back, the occipital bone. The bones forming the vault of the cranium are not joined fast together as in the adult, but are connected by soft membranes, leaving *sutures* and *fontanels* at their contiguous borders (Figs. 23, 24). Between the parietal bones is the sagittal suture; between the parietal and occipital bones, the lambdoid suture; between the parietal and frontal bones, the coronary, and in the frontal bone, the frontal suture. Where the two parts of the frontal and the two parietal bones meet lies an open, four-cornered, lozenge-shaped space filled in by membrane, called the *anterior* or *large fontanel*, and where the parietal and occipital bones meet lies the *posterior* or *small fontanel*. This is really no opening, but the meeting of three sutures. This arrangement of bones, sutures, and fontanels is designed to allow the head to mold and adapt itself to the mother's pelvis during labor, so that it may pass through with the least resistance and injury to both head and pelvis. After a prolonged labor in a primipara the head is sometimes drawn out almost to a sausage shape. Should the child have been delivered with the face first, a corresponding molding takes place and the head assumes a different shape. During the first days after labor the bones resume their proper relation to each

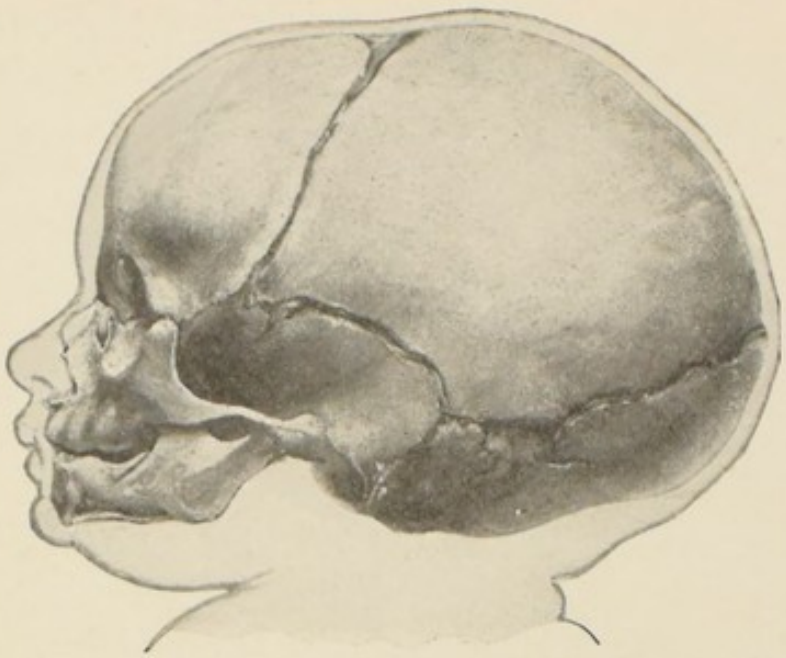


Fig. 23.—Fetal skull at term, showing fontanels. Side view, showing the coronary suture to left; the lambdoid below and to the right; the lateral suture below and in the center (Dickinson).

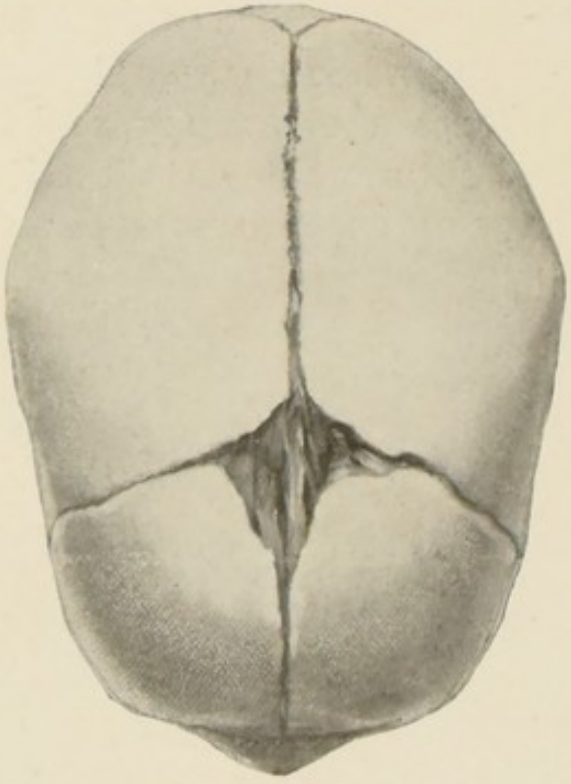


Fig. 24.—Fetal skull at term. Seen from above and showing the small fontanel at upper pole of figure; the large or anterior fontanel below; the sagittal suture in the center; the coronary suture at the sides of the large fontanel; the frontal suture leading down from the large fontanel (Dickinson).

other, the overlapping sutures broaden, the bones themselves straighten out, and the deformity, which may have alarmed the mother, disappears.

The child in the uterus lies folded together: the legs are bent on the thighs, the thighs on the belly, the forearm on the arm, the arms across the chest, the head bent down over the breast (Figs. 25, 26). There are not infrequent changes in the attitude of the child, for example, the chin may leave the chest and be stretched upward, in so-called face presentation, or the arms may leave the chest and prolapse before the head.



Fig. 25.—Side view of fetus, showing the attitude it holds in the uterus.



Fig. 26.—Front view of fetus, showing the attitude it holds in the uterus.

At term the infant weighs about 7 pounds; the placenta, $1\frac{1}{4}$ pounds, and there is about 1 quart of liquor amnii. The average weight for the newborn girl is 7 pounds; for the boy, $7\frac{1}{4}$ pounds. The boys, therefore, give more trouble in delivery, and consequently more of

them die. The first child is usually smaller than subsequent children; 10-pound babies are rare, and children weighing over 12 pounds at birth are very exceptional indeed.

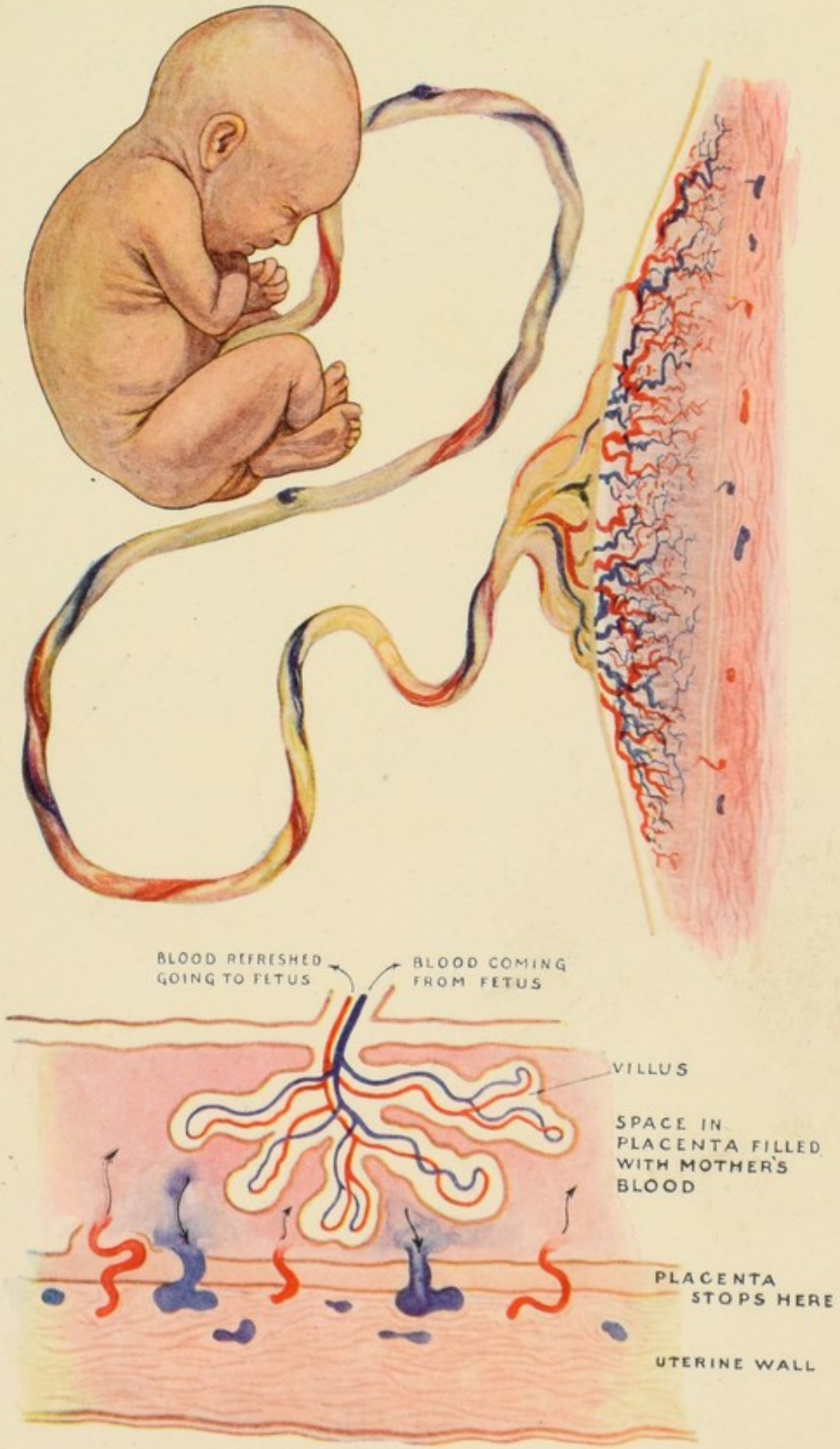
THE PHYSIOLOGY OF THE FETUS IN THE UTERUS

The general metabolism of the child is similar to that of the adult. The fetus has, however, no respiratory function, very insignificant digestive action, and little skin function, since these are hardly necessary, its mother performing them for it. It has its own heat-producing and regulating mechanism, as is shown by the fact that the child's temperature is $\frac{1}{2}$ degree higher than that of its mother.

It gets oxygen from the mother through the placenta, also water and food prepared for assimilation. A small portion of the food comes from the liquor amnii which the infant swallows. The waste-products from the child, and the carbon dioxid which the adult exhales from the lungs, in the infant pass through the placenta to the mother, and are excreted by her organs. All this is accomplished by way of the placenta.

The Placenta.—This organ resembles a flat cake. The umbilical cord leading from the child is inserted on one side, while the other is attached to the inner surface of the uterus. The mother's blood flows in and around the placenta. After the child is delivered the placenta is separated from the wall of the uterus and expelled. This important organ is made up of a number of lobes, each lobe containing a large number of trees of chorionic villi. A *villus* is a tiny, fingerlike filament which dips into the maternal blood in the placenta and through which the above-mentioned changes take place. A description of the villi would take too many pages. Each nurse should shred or tease a piece of placenta with a

PLATE I



Diagrams to show the relations of the maternal and fetal circulations.



pin, and float it in a glass of water, when the fine elements or villi will be prettily shown (Fig. 27).

The blood of the child flows through the vessels of the cord to the placenta, then through the inside of the villi, and the villi dip into the maternal blood, and since there is no direct connection between the blood of the fetus and that of the mother, the changes must occur by osmosis and the vital cellular activity of the wall of the villus. Water, oxygen, and food go to the fetus through the villus; carbon dioxid and waste-products go from the fetus to the mother in the same way. The villi, therefore, are like the roots of a tree, drawing water and sustenance from the ground. The sap of the tree within the roots does not get into the ground, yet water and sustenance get into the sap through the outer covering of the roots. The blood of the fetus, laden with carbon dioxid and waste materials, goes to the placenta through the umbilical arteries, and returns to the child by the umbilical vein, carrying oxygen, water, and food. (See Plate I). The blood of the umbilical vein is red, while that in the arteries is venous, or dark, which is the reverse of the usual.

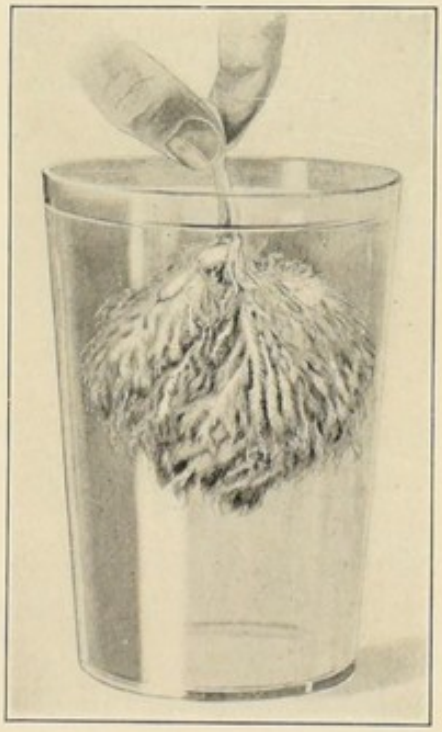


Fig. 27.—A piece of placenta teased and hung in a glass of water.

The liver of the child is very active, and, therefore, large. It reaches half-way to the navel. The stomach and intestines have weak digestive power. The child drinks the liquor amnii, as is shown by the lanugo which

is found in the meconium. The kidneys act and the urine is voided into the liquor amnii. This action is very small indeed, and may not begin until labor has begun.

The child moves about, changing from uncomfortable positions to others. It sometimes has hiccup and it sucks its thumb in the uterus, and tiny respiratory movements are sometimes observed. The hiccup is an interesting phenomenon. The women say they can distinguish regular attacks of hiccups. The child makes rhythmic, jerky movements, recurring about eighteen to the minute. Often the infant stretches, and the mother gets to know its habits, which may correspond with those after birth. The child has periods of rest and activity. Sometimes the activity is so great as to disturb the mother's rest and require treatment. The mental conditions of the fetus have been the subject of much speculation. While the child suffers pain when hurt, the sensation is not as developed during birth as it is shortly after.

CHAPTER III

PREGNANCY, LABOR, AND THE PUERPERIUM

MATERNAL CHANGES IN PREGNANCY

THE development of a new life in the uterus, the performance of the new function—reproduction—is attended with decided changes in the whole being of the woman. No part of the body fails to feel the stimulus of the reproductive function. These changes are divided into two classes: first, local changes—those found in the genitals and the breasts; second, general changes—those involving the rest of the body.

Local Changes.—The *uterus* in the virgin state is small, weighing about 2 ounces. It grows during pregnancy to a sac so large that it reaches almost to the ribs, and weighs, when empty, about 2 pounds. As pregnancy advances the walls of the uterus grow thicker and more powerful, the muscle-fibers become stronger and increase in number, and the uterine muscle develops the functions of contractility and retractility to a high degree. The uterus grows of itself faster than the growing ovum distends it, and when the child is ready for delivery the uterus is a powerful hollow muscle. It expels the child and after-birth with great force, and gentleness withal. The blood-vessels also increase in size and number. Some of the veins are as large as the finger, especially those in that part of the uterus to which the placenta is attached. The lymphatics throughout the pelvis are also enlarged. The vagina

and vulva become softer, more dilatable, and there is an actual increase in size. All these changes are brought about by nature in preparation of the parts for the safe delivery of the child.

The uterus is developed into a strong muscular engine, while the vagina and vulva are softened and prepared for the great distention they will suffer when the child is forced through them.

The *breasts* enlarge early in pregnancy: sometimes there are a tingling and a sensation of fulness and

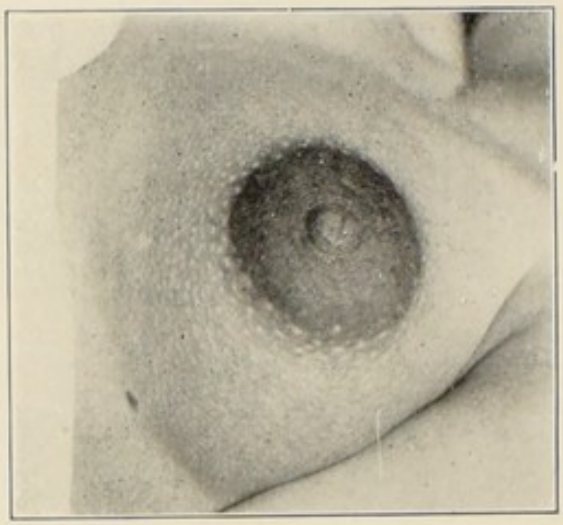


Fig. 28.—The breast in pregnancy. Brunet. Shows the primary areola and a marked secondary areola.

weight as early as the fifth week. The nipple enlarges and becomes more erectile. The primary areola darkens by the deposit of pigment, the tubercles of Montgomery in it enlarge, and the areola is puffy and slightly raised. (See Fig. 28.) Later in pregnancy a little clear fluid streaked with yellow can be expressed from numerous openings on the nipple. This is called colostrum. Around the primary areola sometimes a secondary areola forms. The secondary areola is commoner in brunets, and resembles dusty paper with a sprinkling of water drops. This pigmentation of the

breasts is especially marked in brunets, and in negresses the nipples may be almost black. Light purplish, radiating lines sometimes appear around the periphery of the breasts. These are called linea or striæ gravidarum, are more numerous in blondes, and, after nursing is completed, remain as fine, white, linear scars. Blue veins often show through the skin, which is a sign of good omen, as it promises a sufficient milk supply. Sometimes the breasts grow so large and heavy that some form of artificial support is necessary.

General Changes.—Every tissue and fiber in the woman's body feels the impetus of pregnancy. Mauriceau said that pregnancy was a disease of nine months' duration. This is not strictly true, though many women suffer much throughout the whole period. Many women feel best while pregnant, and some are permanently benefited. Pregnancy tests the integrity of every organ in the body, and if any one of them is diseased the fact will usually be brought out.

The *blood* is increased in amount in the last months of pregnancy and its clotting power augmented, nature thus preparing for the loss of blood during labor. The heart is a little enlarged; the veins of the legs are usually more or less varicose, thus forming reservoirs of blood. The thyroid gland in the neck, the spleen, and all the blood-making organs increase in size and activity.

The *lungs* are pushed upward by the uterine tumor, but their capacity is increased, as the chest is actually broadened. The respiration becomes thoracic. If the uterus is overdistended, it pushes the abdominal organs up against the diaphragm, interferes with the action of this muscle, and thus causes great difficulty in breathing.

The Urine.—The total quantity of urine is increased. The specific gravity is often low. Sugar in traces is sometimes present, also albumin in traces, but these are

always significant, and the patient requires close observation and a physician's care. The sugar is usually milk-sugar from the breasts. True diabetes is very serious. The kidneys and liver are the weak spots of the patient during pregnancy and deserve special attention.

The patient usually puts on fat. The hips round out and there is a gain in weight—usually one-thirteenth of the ordinary weight in the non-pregnant state; but the woman may get very fat. Part or all of this may disappear afterward, especially if the mother nurses her infant. It seems as if nature lays up a stock of heat and energy in the form of fat for the labor and lactation.

The *skin* often turns darker, especially in brunets, and in all women there is some pigmentation of the linea alba, the navel, and the nipples. The pigment is largely reabsorbed after delivery. Occasionally the face is almost covered with a brownish pigmentation resembling freckles closely run together—the so-called "mask of pregnancy." This likewise disappears nearly completely after labor. The sebaceous and sweat-glands are more active, and the active perspiration makes the patient more liable to colds. Lineæ or striæ gravidarum, the purplish lines described as occurring on the breasts, appear on the abdomen in larger number and sometimes on the thighs (Fig. 29). These striæ are due to the stretching of the skin, and are more common in some women than in others. Occasionally they are absent, though the woman has had several children.

The Mouth.—The salivary secretion is increased, sometimes pathologically, so that there is constant dribbling of saliva. This latter is called ptyalism and is similar to the excessive vomiting of pregnancy, with which it is frequently associated. The physician is to be informed of it.

The *teeth* easily decay. There is an old saying, "every child a tooth." This decay is due to the change

in the secretions in the mouth, not, probably, to the child using up the lime salts of the body. (For the Treatment, see page 248.)

The patient is sometimes sick at the stomach in the morning—the so-called "morning sickness"—and this

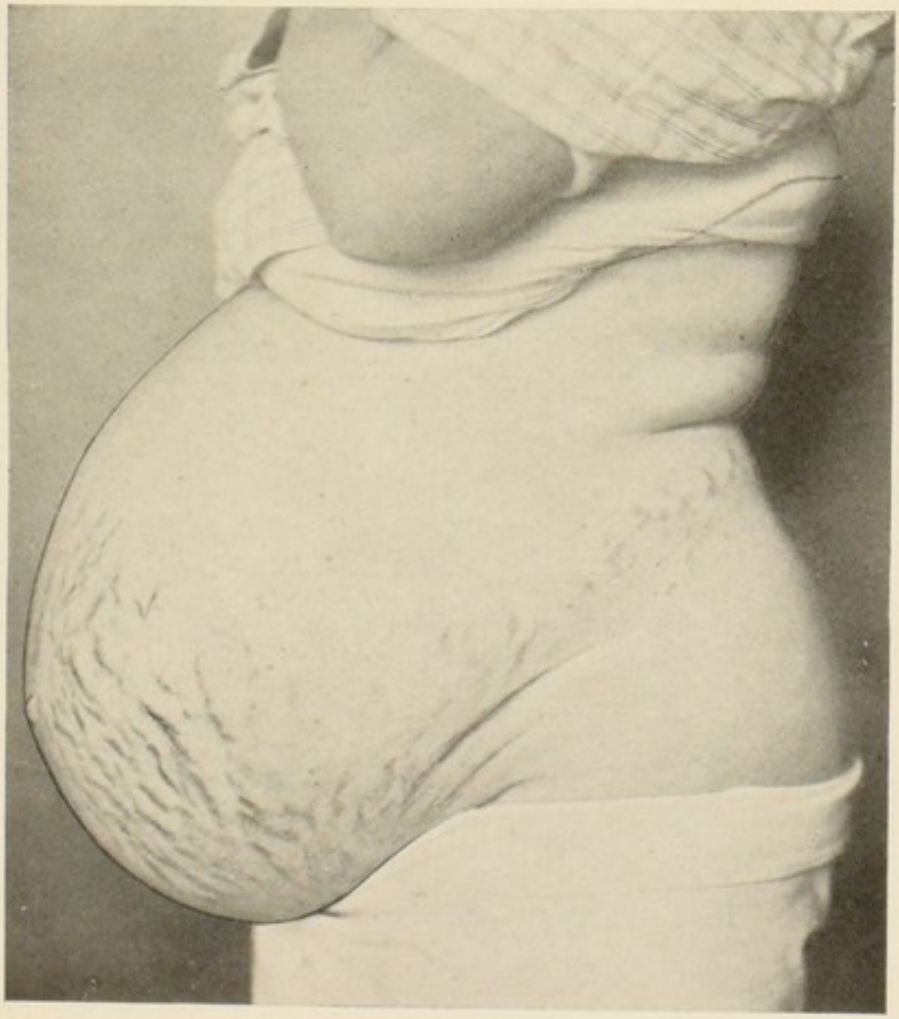


Fig. 29.—Striæ gravidarum.

is one of the diagnostic points of pregnancy. Taste is perverted; the patient craves all sorts of unusual things, which are sometimes indigestible. One may humor these peculiar cravings if the article is not harmful. Sometimes these cravings evidence insanity, as in the case of a woman who craved a bite of her husband's arm

and actually took it. The wife of Camerius, a famous botanist of the sixteenth century, enjoyed herself during pregnancy by breaking eggs on her husband's face.

Owing to the cramped position of the bowels, constipation is a common symptom, which grows worse as pregnancy advances and always requires treatment. (See page 84.)

The Nervous System.—Women are more sensitive and irritable during pregnancy; sometimes there is a change in character, for example, pyromania, kleptomania developing. Sweet-tempered women may be soured, and vice versa. Sometimes they are morally uncertain, showing impaired judgment of right and wrong. Neuralgias, especially of the face and teeth, are common. One must exercise care in the extraction of teeth to relieve the pain, as healthy teeth may be needlessly sacrificed. Sometimes there is prickling of the skin in the extremities, or a general itching which may resist treatment. It is thus seen how gestation tests the integrity of every structure in the body.

LABOR

Pregnancy begins with conception and ends with the expulsion of the fetus and secundines from the parturient canal. It lasts normally ten lunar months, forty weeks, two hundred and eighty days, though the time may be two weeks more or less. In some women the fetus develops quicker than in others, a child at eight months equaling the children of others at nine months. The process by which the fetus and secundines are expelled is called *labor.* If labor should come on two weeks before its expected time, or at any previous period in the last three lunar months of pregnancy, we call it premature. The child is viable at the end of seven lunar months or twenty-eight weeks. It is not strong and may

die shortly after birth. Any interruption of pregnancy after viability of the child, but before two weeks before the expected time of labor, we call *premature labor.* Should a woman go into labor and expel the product of conception before the child is viable—that is, capable of carrying on extra-uterine existence—we speak of abortion. *Abortion*, therefore, is the interruption of pregnancy before the end of the twenty-eighth week. The women call all premature interruptions of gestation "miscarriage"; the term abortion to them means a criminal process, and, therefore, if one employs it, one should not fail to explain its scientific significance.

When labor is over the uterus immediately begins to return to its original size. This is called involution. At the same time a powerful stimulus is given to the breasts—lactation is established.

Labor may, therefore, be defined as that function by which the fetus and secundines are expelled through the natural passages, the retrogressive changes in the genitals started, and the secretion of milk inaugurated. There are three points to this definition. The cause of labor—what influences the uterus which has carried its burden so long, suddenly and violently to expel it—is not known.

Labor does not usually come on without warning: there are *premonitory symptoms.* Usually the woman feels heavy and unwieldy in the last weeks, her gait is laborious, the bowels may become loose, urination more frequent, a free discharge of mucus from the genitals may be noted, and she has fleeting pains in the abdomen and elsewhere. There are three distinct signs that the time is nearing—lightening, false pains, and the show.

1. Lightening.—In the last two weeks, especially in primiparæ, the child's head sinks into the pelvis and its body falls a little forward. The uterus sinks down and forward with the child. The waist-line lowers, the stom-

ach region is flatter, the navel more prominent. The patient breathes easier, but walks less well. The head, entering the small pelvis, interferes with the bladder and frequent urination results. The rectum suffers also, and the bowels are constipated. This phenomenon is called "lightening" or "dropping" by the people, and is sometimes attended with slight pains similar to labor-pains (Figs. 30 and 31). It is a good sign, indicating that there is no mechanical disproportion between the



Fig. 30.



Fig. 31.

Figs. 30 and 31.—Silhouettes of a woman before and after lightening occurs.

head and the pelvis—that is, that the head is not too large for the pelvis.

2. False Pains.—Sometimes, especially in multiparæ, for a few days to three weeks before labor the patient is annoyed by pains in the abdomen. These often occur at night and pass off by morning; they are sometimes due to gas in the bowels, when they are relieved by castor oil and an enema. They are sometimes due to painful uterine contractions, which subside after a hot bath, a warm drink, and an enema. In rare

cases an anodyne is needed. These false pains are annoying, as they may closely resemble actual labor and summon the physician and nurse unnecessarily.

3. The Show.—A few hours to twenty-four hours before labor really begins there is a discharge from the vagina of thick mucus, more or less stained with blood. This is called the show, and is the plug of mucus which fills the cervical canal during pregnancy. Sometimes the show is absent or appears after labor has been in progress for a while. If there is any pure blood with the show it is unusual, and the physician should be notified.

The bag of waters may rupture as the first indication of approaching labor. This is undesirable, because the most favorable means of dilating the mouth of the uterus is thus lost. The patient then has what is known as a "dry labor," which is often slow, tedious, and painful.

Labor is divided into three stages: The *first stage* extends from the time of beginning of the labor-pains to the complete dilatation of the os uteri. It is called the period of dilatation. The bag of waters usually ruptures at the end of the first stage.

The *second stage* comprises the period from the time of complete dilatation of the cervix to the end of the expulsion of the child. It is called the period of expulsion.

The *third stage* extends from the time of expulsion of the child until the after-birth has been expelled, and the uterus has contracted down on itself. It is called the placental stage.

If one observes a labor critically, the process makes the impression of being a mechanical operation, consisting of the action of some expellent power on the fetus and placenta, forcing them through the maternal parts into the external world. Thus the factors of this mechanical operation are: the powers (the forces that prepare the

way and drive the child, etc., along), the passages (the cervix, vagina, vulva), and the passengers (the child, placenta, etc.). The passengers—the child and placenta—have been described on pages 41–46. The passages, too—the pelvis, vagina, and vulva—have been described on pages 21–28.

The powers remain to be studied. They are mainly two—the uterus, a hollow, strongly muscular organ, and the abdominal muscles. The abdominal muscles act during the second stage of labor as they do in procuring an evacuation of the bowels, that is, by bearing down or straining. The force thus exhibited is sometimes enormous, and the patient may injure herself if it is not properly restrained. The uterus acts by rhythmic contractions called "pains."

All three stages of labor are characterized by pains. These pains represent uterine contractions, and the two terms are used synonymously. Uterine contraction in all languages is expressed by the same word that means pain—for example, in German, *Wehen;* Italian, *dolores;* French, *douleurs.*

The Labor-pains.—The uterus contracts at irregular intervals throughout pregnancy, but there is no pain. Late in pregnancy there may be some pain, but usually when the uterine contractions become painful labor has begun, and this is our most reliable outward sign of the advent of labor. When the "pains" begin and become rhythmic we consider the woman in labor. If one observes the abdomen when a pain comes on—that is, when the uterus contracts—one feels the organ harden all over; it rises toward the ribs and stands out more prominently. With a strong pain the uterus becomes almost boardlike in hardness. As the pain goes away the uterus softens and loses its sharp contour, and the abdomen flattens.

In the beginning of labor the pains are far apart, but as it progresses the intervals decrease gradually, being one hour, thirty minutes, fifteen, ten, six, five minutes, until, toward the very end, one pain follows almost immediately after the other. The nurse may judge the rapidity of the labor by the frequency and strength of the pains. The parturient feels the pains at first in her back (the "kidney pains" of the French), and they are not so painful, but as labor goes on they are felt more to the front and are severer. When the woman is well on in the first stage she describes the pains as grinding, later as cutting, and in the second stage they are "bearing-down" pains. The pains or the uterine contractions, aided by the action of the abdominal muscles, are the most important powers of labor.

The Bag of Waters.—The first effect of the uterine contraction is the formation of the "bag of waters." That part of the fetal sac, or the membranes inclosing the child, which covers the internal os is forced into the os from within outward. The cervix being the point of least resistance in the uterus, when the uterus contracts it forces the liquor amnii in this direction. The os being covered by the membranes, these latter are forced out in the form of a pouch. This pouch is called the bag of waters, and it has important functions. First, it dilates the cervix and the vagina gently, evenly, and safely; second, it protects the baby from injurious pressure on any one part, because when the uterus contracts the force exerted presses equally in all directions, answering to the law of pressure on fluids; third, it protects the cord from prolapsing; and fourth, if there is infection in the vagina, it prevents this from getting into the uterus or into the baby's eyes. (See Plate II.) Some authors call the whole fetal sac the "bag of waters."

When the cervix is completely opened, so that the

uterine cavity forms a continuous canal with the vagina (the parturient canal), the membranes usually rupture, but they may not until later, or may rupture before the pains begin. This last then leads to a so-called "dry labor." If the baby is born with the membranes covering its head, it is said to be born with a "caul," and it is considered a lucky omen.

When the uterus contracts, everything in it is forced out in the direction of the cervix. The child is forced against the os, and, when this is large enough, the head passes through it into the vagina. The pains, aided now

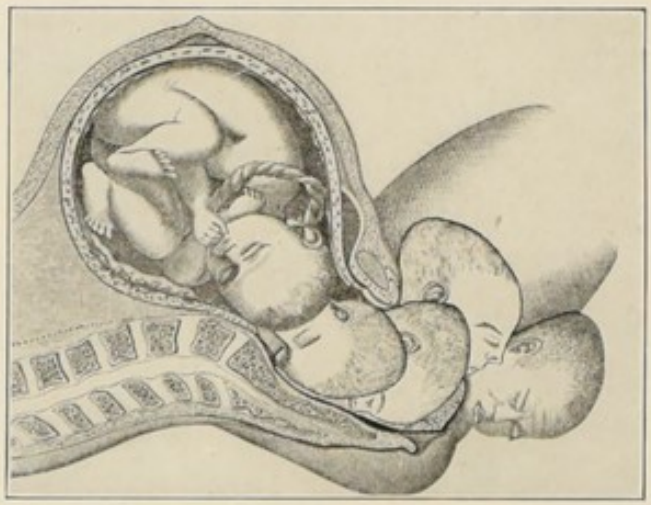


Fig. 32.—Diagram showing the advancement of the head through the pelvis (Leishman).

by the voluntary bearing-down efforts of the woman, drive the head along the vagina. The perineum now begins to darken in color and to bulge outward, and the anus opens, so that the anterior rectal wall lies exposed. The pains are about two minutes apart and very strong. The vulva begins to open, and soon the wrinkled scalp is visible (Fig. 32). Under the actions of the pains and strong pressing efforts of the mother the vulva is dilated so as to allow the passage of the child. Sometimes the parts will not dilate, but tear, or the doctor has to incise the vulva to permit the escape of the child. This

operation is called *episiotomy*. After the head is delivered the face turns to one side and there is a short pause, after which the shoulders come, followed at once by the trunk. The child gives a sneeze or a gasp, and soon cries lustily. Now come blood, liquor amnii, sometimes meconium, and the ends of the membranes.

The pains cease and the patient feels much relieved. The second stage is ended; the third stage begins. After a short rest, during which the uterus may be felt as a roundish body the size of a cocoanut, lying under the navel, the pains recommence—the after-pains. These bring about the separation and expulsion of the placenta. Sometimes there is a little hemorrhage with each pain. The pains recur every three or five minutes. Soon the cord slides down a little from the vulva and the patient bears down, or the doctor presses on the uterus and the after-birth appears. The nurse receives it in a sterile basin, or the physician takes it, gently pulling on the membranes, which strip off slowly from the uterus. There is always more or less blood when the placenta comes, and a little more follows it. The uterus now contracts down into a hard ball behind the pubis, and the third stage of labor is ended. The *puerperium* is now begun—the woman is a *puerpera*. If she has already borne children the after-pains continue more or less severely, and for a period of one or more days.

THE PUERPERIUM

The puerperium is characterized by the return of the genital organs to their previous condition and the development of the breasts for the function of lactation, that is, to carry still further the function of reproduction. Retrogressive changes occur in the genitalia; progressive changes, in the breasts.

The **uterus,** which after labor is the size of a small

cocoanut and weighs about 2 pounds, by a process of fatty degeneration and absorption quickly diminishes in volume. The nurse can observe this by feeling daily the fundus of the uterus and measuring from its top to the pubis. On the first day the uterus is high—even

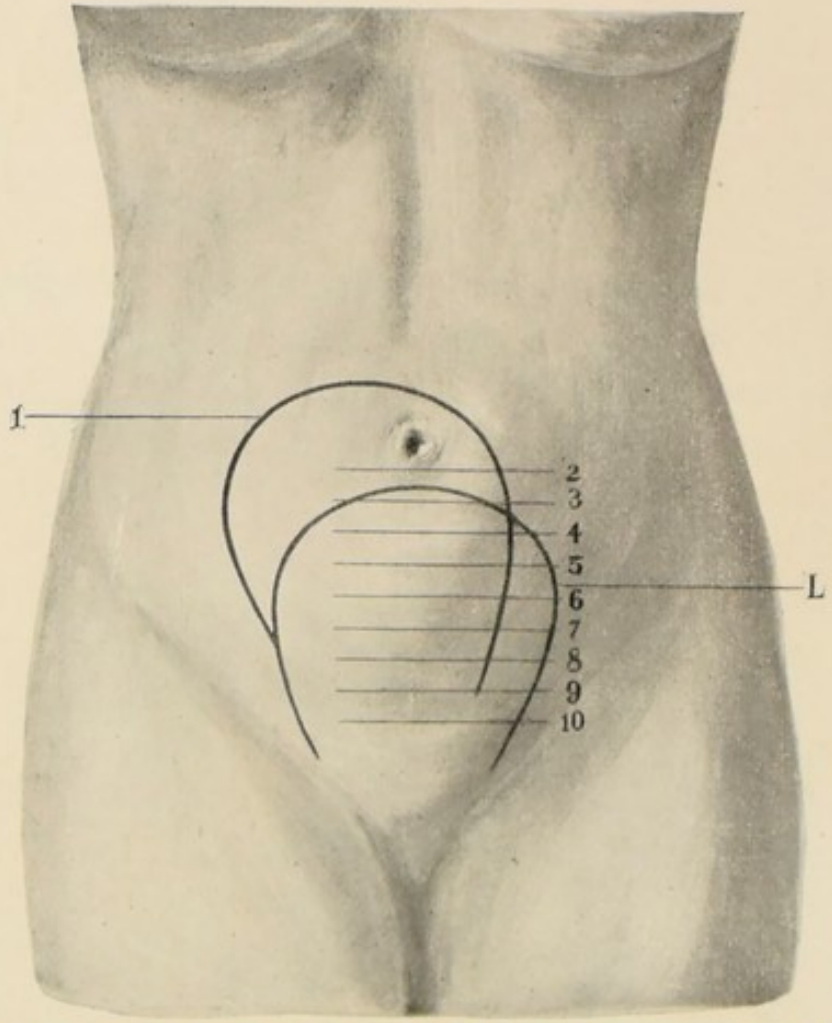
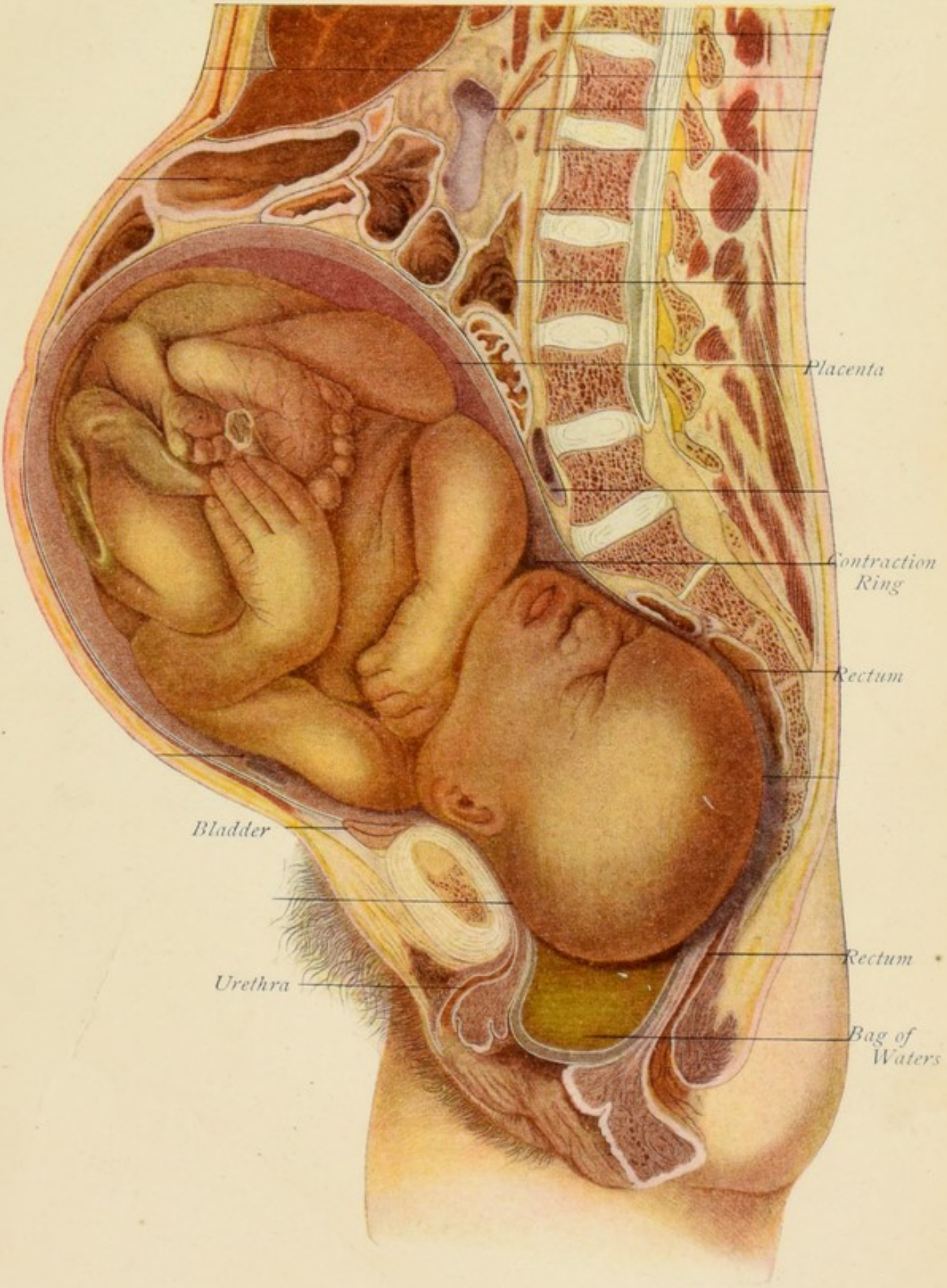


Fig. 33.—Height of uterus postpartum, the bladder empty: L, After labor; 1, first day; 2, second day, etc.

above the navel; on the third day it is eight fingers' breadth above the pubis; on the fifth day, six fingers'. On the twelfth day it is at the pubis, and after this normally cannot be felt through the abdomen (Fig. 33). If the bladder or rectum is full the uterus is pushed up higher (Fig. 34).

PLATE II



Braune's frozen section of a woman who died at the end of the first stage of labor. Shows the bag of waters at the vulvar outlet.



The Lochia.—The lining membrane of the uterus, the endometrium, is cast off and renewed during the puerperium. This is attended by a flow of fluid from the genitals called the lochia. The lochia varies in appearance and consistence from day to day, and varies in different women, also with the kind of labor the patient has had.

On the first day the lochia is bloody—*lochia cruenta*. Sometimes there are clots. If these are large, the case

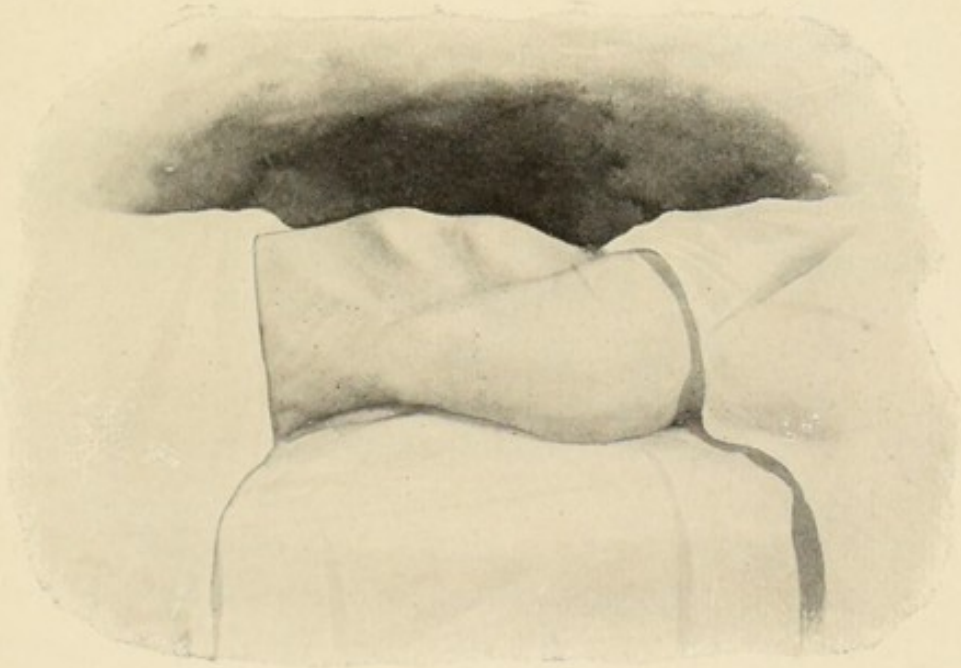


Fig. 34.—Uterus pushed up by full bladder.

is abnormal. Note the expulsion of the clots, membrane, etc., on the history-sheet, and save anything abnormal for the doctor's inspection, either fresh, wrapped in a wet cloth, or in 50 per cent. alcohol. On the second and third days the lochia is still bloody, but there is quite an admixture of serum. It is called *lochia sanguinolenta*, or is said to be serosanguineous. For a few days now the lochia is creamy and reddish. After the sixth day there is quite an admixture of fatty detritus and pus-corpuscles, which

make the discharge purulent—*lochia purulenta*. Later in the puerperium there is only a watery clear discharge—*lochia serosa*. Sometimes the bloody lochia persists for several weeks. Microscopically, about the third day, the lochia contains red and white blood-corpuscles, epithelium from the genital tract, bits of necrotic or dead endometrium, or *decidua*, and millions of microbes. These germs are not virulent unless the puerpera is septic or unless they are introduced into conditions favorable to their growth. Thus the lochia of one puerpera might, if introduced into the vagina, infect another puerpera. Nurses have infected their fingers by the lochia of normal puerperæ, and that infection may be carried from here to the breasts is generally admitted.

The amount of lochial discharge varies from day to day and in different women. It varies also according to the nature of the labor and the conduct of the third stage. Women who menstruate freely have profuse lochia; operative cases have much for the first few days; when the uterus has been thoroughly emptied at a labor the discharge is scanty. The lochia may be pent up in the uterus and give rise to fever.

The odor of the lochia changes during the continuance of the flow, being at first bloodlike; later it resembles that characteristic of the patient. A foul or putrid odor is always indicative of infection, though the infection may not be serious. (See chapter on Puerperal Infection.)

The vulva and the vagina after labor are dark, bruised, and more or less torn and abraded. There is, usually in primiparæ, more or less swelling. This edema is quickly absorbed, also the ecchymoses. All these processes are grouped together and called "involution." Involution, then, may be defined as that

group of processes occurring when the uterus and other genital organs return to their usual conditions. The health of the woman depends on the involution proceeding undisturbed.

The **breasts** take on their greatest activity during the puerperium. Whereas the processes going on in the pelvic genitalia are retrogressive, bringing those structures back to their previous condition, the changes occurring in the breasts are progressive—designed to further carry on the function of reproduction.

On the first day the infant obtains the secretion known as colostrum. This is rather indigestible and produces catharsis. Even of the colostrum there is very little the first day, so that the infant practically starves. On the second day there is more secretion in the breasts, and it is quite yellow from the admixture of butter-fat. On the second day in multiparæ, and on the third in primiparæ, there is usually a rush of blood and lymph into the breasts. They are swollen, enlarged, turgid with blood, painful and tender, and feel hot. The patient, when the engorgement is marked, may be in much distress. The breasts are sometimes so large and hard that the nipple is flattened and the baby cannot grasp it for nursing. Since the breasts are thus not emptied, the engorgement is not relieved. This condition is popularly thought to be a rush of milk to the breasts, but it is nothing but an acute engorgement of the organs. No milk is formed, but it is ready to be formed, and needs only the stimulation of nursing. Should the child not nurse the engorgement would gradually subside. If it nurses the milk is made, and mostly during the nursing itself. In multiparæ, and after lactation is established, the breasts having formed the habit of making milk at certain periods, do so, and thus there comes to be a little milk in the breasts; but

this is not the rule, nor is the quantity large, and herein lies the fallacy of pumping the breasts continually to relieve them. It is not overfilling with milk that is giving the trouble, but lymphatic and venous engorgement, and measures for relief should be directed toward these. Under appropriate treatment the engorgement subsides spontaneously in a day or so, and the function of lactation is gradually established. (For Treatment, see p. 308.)

The engorgement of the breasts is not accompanied by fever. There is no such thing as "milk-fever." When there is fever about the time that lactation is being established, its cause must be sought elsewhere, and some form of sepsis will usually be found.

GENERAL CHANGES IN THE PUERPERIUM

The general condition of the woman during the lying-in period is different in some respects from that of other women. The temperature is sometimes a little higher than normal. It may rise to 99.5° F. and not be pathologic, though the writer is accustomed to regard every rise above 99° F. with suspicion. Anything above 100° F. is certainly indicative of disease.

The pulse ought to be below 88. If higher, there is usually something wrong, as hemorrhage, infection, heart disease, etc. Sometimes a woman has naturally a rapid heart.

Kidneys.—The patient passes much urine during this time—*polyuria*—therefore the nurse should see that the bladder is not overfilled, because it may cause hemorrhage from the uterus and cystitis. When the bladder is overfilled it makes a soft tumor above the pubis (see Fig. 34), pushing the uterus up and to one side. Retention of the urine after labor is common. If the bladder overflows, this condition is called *ischuria*

paradoxa. The inability to urinate is due to several causes: first, the horizontal position in bed, some patients finding it impossible to urinate lying down; second, to the bruising and swelling of the urethra caused by the labor; third, the abdominal walls are weak from overstretching during pregnancy. In hysteric women and after some operations the amount of urine may reach from 3 to 5 quarts.

Bowels.—Constipation is the rule because the patient is quiet on her back, and because the abdominal muscles are stretched and the intestines inactive from being in a cramped position so long. Not seldom there is tympanites. In pathologic cases this may require special treatment. Rarely it is fatal.

The **skin** is active, the patient sweats freely, and therefore is more subject to chilling—an important hint. There is, too, a peculiar and somewhat characteristic odor about the patient. This may be altered by disease, as uremia or sepsis.

The **mental condition** is altered, the patient being more susceptible to nervous influences; therefore the general desire to keep parturient women free from all worry and excitement. In Roman times a criminal was safe if he took refuge in the house of a puerpera, and even the tax-gatherer was debarred. It is claimed by some that a puerperal woman is so sensitive to nervous shock that such may cause an acute rise of temperature. The writer has seen a few instances where the fever could not well be explained on any other grounds, but such a diagnosis is hard to prove.

CHAPTER IV

THE NEWBORN INFANT

THE BABY IN THE FIRST WEEKS

As soon as the child is born close observation will show tiny respiratory movements of the chest; then comes a gasp or a sneeze which clears the air-passages; then a short cry; finally, the lusty crying. These few moments are crucial. The change from the uterine circulation of the blood to the extra-uterine is now taking place. The lungs are expanding; the blood-currents are taking the directions they are permanently to follow. Should the lungs not expand fully, sufficient air cannot enter and the child remains blue, and if the condition is marked, it will die after a period of from two to forty-eight hours. During this time each breath drawn by the infant is marked by an expiratory grunt or whining cry. It is pitiful to hear, and soon the infant becomes unconscious and finally comatose. This condition is called *atelectasis pulmonum*, and is much more common in premature infants. The respiration of even a healthy infant is irregular, and for a few hours the child may be a little bluish around the mouth and nose, but this disappears fully, being replaced by the healthy pink or red.

The **cry of a newborn infant** is lusty at first, then the infant quiets and cries only when hungry, uncomfortable, disturbed, or sick. A whining cry is suggestive of atelectasis, prematurity, and illness; a sharp,

high-pitched cry, of cerebral trouble; a sharp, loud cry with kicking of the legs, of hunger or colic; a fretful cry, with borborygmus (rumbling in the bowels) and greenish stools, of indigestion.

Sleep.—The newborn infant sleeps nearly all the time when it is not disturbed. After a week, but sometimes sooner, it usually begins to show signs of intelligence. It moves in its sleep, and occasionally muscular jerks may be seen, due to a jar or sudden light. If the child does not sleep, something is wrong.

The **temperature** varies normally from 98° to 99° F., usually it is 98.4° F. In premature infants the temperature is 97° to 98.6° F. or lower if they are not kept warm. The normal pulse-rate is from 120 to 140 a minute. The respirations are 38 to 44 a minute. The pulse is made more rapid by the least disturbance. It is difficult to count and is felt best in the temple and while the child sleeps.

The **skin** is at first bluish pink, becoming in a few hours pink or red. At birth it is more or less covered with a white, thick, cheesy material, the *vernix caseosa*, which is composed of epithelial cells, lanugo, and sebaceous secretion accumulated on the skin during intrauterine life. During the first days the skin dries and may crack in the folds; it may desquamate in more or less large flakes. In many babies—over half—there is a yellowish color to the skin after the third day, the so-called *icterus neonatorum*, or jaundice of the newborn. It has several causes, but the exact nature is is not known. If the jaundice is slight the general health of the baby is not affected, and the skin clears in a few days; but if the child is deeply jaundiced the condition may indicate a serious disease. These cases are slow to lose the yellow color. The children remain for a long time weak, small, and puny.

The Navel.—The umbilical cord is tied and cut off ½ to 1 inch from the skin margin. The stump of the cord in a few days shrivels up to a thin, tough strand. At the edge of the skin, where the cord has been inserted, a line of granulation forms which separates the stump of the cord. The cord usually drops off from the fifth to the fifteenth day; it may be sooner or later than this. The process is one of aseptic necrosis, the wound healing by granulation and cicatrization. Careful asepsis must be observed in the treatment of the stump, so that sepsis does not interfere with the process.

The Baby's Bowels.—For the first three days the infant passes a thick, dark-green, tarry material, called *meconium*. This has been accumulating in the bowel since the fetus was very small, as it is found in the intestine of fetuses expelled in the early months of pregnancy. When the child is from three to five days old the movements are brownish in color, and then gradually there is an admixture of yellow from the food. By the sixth day usually the green has entirely disappeared and the movements are pure yellow. This is the normal process. The green may persist longer in some cases. The odor of a healthy baby's stools is not bad, resembling somewhat that of sour milk, and the color should be golden yellow. There should be no mucus in them, and the water-line outside the solid part of the bowel movement should not be more than ½ inch wide. Greenish, frothy, slimy, foul-smelling, acrid stools betoken intestinal disease. A continuance of the brown color shows insufficient food.

The Kidneys.—The newborn infant generally passes urine in the first few hours. This must be watched for, and if absent the parts must be inspected for evidence of obstruction. Sometimes the napkin is stained with a reddish, brick-dust-like deposit, the so-

called uric acid. In the kidneys of children dying in the first days this same deposit is frequently found. The urine in these cases is too concentrated and requires dilution, which is accomplished by the free administration of liquids, especially water.

The Weight.—The infant loses weight during the first four to eight days, and then begins to regain it. By the eleventh day it again weighs as much as when born. Children vary much in this regard, depending on their constitution and on the food they get. If breast fed, and the supply is abundant, the initial loss may be small, and the birth-weight may be regained before the fifth day (Fig. 35). Under contrary conditions the child may weigh less in three weeks than it did when born. This is especially true of premature infants, as they lose relatively more—sometimes a quarter—of their whole weight. They regain it slowly, often remaining stationary for weeks before the little body begins to grow.

Girls sometimes have a little whitish discharge from the vagina, and rarely they menstruate. This lasts one to five days and is not of serious moment. Occasionally it is too profuse, when a drop of extract of ergot, three times daily, may be needed.

Name Baby Robinson CHICAGO LYING-IN HOSPITAL. Conf. No. 504

Application No. 619 INFANT'S WEIGHT CHART. Delivery Instrumental.

DATE	July 22	23	24	25	26	27	28	29	30	31	August 1	2	3	4	5	6	7	8	9	10	11.
DAY OF LIFE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NUMBER OF FEEDINGS	6	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
TOTAL AMT. OF FOOD	Milk slow in coming.																				
FOOD NATURAL, ARTIFICIAL	Mother's Milk. →																				

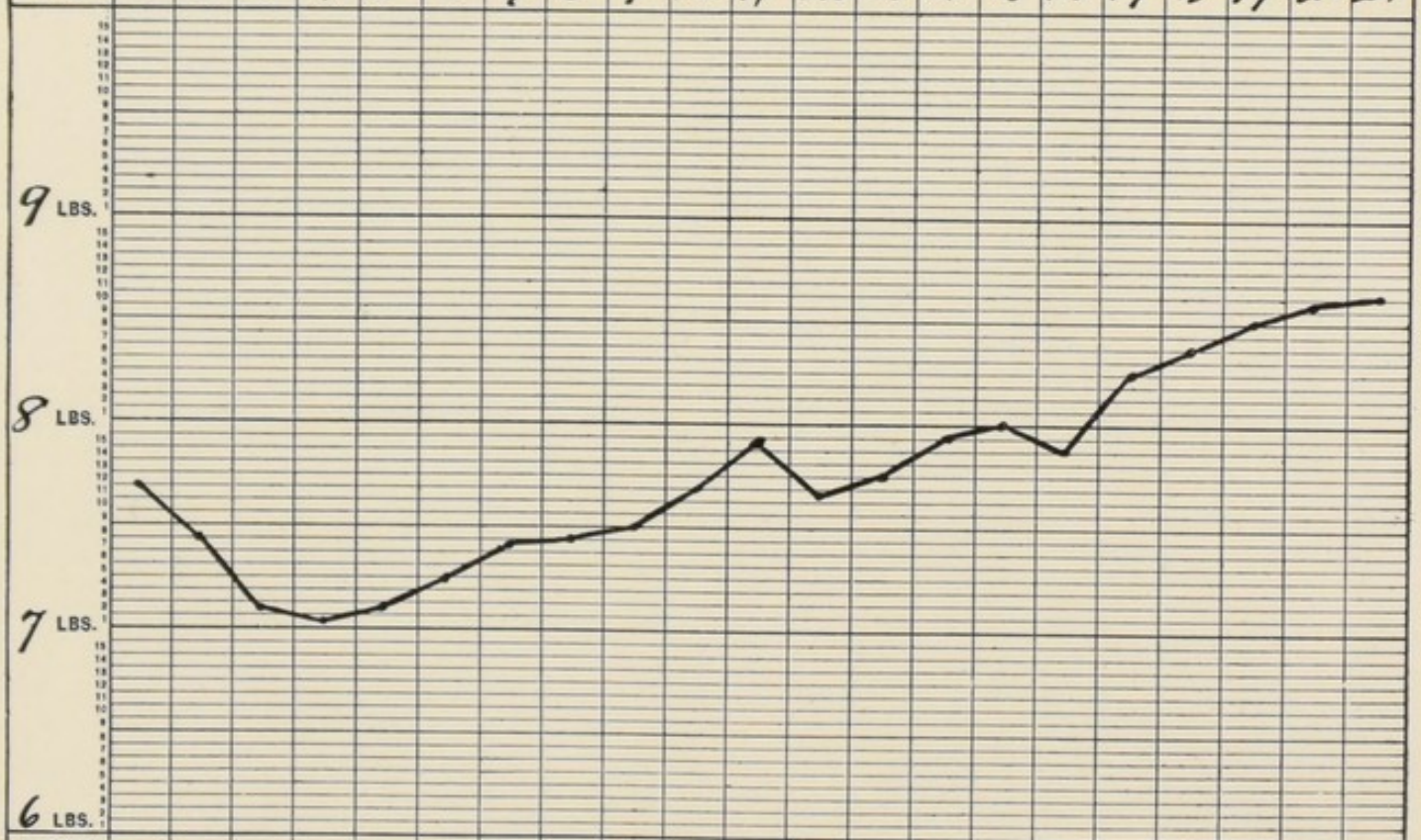


Fig. 35.—Weight-chart of a normal infant.

CHAPTER V

THE HYGIENE OF PREGNANCY

UNDER this caption those duties will be treated which fall to the lot of the nurse during pregnancy. She is often consulted about various incidents of the gravid state, first of which is the diagnosis of the condition itself.

Diagnosis of Pregnancy.—This is not always easy, even late in pregnancy, and in the early months may not be made positively even by an expert accoucheur. The nurse has the following points on which to base a diagnosis of pregnancy:

1. *The Cessation of the Menses in a Healthy Woman.*—If a woman in good health ceases to menstruate during the period of reproductive life, the probability is very strong that pregnancy exists.

2. *The Morning Sickness.*—If a woman apparently healthy is affected with morning nausea and vomiting, there is a presumption of pregnancy, but no more than a presumption. Together with the absence of the menses, the symptom has more value.

3. *Enlargement of the Breasts and the Areolar Signs.*—These evidences are very strong, but not certain, because nervous women may show them at their menstrual periods. Shooting pains in the breasts, prominence of the nipples, puffiness of the areola, pigmentation, and colostrum may be noticed.

4. *Quickening or "Feeling Life."*—Since this is a subjective sign—that is, felt by the woman—it has no positive value. Even matrons have imagined feeling a child in the abdomen when none was there. A mother of nine children prepared a complete outfit for the tenth, which she imagined she felt. One patient of the author felt labor-pains when she was not even pregnant.

5. *Palpation of the Fetus, of Fetal Movements, and Hearing the Fetal Heart-tones.*—These are the only certain signs of pregnancy, but may only seldom be elicited before the fourth month.

The physician has other means of diagnosis, including the blood-serum test just discovered.

Diagnosis of Time of Confinement.—This can never be exactly determined. An error of two weeks either way is always possible, because we do not know when the gestation begins or when it ends. The time of conception is not known, labor is more or less accidental, being sometimes brought on by external causes, and the length of pregnancy varies in different women, and in the same woman at different times. Therefore all statements as to the exact time that labor will occur are conjectural. Experience, however, has shown that we can arrive at an approximate date, which, for practice, is quite satisfactory, if not wholly so.

1. Count back three months from the first day of the last normal menstruation and add seven days. For example, Mrs. X. menstruated last beginning October 10th: July 17th is set for confinement.

2. Count twenty-two weeks from the day of quickening for a primipara, and twenty-four weeks for a multipara.

3. Count two hundred and eighty days from the supposed date of impregnation.

4. Count two weeks from the time of lightening.

5. The physician will measure the fetus by means of the pelvimeter and the cephalometer, and by general palpation of its body, and, judging from its size and consistence, will say that the child is about thus and thus far along in development. Outside of the error due to uncertain human judgment there are other fallacies, because some children at eight months are larger than others at term and even those carried over time.

Thus if a gravida has a small fetus, it is unsafe to say that she is far from term. The author delivered a 3-pound baby from a woman who was beyond the ninth month of pregnancy, and on the same day another child, in the eighth month of pregnancy, that weighed 8 pounds.

MODE OF LIVING FOR THE PREGNANT WOMAN

Dress.—The dress of a pregnant woman should be simple and warm. There should be no heavy skirts. There must be no circular constriction at any part of the body, which means that round garters, corsets, tight skirt-bands, etc., must not be worn. Closed drawers are essential. It is best to wear wool next to the skin—heavy in winter, light in summer—but many women do not do so. All skirts should hang from the shoulders, from a waist or by means of suspenders. The secret of a proper abdominal dress for pregnant women is that there should be no pressure on the womb from above downward, but the uterus should rather be supported from below. If a woman presses the uterus down by the corset, all the abdominal organs are displaced: the intestines upward against the stomach and diaphragm; the uterus is forced down against the pubis and into the pelvis, pressing on the bladder (Fig. 36). All the organs in the pelvis are crowded down and venous congestion results, with its train of dangers, immediate and future.

The supports of the uterus and abdomen are weakened, and later "high stomach," *enteroptosis*, or prolapse of the abdominal viscera, and displacement of the uterus develop. Further, the growth of the child is interfered with and deformities, such as club-foot, may thus be caused.

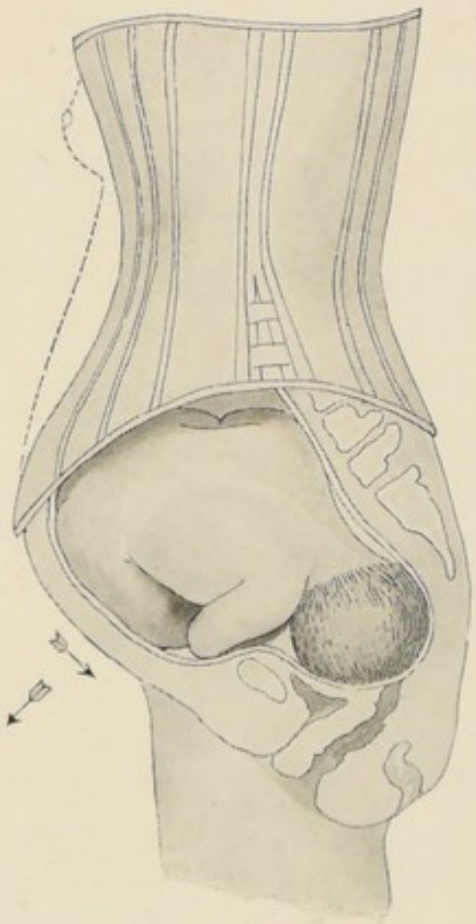


Fig. 36.—Corset pushing the uterus, child, and other organs down into the pelvis.

Several corsets or waists especially designed for pregnant women are on the market. Some of the best are those made by the Patterson and the Kabo Maternity (Figs. 37, 38) waist manufacturers.

In the latter half of pregnancy most women, and expecially the multiparæ, enjoy much comfort from a well-fitting abdominal supporter such as is worn after laparotomy. This helps the abdominal wall to carry the weight of the child. (See Fig. 129.)

Should the breasts grow large and distress the patient by their weight, care should be taken that sufficient

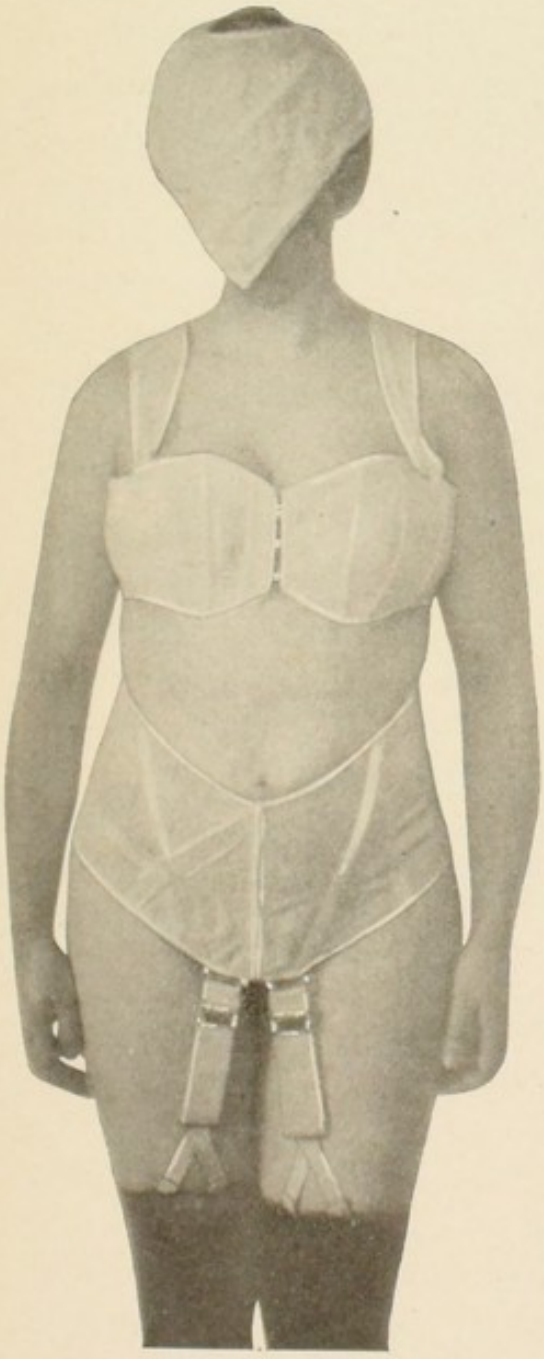


Fig. 37.—The Kabo abdominal supporter, front view.

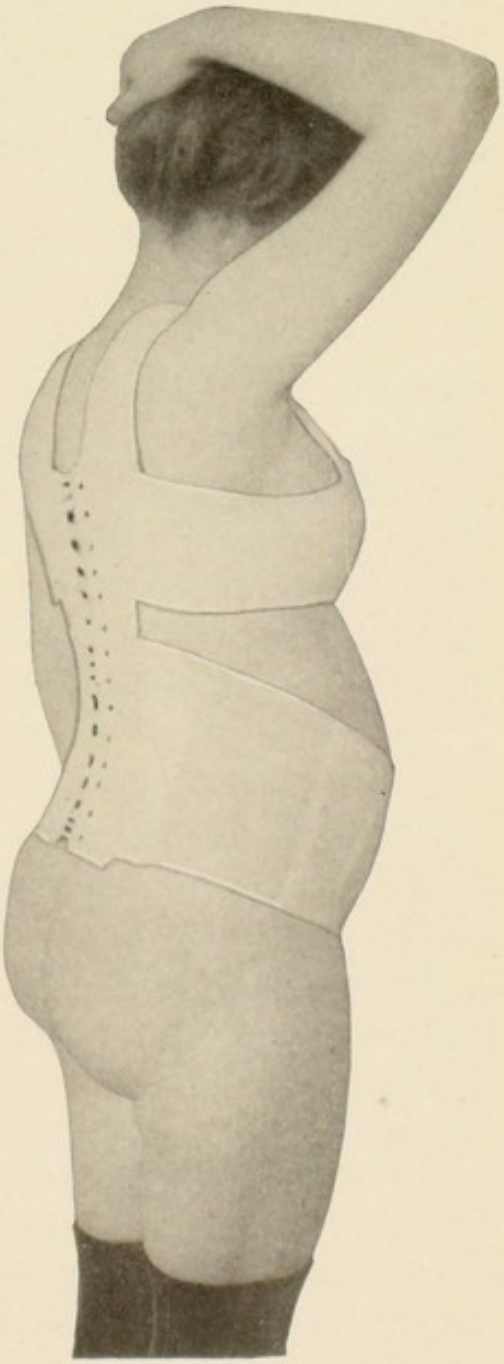


Fig. 38.—The Kabo abdominal supporter, side view.

support be given. This is as much needed to avoid injury of the delicate organs as to insure comfort.

The pregnant woman should wear low-heeled shoes—the so-called common-sense shoe with broad toes. High-heeled shoes are distinctly injurious, causing pain in the back and bearing-down sensations in the abdomen. A glance at the figure of a pregnant woman will show how this comes about. Owing to the development of the abdominal tumor, which tends to pull the trunk forward, the woman throws her shoulders back and straightens her neck. This balances the figure, but it makes a sharp angle in the small of the back. It gives the gravida a peculiar pose and gait which did not escape the eye of Shakespeare, who called it the "pride of pregnancy." Now if, in addition, the pregnant woman wears high heels, the trunk is pushed still further forward, and to save herself from falling the gravida throws her head and shoulders very far back, making a sharper bend in the lumbar region. This causes pain here and overstretches the abdominal wall in front. It is sad to contemplate how the beautiful female form is distorted at the behest of fashion, but it is sadder to think of the physical misery and injury to health these behests cause.

Preservation of the Figure.—Naturally and properly, women are desirous that the function of child-bearing should not leave the person in an ungainly shape, for example, with protuberant abdomen. The most common complaint is that the patient develops a "high stomach" after labor.

It may be remembered that the Roman women had abortions performed so that they need not suffer the disfigurement produced by child-bearing. Certain changes in the body are the necessary results of child-birth and beautify the figure, although some women do not look at it in this light. Such are the general rounding of the hips, broadening of the bust, the more mature

and matronly appearance. It is natural for some women to put on fat after delivery, and nothing done before, during, or after confinement will prevent it. An excessive accumulation is, however, amenable to the usual treatment for obesity. Antifat medicines should not be taken during pregnancy, and never without the physician's order.

For the prevention of "high stomach" or extreme prominence of the lower abdomen much may be done. The condition is caused by weakness of the abdominal muscles, or even by a separation of the recti muscles, when the woman is said to have a "rupture." As the result of either, the intestines fill with gas and fall forward; sometimes the kidneys become movable, or even the liver prolapses. The muscles give way under the stretching produced by the growing uterus, and, of course, will give way sooner if there are twins or an unusually large child, or if the abdominal walls are weak. If corsets are worn during pregnancy, they add to the strain on the lower abdomen and thus favor muscular weakness. High-heeled shoes are another factor. Overstraining during labor and inattention to the bowels after labor are also causative. To prevent the muscular insufficiency, one must begin with the girl. She should develop herself as does the boy, with active sports—rowing, swimming, climbing, etc. When a young woman, she should not "lace" and thus paralyze the abdomen. Healthy exercise of the whole body should form part of her daily routine. The abdomen may need some support during the last three months of pregnancy, which may be obtained by one of the maternity corsets recommended. A special abdominal binder, as the Patterson, may sometimes be needed, and this in multiparæ with already weakened walls or with twins, polyhydramnios, etc. After the birth of the child the

nurse should see that the bowels are regularly emptied and that the gas does not accumulate in the intestines. The binder after labor does not prevent "high stomach," and while the writer recommends it (see Treatment of the Puerperium), the most benefit obtained from it is when the patient first leaves the bed. To bring the abdominal walls back to their original tonus the nurse may, after the uterus has shrunk into the pelvis, give them a daily five-minute massage.

To prevent the overstretching of the skin and the formation of the lineæ or striæ gravidarum, our efforts are not very successful, but the writer recommends albolene as an inunction. Several such remedies are much vaunted in newspaper advertisements. Massage of the skin with oil or fat does help prevent striæ.

Women whose legs become swollen and full of immense varicose veins should wear rubber stockings. This, in its marked form, is a congenital defect and unpreventable.

The Diet.—The diet of the pregnant woman should be simple, but not strict. The amount of meat and broths should be small—meat once a day only. Starches fried in fat and rich pastry should be avoided. Otherwise a liberal diet may be allowed, especially plenty of water, milk, and all the milk-products. Cereals, fruits, and vegetables should be eaten, especially fruit, to loosen the bowels. Women sometimes reduce the food taken in the last three months with the idea of restraining the growth of the child. This, if overdone, is unwise. Certain books advise a special diet to reduce the bone salts in the skeleton of the fetus and thus insure an easy labor. It is questionable if the desired effect could be obtained without first injuring the mother, and, further, the child would probably suffer from rickets. In women with contracted pelves a specially restricted diet has

been tried with a view to restraining the development of the child and thus insuring its passage; the results are not certain. (See p. 452.) On the other hand, the gravida, thinking she must feed two persons, must not overeat. She should be advised that her usual habits should continue in pregnancy.

No wine or other alcoholics may be taken, first, because of the danger, exaggerated during pregnancy, of contracting the liquor habit; second, because of a demonstrable bad effect on the offspring. The evil effects of alcoholics on the infant were recognized even in biblical times. It is said that Samson's mother abstained from wine during her pregnancy. A child conceived while the father is intoxicated may be dull, stupid, or diseased. Diogenes was aware of this fact, which recent experiments on guinea-pigs have proved.

Exercise.—A moderate amount of exercise must be taken each day, but the patient should always stop short of fatigue. A woman cannot develop muscle during pregnancy to make labor easier; she should have done this before. If active exercise tires her too much, a general massage may be given, always avoiding the breasts, the abdomen, and the veins. Walking in the open air and in the sunlight must be urged, always, of course, short of fatigue. No golf, tennis, dancing, or swimming is permissible during pregnancy. Sewing on the machine should be restricted.

The patient may go to the theater, but must avoid crowds for fear of getting into a crush. She must avoid gatherings in close rooms, especially with stove-heat, because of the danger of coal-gas, etc., injuring the child. She should not travel much, and if travel is necessary, should go in the most comfortable way obtainable. If a patient has a history of abortions or a known tendency, travel should be prohibited. Long

trolley rides may bring on premature labor, and the same may be said of automobile riding on rough roads.

The Mind During Pregnancy and Maternal Impressions.—The pregnant woman should lead a placid, quiet life, avoiding mental as well as physical fatigue and excitement. The patient should read good books and avoid medical subjects. It is not necessary for her to be acquainted with the processes of labor and its various complications. From medical books published for the laity she will obtain erroneous impressions regarding the function, and groundless fears will be engendered in her mind. "Maternity," by Dr. Henry D. Fry, may be recommended, as may also "Woman and Marriage," by Margaret Stephens.

The patient must not be allowed to worry over her condition and her approaching labor. So far as possible she should be removed from association with gossiping neighbors, who take pleasure in recounting the difficulties and dangers of parturition, and the relation of wonderful cases—and the nurse must not be guilty of the same offense.

If there is a tendency to melancholia, the physician is to be informed of it. A change of scene may be ordered. There is a popular notion, handed down from the ages, that a woman's condition of mind may influence her unborn child mentally and physically.

Statistics tend to prove that the mothers of great men nearly always were characterized by great intelligence, superior intellectual attainments, or religious devotion, and that great-minded fathers less often procreated children that became great. The evil effects of alcoholism during pregnancy have already been alluded to.

Most physicians do not believe that the state of the mother's mind during pregnancy can affect the fetus. They base this disbelief on the fact, which cannot be

doubted, that there exists no connection, either nervous or vascular, between the child and its mother. That a fright or shock can so alter the milk of a nursing mother that the nursling may be seized with convulsions is a fact. Reasoning from analogy, one would believe that the same effect could be produced on the child in the uterus. A fright or shock may bring on abortion or premature labor by causing a hemorrhage in the placenta.

If a woman believes that by reading good books her child will be intellectual; that by studying good pictures and sculpture her child will be artistic; that by engaging in the science of mechanics her child will be mechanical, the belief may be encouraged, as it conduces to the general welfare of both, even though there is no scientific basis for the belief.

That a fright, such as seeing an ugly object or deformity, will produce a like deformity in the unborn child is not scientifically proved. Cases reported in evidence of such effect can usually be explained by coincidence, if untruthfulness be excluded. The fetus is completely formed at the eighth week, and the shock or impression to which the deformity is usually ascribed almost always occurs after this time.

The limits of this book do not permit the presentation of the many theories and reasons for and against the proposition, but suffice it to say that the nurse may comfort the mother with the statement that maternal impressions do not affect the physical well-being of the child.

The Determination of Sex.—Even if it were possible, it is doubtful if it would be desirable that parents be able to influence the sex of the unborn child. We do not know what causes produce the two sexes in the ratio of 106 males to 100 females, a ratio that obtains the world over.

Many investigators have studied the subject and endless theories have been propounded, but nature still hides the secret of the production of sex. As far as we know at present, the sex of the child is already determined in the ova in the ovaries of the girl, even before puberty, and, therefore, no external influences can affect the sex of the infant during pregnancy. It is a matter of chance whether a male or a female ovum is the one to be fertilized by the male element. The subject is by no means closed, and perhaps nature will give up her secret in time.

To diagnose whether a male or a female child will be born is also beyond our ken. All statements in this regard, it must be admitted, are guesses. The rapidity of the fetal heart-tones may be used as a basis of the guess. If the child's heart beats faster than 140 a minute, we say a girl will be born; if below 130, a boy, leaving the intervening numbers as of doubtful significance.

The Bowels.—Attention to the intestinal tract during pregnancy is of the utmost importance because most serious consequences may be the cost of the neglect of the same. Most women—perhaps 9 out of 10—are costive during pregnancy, and the relief of chronic constipation requires great effort, patience, and persistence. A long-standing habit cannot be cured during pregnancy, and usually we must resort to medicines, but they are always avoided if possible. The general rules for curing constipation are the same during pregnancy as out of it, and are as follows:

1. Have the patient make it an unfailing habit to go to stool at a certain hour each day. Usually the best time is shortly after breakfast. Should no movement occur at the time—and straining is not permitted—the action of the rectum may be provoked by a glycerin sup-

pository or an enema. As the habit is established, these means are omitted. She must never resist the desire to go to stool at any time.

2. Every morning, just after rising, and every evening, just before retiring, the patient should drink a glass of cool water and eat some fruit—an apple or an orange. Between meals she should drink water freely.

3. Her diet should contain fruit and vegetables in abundance, especially spinach, peas, beans, barley, tomatoes, corn, and foods of this kind. No tea is allowed, but a little coffee may be taken at breakfast. To the diet may be added bran and molasses biscuits, of which there are several kinds on the market.

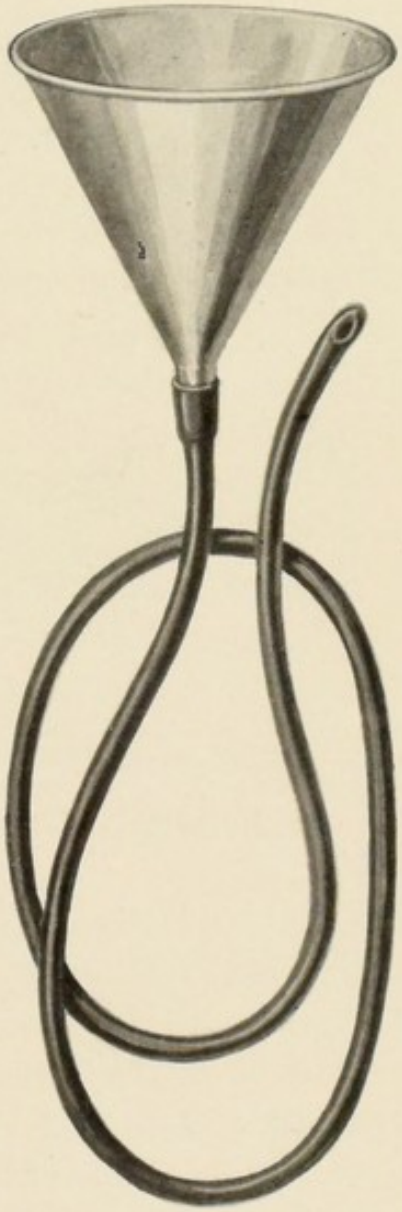


Fig. 39.—Tin funnel with rectal tube for oil enemata.

4. Every night before retiring let the patient inject into the rectum 6 to 8 ounces of common olive oil by means of a hard-rubber syringe and catheter (Figs. 39, 40). The oil remains over night in the rectum, soothes the mucosa, and allays a possible spasm of the bowel. In the morning the bowels will move or may be aided by a plain water enema.

If these rules prove insufficient, let the patient eat prunes, figs, and dates, warning her to chew them very thoroughly. It is good that the patient have some

system about this, for example, that she begin eating one prune the first day, increasing one each day up to ten, then decreasing to one, then up again. There is a little mental suggestion in this. If the patient is not pregnant, abdominal massage may be practised, and the results are usually good.

If constipation persists we resort to drugs, and, of them all, fluidextract of cascara sagrada (*Rhamnus purshiana*) is the best. Alternate, after a month's use, with Pluto water or other saline laxative and phenolphthalein, all, of course, with the physician's order.

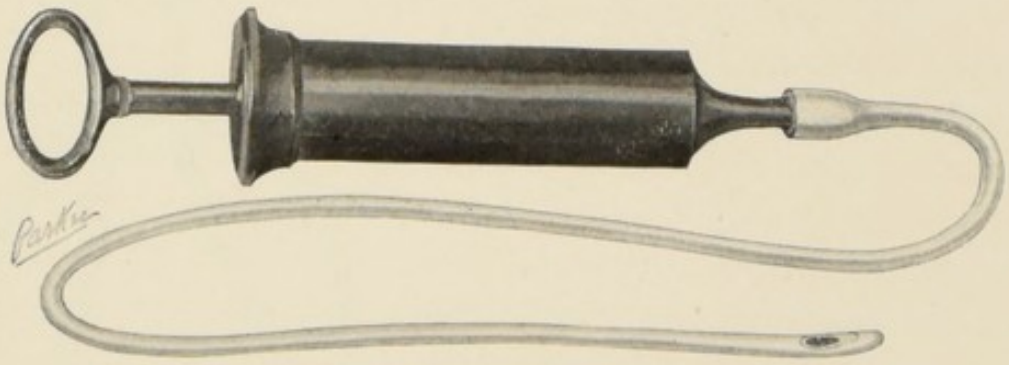


Fig. 40.—Hard-rubber syringe and soft-rubber rectal tube (small) for oil enemata.

Enemata are useful only for temporary relief, not for daily and continuous employment, because they dilate and weaken the bowel and may irritate it. The cascara should be given in increasing doses, like the prunes, increasing 1 drop each day up to 30 drops, then decreasing. The bitter extract is the best, administered in capsules; 5-grain empty capsules are filled with the medicine in proper dosage just before it is taken.

The Kidneys.—These organs are generally conceded to be the weak spot during pregnancy, and, therefore, they require particular watching and care. The urine should be examined every three weeks during pregnancy, and oftener if there is any reason to suspect trouble. The test should be made for albumin, sugar, specific

gravity, the amount of urea, and microscopically for casts, etc. The total amount passed in twenty-four hours is of utmost importance—it should be at least 50 ounces. If there are casts or albumin, the case is usually one of nephritis, or should be considered such, and danger apprehended. The physician should also be notified if not enough urine is passed. Edema of the feet and swelling of the hands and eyelids are always significant, though they need not come from kidney disease, and should be reported to the physician.

Toxemia.—There is a condition found during pregnancy due to improper functioning of internal organs or insufficient elimination from the organs of excretion; it is called toxemia, and produces symptoms from the stomach, as hyperemesis gravidarum or excessive vomiting; symptoms from the brain, as eclampsia, persistent headache, etc. The patient should take care of her kidneys, and follow the rules laid down under Dress, Diet, Bathing, and Bowels, which have the health of these organs in view. (See chapter on Complications.)

Bathing.—The skin during pregnancy is more active than usual and requires more care: first, to avoid chilling; second, to keep up its function as an excretory organ.

The patient should bathe daily or often during the week. The bath should be tepid—88° to 90° F. Cold bathing, cold plunges, cold showers, sitz-baths, ocean bathing, and hot baths are all proscribed during pregnancy. Abortion has repeatedly been caused by surf-bathing. If the kidneys are not acting well the physician may prescribe warm (98° F.) baths, followed by sweating in bed. After the bath the gravida must avoid chilling the skin.

For the sometimes profuse perspiration a tepid bath

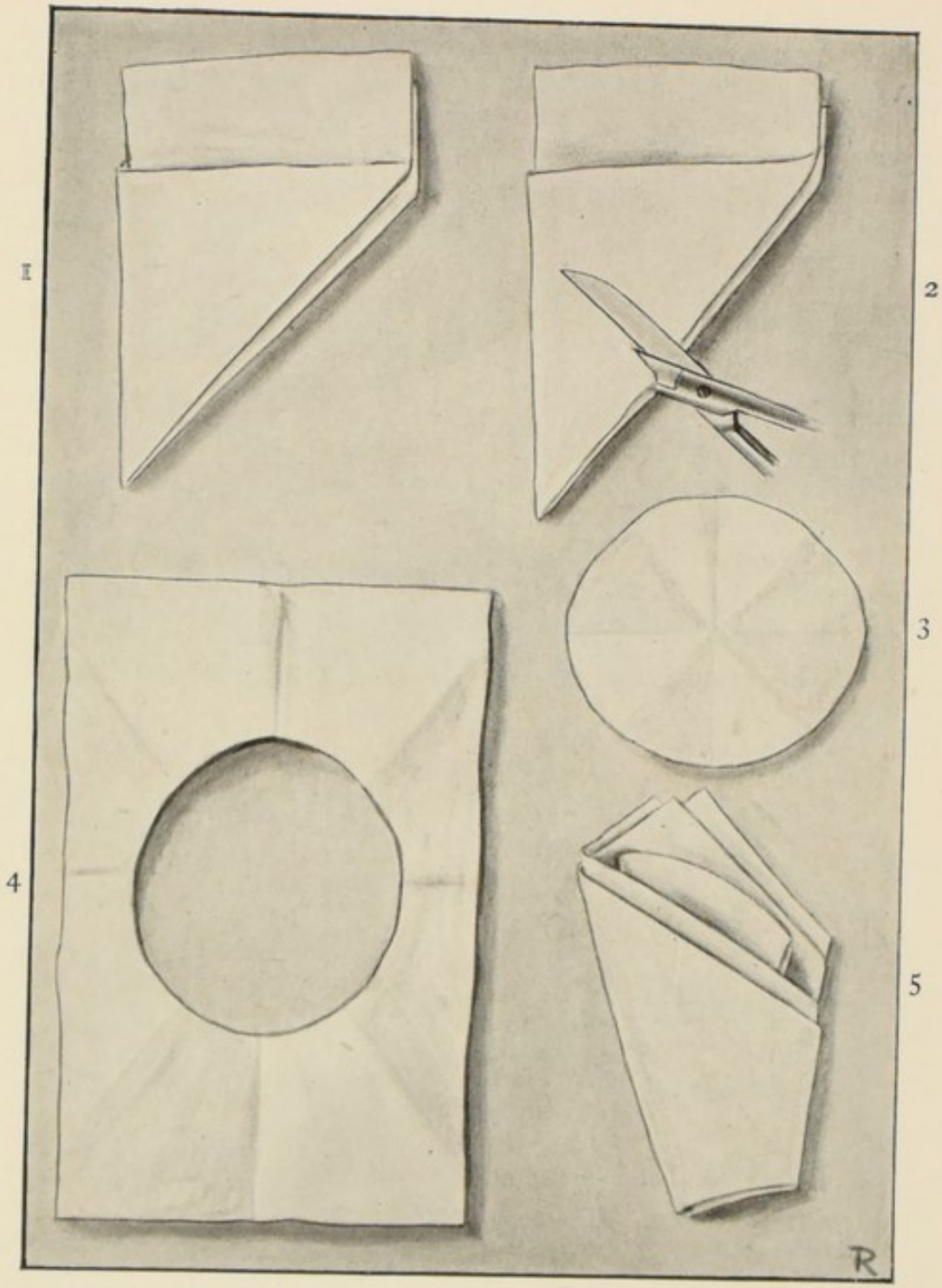


Fig. 41.—Sanitary seat cover. Take a piece of tissue paper, 15 x 20 inches, fold as in 1, cut as in 2. The center (3) is laid on the water in the closet bowl to prevent splashing; the large piece (4) covers the seat. After use it is cast into the bowl. Several, folded like 5, should be carried while traveling.

followed by a vigorous rub with a "salt towel" is efficacious. A salt towel is made by wringing a coarse bath

towel out of a strong salt solution and drying it. In the week before labor and during labor the tub-bath had better not be employed, because of the danger of the wash-water gaining entrance into the vagina. The shower-bath must be substituted. This advice is especially needed for multiparæ.

Care of the Genitals.—Since the secretions from the genitals are augmented—leukorrhea being a common complaint—daily ablutions of the parts are essential to keep them free from eczematous eruptions and to avoid odor.

Multiparæ, especially, because of the patency of the introitus, may contract infections of the vulva and vagina from street dust and by contact with dirty water-closet seats. The patient is instructed to wear closed drawers, certainly in the later months of pregnancy, and she should provide herself with sanitary seat covers for use when away from home (Fig. 41).

If the vulva is enlarged by varicose veins, the woman must be instructed to avoid injury which might cause a fatal hemorrhage.

Care of the Breasts.—The breasts require care from early girlhood to fit them for the important function of lactation. It is a great misfortune if a woman cannot nurse her infant, and no effort should be spared to prevent such a calamity. From the time of puberty the growing organs should be protected from pressure, so that the whole gland may develop properly. At all times and especially during athletic exercises care should be taken to avoid injury Mothers should be taught to provide for the development of the reproductive organs of their girls as well as for the development of their brains.

During pregnancy, if the breasts are large and heavy, some form of supporter should be used. The surface

should be washed daily with soap and warm water, using care to remove the branny scales from the nipples, and then the latter anointed with cocoa-butter or albolene. In blondes with very tender skin the following lotion may be applied to the nipples each morning for a week, to be followed by the use of albolene for a week:

℞. Glycerite of tannin..... ¼ ounce;
Compound spirit of lavender..... 1 "
Water..... 3 ounces.

No strongly astringent washes or alcohol should be used; the nipples must not be hardened, but rather kept soft and pliable. The nipples should be relieved of all compression. If they are flat, gentle attempts to draw them out may be made night and morning. The breasts should at all times be protected from injury, which some time later might become the starting-point of a mastitis.

The Engagement of the Nurse.—The author believes that obstetric nursing requires higher skill than any other form of nursing, comprising, as it does, surgical, medical, and infant nursing. It is more arduous, surely. For these reasons only the best nurses should adopt this specialty, and the author believes the remuneration should be higher than for work in the other branches of the profession. An obstetric nurse should not take infectious cases. She should allow sufficient time between engagements. It is better for the nurse to be at the house a few days or a week before the day of labor, but most women prefer to wait until labor has begun before sending for the nurse, which is a very uncomfortable way, since this keeps the nurse waiting at her home and she may not be accessible when wanted. Occasionally an arrangement is made whereby the nurse remains at her home for a stated time before the labor,

being paid by agreement half or full salary. It is wise to have such agreements made in writing, though it is not customary. The time a nurse is called depends, of course, upon the time set for the confinement, and since this can never be determined accurately, the nurse seldom knows when she will be summoned. A certain date is usually agreed upon, from which time the nurse awaits a call. The nurse may take short, clean cases up to this date, or, if they promise to run over the day of her obstetric engagement, with the stipulation that she will be allowed to leave when the call comes.

The patient is usually supplied by the doctor with a list of articles to get. This list is one furnished to his patients by the writer:

List of Articles for Obstetric Cases

2 hand-basins of graniteware, medium size.
2 hand-brushes, wooden backs.
1 new 2-quart douche-bag.
1 "Perfection" bed-pan.
Rubber sheeting enough to cover the bed and a piece a yard square.
30 yards of bleached dairy cloth.
2 pounds of aseptic absorbent cotton.
5-yard jar borated gauze.
100 bichlorid of mercury tablets.
4 ounces of lysol.
4 ounces of boric acid crystals.
1 ounce of camphorated oil.
2 ounces solid albolene.
One rubber catheter, size 14 French scale.
Water pitchers and vessels for the storing of sterilized water, if not in the house, should be procured.

INSTRUCTIONS FOR THE OBSTETRIC NURSE

Sterilizing.—A few weeks before the labor the nurse should go to the patient's house and sterilize the following articles:

1. Six sheets.

2. Two dozen towels, old and soft ones, but without holes.

3. Six pillow-cases.

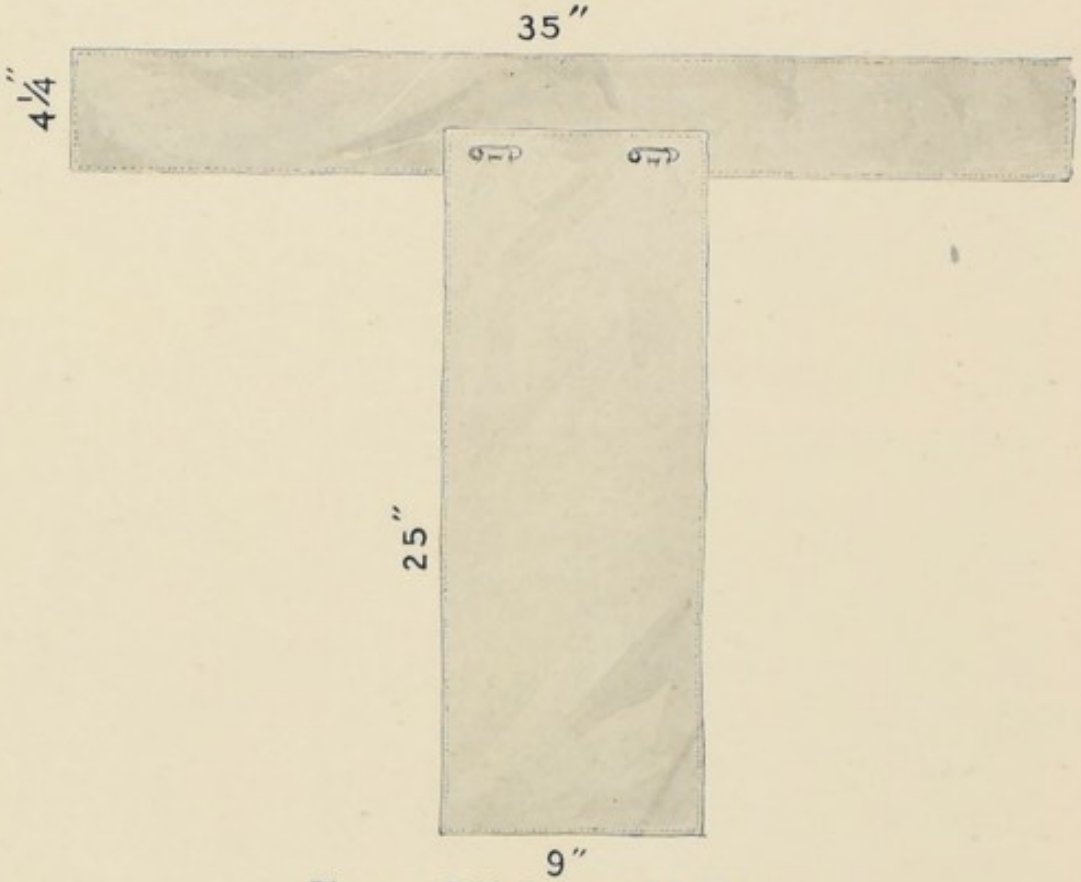


Fig. 42.—T-binder or pad-holder.

4. Four abdominal binders. These are of unbleached cotton cloth, 16 inches wide and 36 inches long, doubled and hemmed.

5. Four "pad-holders" or T-bandages, similar to the menstrual pad-holder (Fig. 42).

6. Three breast-binders of the size and shape given herewith (Fig. 43).

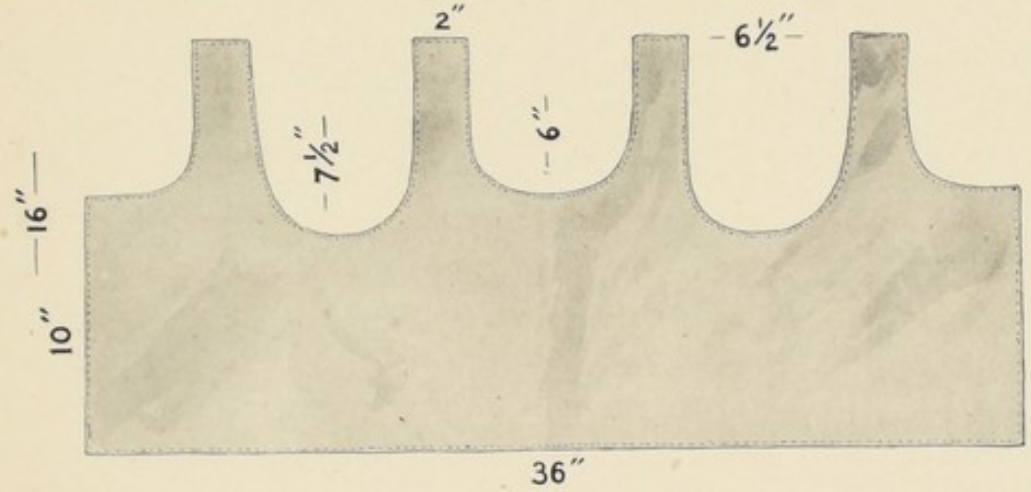


Fig. 43.—Breast-binder.

7. Two night-dresses, of the smoking-jacket pattern for the mother, or two of the confinement jackets illustrated here (Fig. 44).

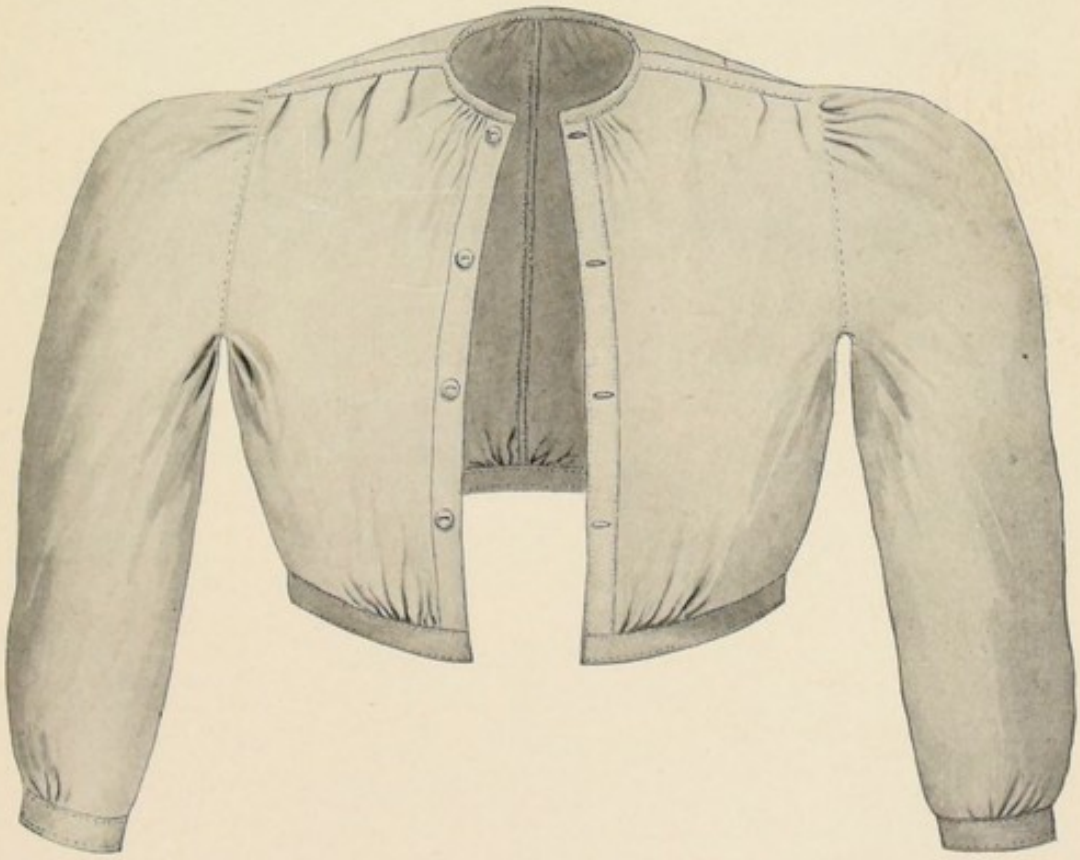


Fig. 44.—Jacket used during confinement. Chicago Lying-in Hospital pattern.

8. Two pairs of long stockings for the mother, so-called "opera lengths," or, if obtainable, the obstetric leggings illustrated here (Fig. 45).

9. Two men's gowns or surgical gowns, for the husband, if he is to be in the lying-in chamber, and the anesthetizer.

10. Two obstetric pads of absorbent cotton, 1 inch thick and 1 yard square, covered on each side with gauze, and tacked. In lieu of these some nurses use squares of mattress pad material; $4\frac{1}{2}$ yards make six pads. After delivery these are washed and then are suitable for the baby's bed. Four thicknesses of newspaper wrapped in a bath towel make an excellent pad.

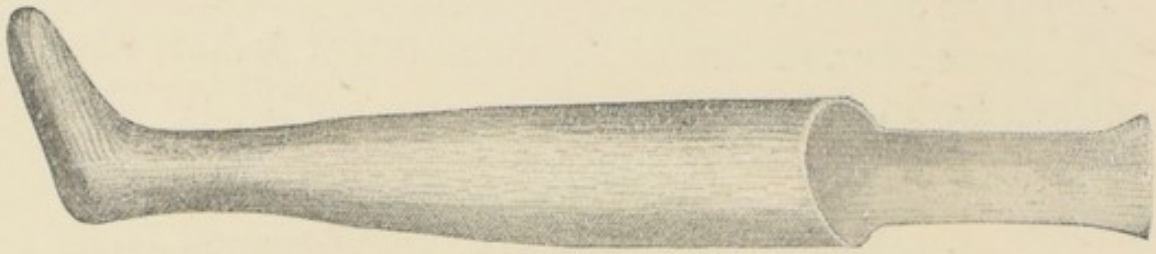


Fig. 45.—Obstetric legging. Chicago Lying-in Hospital pattern.

11. Several dozen ordinary menstrual pads of cotton, covered with gauze, and which are long enough to be pinned to the binder before and behind.

12. A pillow-case full of sterile cotton pledgets, the size of a lemon, for use as sponges during labor. These are cheap and good.

13. One Mason jar full of applicators, cotton wound on tooth-picks (Fig. 46).

14. Two Mason jars of gauze pledgets for perineorrhaphy and cord dressings should also be very carefully sterilized. Covered sponges, described on page 434, are excellent for perineorrhaphy, are cheaper than gauze, and as good.

Each package should be neatly covered with napkins

and distinctly labeled, so that confusion may be avoided at the time of labor.

After thorough sterilization and drying, they should be packed carefully away and protected from dust.

The basins, brushes, douche-bag, and pitchers should all be sterilized and put away aseptically, so as to be ready for use in case of emergency. (See page 424 for Methods of Sterilizing.)

Sterilization is best accomplished by steam, and there are several instruments on the market doing good work. The Rochester, Arnold, or Boeckman sterilizer, with

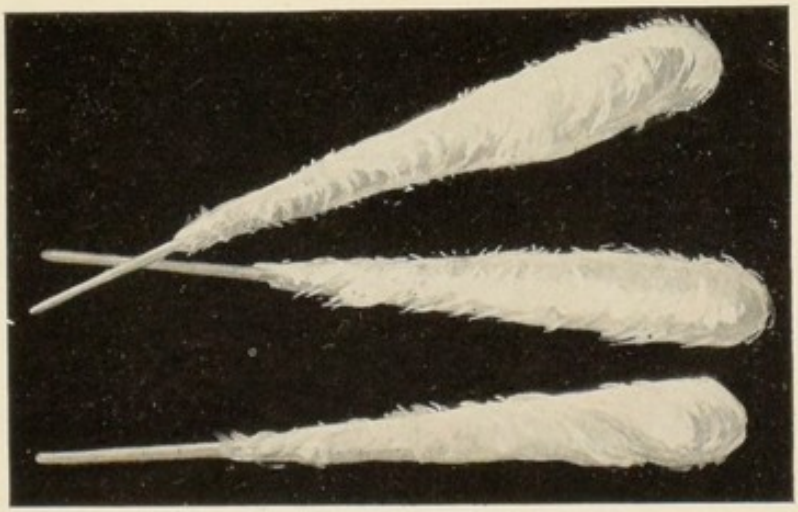


Fig. 46.—Cotton-wrapped tooth-picks, known as applicators.

proper management, does equally as good work as the large high-pressure apparatus.

Maternity boxes may be purchased from the medical supply houses at prices varying from $5 to $20. They contain the various articles required, all sterilized, ready for use.

The Nurse's Visit.—It is a good plan for the nurse to call on the patient occasionally during the pregnancy. The young mother will need instruction regarding her dress, diet, and mode of life. The baby's layette will also be a subject for discussion.

The nurse may do much to encourage the patient for her approaching trial, and give her advice regarding the health of both mother and child.

She should acquaint the patient with the phenomena of beginning labor, so that the physician may be notified promptly, and tell her what to do if the baby should come very quickly.

The nurse may discover some dangerous complication threatening, as eclampsia or placenta prævia, and will notify the attending accoucheur.

The patient should be instructed to take no douches, and not to insert the finger in the parts, during the latter weeks of pregnancy.

CHAPTER VI

THE INFANT'S LAYETTE

THE nurse is often consulted by the young mother regarding the baby's layette. This list is intended simply to guide her in the selection of the needed articles.[1]

THE WARDROBE

Six straight bands, 18 inches long and 5 inches wide, made of flannel, with the edges pinked, not hemmed. These will be used for the first two months.

Six knit bands with shoulder-straps, of silk and wool for a winter baby, of cotton for a summer baby. These bands will lose their elasticity with the first washing and become useless unless they are properly dried. They must not be hung up to dry or laid out flat. After washing and rinsing they should be wrung out by hand, tightly, and left in that tight roll to dry, near a fire.

Six knit shirts, of silk and wool for winter, of cotton for summer. It is better to get the second size, as the first size is outgrown in a few weeks.

Six pinning blankets for a winter baby; they are not necessary in summer. These should be made entirely of flannel. A piece 24 inches square may be sewed onto a flannel band (18 by 6 inches) in flat plaits, allowing the band to project 2 inches at each end.

Six flannel skirts for a winter baby.

Eight flannel skirts for a summer baby, four for day and four for night. (A winter baby wears a skirt and

[1] This chapter was written by Miss Katherine DeWitt.

stockings by day, a pinning blanket and socks at night. A summer baby wears skirts by day and night, except in very hot weather, when a shirt band, diaper, and dress or night-dress are sufficient.) The skirts should be made with a waist, either of flannel or of muslin, or they may be cut all in one piece, after a Gertrude or princess pattern. In any case the skirt must be sup-



Fig. 47.—Infant's dress for the first weeks. Back view.

ported from the shoulders and must open in the back, so that it may be put on with the dress.

Four dresses of the Warren pattern (Fig. 47). These are made of light-weight twilled flannel, are sleeveless, open at the bottom, and have a single slit at the back of the yoke. This dress is especially valuable for hospital work. It keeps the hands warm and prevents the child

from scratching its face and infecting its eyes. It is easily and quickly changed. For the first two weeks of life it is highly recommended, and subsequently as a night-dress. For summer use they may be made of fine Canton flannel.

Twelve dresses, not more than 1 yard long from neck to hem. These may be made by any simple "slip" pattern or with a yoke. They should be simple, as they are prettier and more comfortable when not loaded with ruffles or embroidery. Very narrow lace or insertion, fine tucking, hem-stitching, and feather-stitching are the most attractive trimmings.

Six night-dresses of light-weight twilled flannel—something almost as light as cashmere, made by a "slip" pattern. These should be of good size, as the baby will wear long night-dresses after being put into short clothes.

Six pairs of white woolen stockings for a winter baby.

Six pairs of socks.

Six dozen diapers of cotton diaper-cloth. This should be shrunk before the diapers are cut off, otherwise they will not fold square. They should be made twice as long as they are broad, and should be of two sizes, medium (20 by 40 inches) and large (26 by 52 inches).

Two dozen cheese-cloth diapers, made of 1 yard of cheese-cloth folded twice, so that the diaper is $\frac{1}{2}$ yard square and has four thicknesses. These are just the right size for first diapers, and are soft without ironing. They can be used for inside diapers later. They should be stitched around the edges and diagonally.

Several blankets for wrapping about the baby, made of flannel, cashmere, or knit of wool. The last are by far the best. A good size is 1 yard square for cashmere or flannel, 1 yard by $1\frac{1}{4}$ yards for the knit ones.

The baby's outdoor garments can be provided after its arrival.

NURSERY CONVENIENCES

The Bed.—This may be a wicker bassinet, a large clothes-basket (which is quickly outgrown), or a crib. Whatever is used as a bed, should be provided with a hair mattress. A baby who sleeps with a bed-pillow under its body and a down pillow under its head is lying with its spine curved and is being kept much too warm, so that it will easily take cold or have earache. The

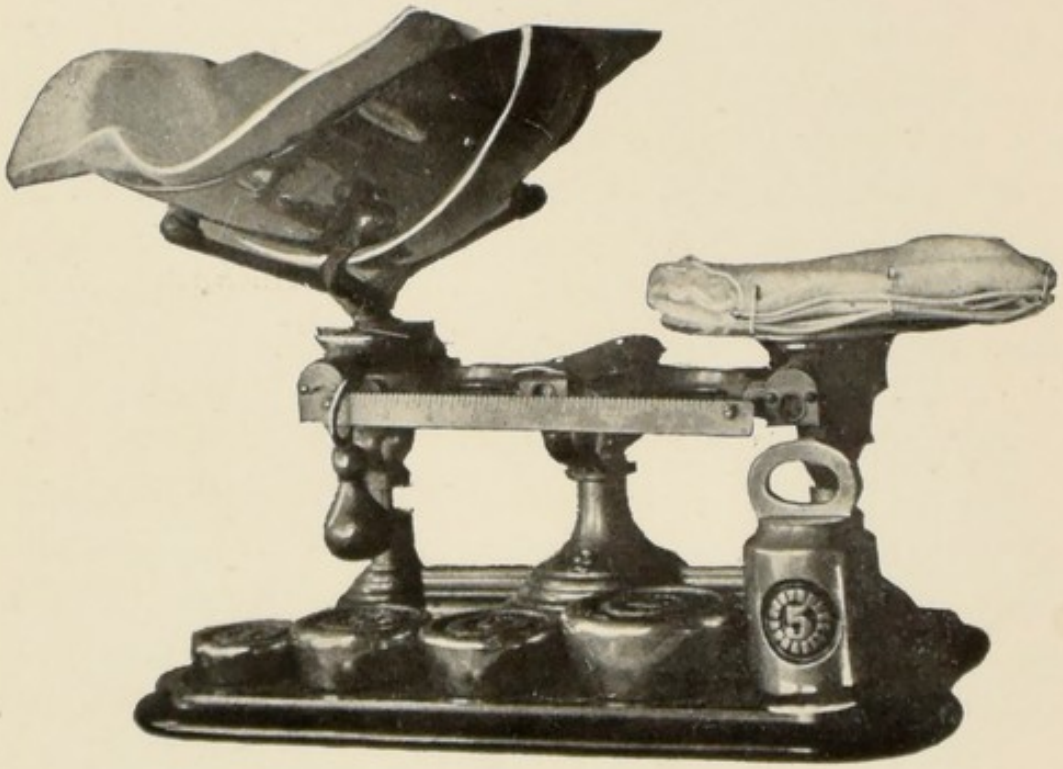


Fig. 48.—Best infant scales.

hair mattress should be covered with a square of rubber sheeting, then with a square of mattress covering, 1 yard each way. The mattress covering can be bought by the yard, and four pads will be needed. Over the mattress pad a cambric sheet is laid; have six of these on hand—they are used under, but not over, the baby. They should be made large enough to tuck under the mattress well on all sides.

For covering, one may have two light-weight blankets

made of flannel, bound with wash-ribbon, and two light comforters made of cotton or wool, covered with cheese-cloth, silkaline, or silk, and tied with silk floss or ribbon. A hair-pillow with four cases made of linen should be provided, though the baby should not sleep on it until he is six months old.

Good scales (Fig. 48). The fancy infant scales are not reliable. The best scale is the ordinary grocer's even balance, with iron weights for the pounds and a bar for the ounces.

A *bath-tub* of rubber, white enamel, or papier-mache.

Small-sized clothes-bars. These will be used for airing the baby's clothes and holding its towels.

Two bath aprons of flannel (38 by 27 inches), made with a hem top and bottom. Through the upper hem a wash-ribbon is run to tie about the waist.

Six old soft damask towels. If these cannot be obtained, nice baby towels can be made from linen diaper-cloth, but they should be frequently scrubbed and boiled to make them soft.

A *wicker hamper* or shallow basket, lined with muslin and holding the following toilet articles:

6 washcloths of shaker flannel, 6 inches square.
1 small soft sponge.
1 cake of old Castile soap.
1 bath thermometer.
1 tube albolene (solid).
1 comb and brush.
3 dozen safety-pins, three sizes.
Powdered stearate of zinc in shaker.
A package of applicators (tooth-picks wound with cotton). (See Fig. 46.)
1 jar sterile navel dressings.
Small, wide-mouthed bottles of alcohol and boric acid solution.

Bottle of pure olive oil or a jar of benzoinated lard.

Needle and thread.

Several old, soft handkerchiefs.

Package of sterilized cotton sponges.

Screen—not a bamboo screen with curtains hung on rods, but one with a firm square frame, solidly covered with cretonne, burlap, or denim, so that it affords real protection from drafts or light.

One 2-quart hot-water bag.

A *low chair* without arms.

Two hand-basins.

The nurse will find this list quite complete, and may select from it the articles needed as far as the patient's circumstances will permit.

PART II

NURSING DURING LABOR AND IN THE PUERPERIUM

CHAPTER I

CARE DURING LABOR

How will the nurse tell when labor begins? First, by *the show*, which occurs a few hours before labor; second, by *the pains*. If the woman complains of pains first in the back, then drawing around to the front, and at the same time the uterus hardens (contracts), and if these sensations recur at gradually lessening intervals, it is safe to say the woman is in labor. Third, by *the dilatation of the os uteri*. Fourth, by *the rupture of the bag of waters*. The nurse is not allowed to examine the patient internally without instructions from the physician. The opening of the os is the most certain sign of labor. Without an internal examination the best observer may make a mistake as to the onset of labor, since the patient may have "false pains" at regular intervals. These may lead the physician to think the woman is in labor. Later the pains subside and the doctor calls the episode a "false alarm." The subsidence of pain may even occur after some dilatation of the os has taken place. These uncertainties are very annoying to patient, doctor, and nurse.

Care During the First Stage.—As soon as labor is declared, the nurse begins to surround the patient with

all the protective measures of asepsis and antisepsis that her art affords, and from now on nothing is neglected that will save the patient from puerperal infection.

The general rules of asepsis are identical with those practised in the most particular operating room. The care to be observed is identical with that observed in the course of a laparotomy, because the danger of infection is almost equal to opening the abdomen. The difficulties in attaining obstetric asepsis, however, are greater than in surgery, so that success achieved by the obstetric nurse is entitled to higher credit.

A woman is liable to infection from the time labor begins until she has been up and around a week. Even before and after this time, if the germs introduced are virulent, she may be infected. A physician returning from a case of erysipelas had the unfortunate thought to examine his wife, who had been delivered seventeen days before. The woman died a few days later from infection. A student, in examining a woman a few days before labor, caused a fatal puerperal infection.

A nurse doing obstetric nursing should keep away from infectious cases, and, when she has been exposed, must make a complete change of clothing, take a full bichlorid bath, and shampoo her hair. At least a week must elapse from the time of her attendance on a pus or scarlet fever case, or other infectious diseases, before she assumes the care of a parturient woman. During this week she should take several scrub baths and shampoo her hair carefully. In practice it is hard to reconcile these duties, but the danger is too great to neglect such precautions. Other measures will be considered later under the heading of Puerperal Infection. It might be said here that the reasons for these extra precautions in the case of the nurse are that she comes into such intimate contact with the mother and babe, and for so long a

period of time, and so often during the day has to treat both surgically, as there are open wounds. It is, therefore, highly essential that she be aseptic.

Preparation of the Room.—The sunniest and best room in the house should be selected for the labor. It should be near the bath-room, and should be properly heated. Plenty of light should be provided at night-time—a very important point. The room should be cleared of all unnecessary furniture. Heavy curtains and all bric-a-brac should be removed. If there is carpet on the floor, the area around the bed should be protected by a large rubber mackintosh or several layers of newspapers. Rugs should be removed without raising dust. Two plain chairs, a kitchen table, a sewing table, and a rocker for the patient complete the furniture. In some families the nurse may meet objections to what they term unnecessary preparations. The patient's mother perhaps was not delivered with so much fuss and ado. Here a little tact and explanation will clear the way. One cannot force advancement on the people—one must smooth them into it.

The nurse has her sterilized things at hand, usually on the dresser, which has been cleared of the toilet articles and covered with a sheet. She has a pitcher of hot, and one of cold, sterile water, each covered with a hood, in the room. The wash-stand, with basin, in which the physician and nurse wash their hands, should be thoroughly scrubbed, and a new piece of soap placed in a clean soap-dish. This wash-stand and soap should be reserved for the physician and nurse. A jar of sterile hand-brushes and a nail-file complete the number of articles on the wash-stand.

The wall around the table on which the hand solutions are set should be protected, using a newspaper, so that the decorations will not be marred, and

throughout the case the nurse should exert constant care of the furniture and utensils of the house, so that they will not be broken or injured by solutions, by hot basins, etc.

One may err with too much zeal, therefore the nurse should not make too great display of preparation, which might alarm the patient. The general arrangement of the room is like the diagrams (Figs. 49, 50).

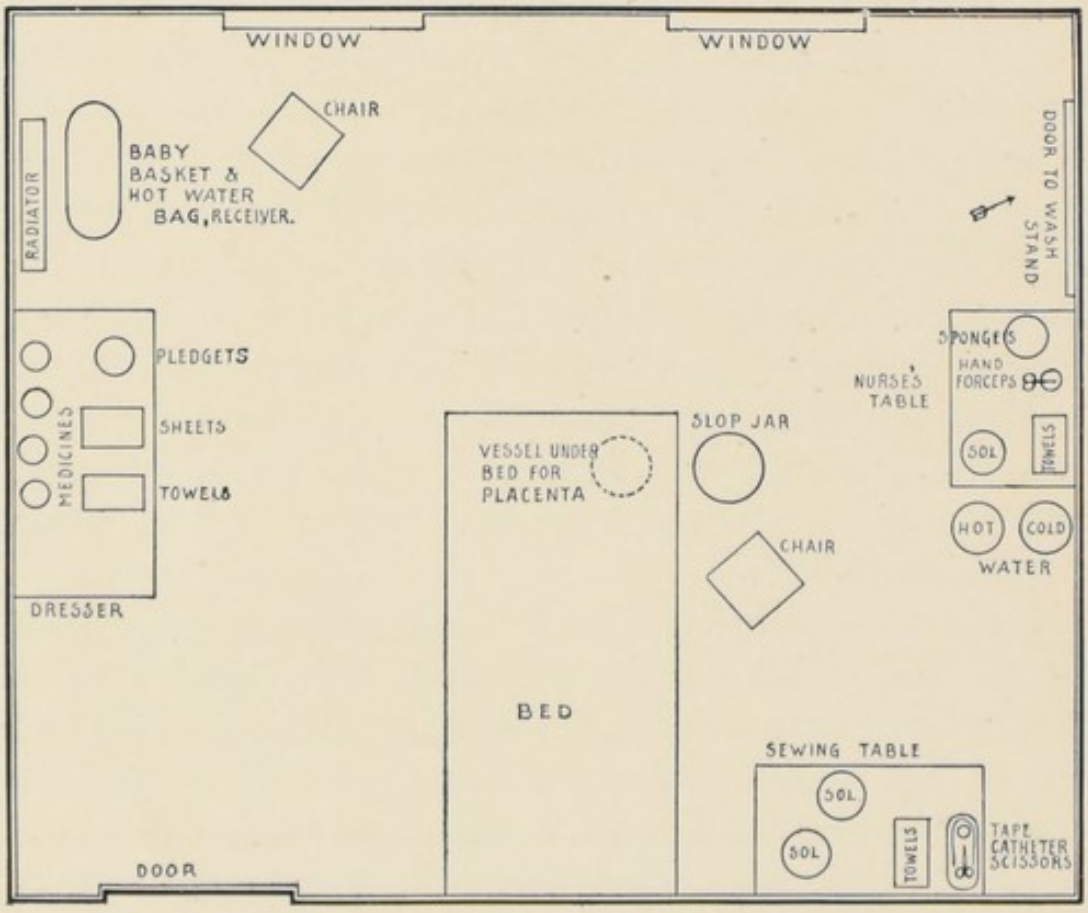


Fig. 49.—Diagram of room arranged for normal confinement.

Naturally, one will not always find conditions in practice which enable one to arrange everything as here given, but the diagrams will show what is needed and how things may be conveniently placed. The nurse who knows the principles of asepsis will easily adapt herself to the exigencies of the individual case.

The Preparation of the Bed.—All hangings must be removed and the bed wiped with 1 : 1000 bichlorid solution on a damp cloth. The foot board of the bed is to be covered with a sheet, pinned securely and evenly. If the bed has a box-spring, the valance should be removed or pinned up securely; then the side of the spring should be covered with some impervious material which

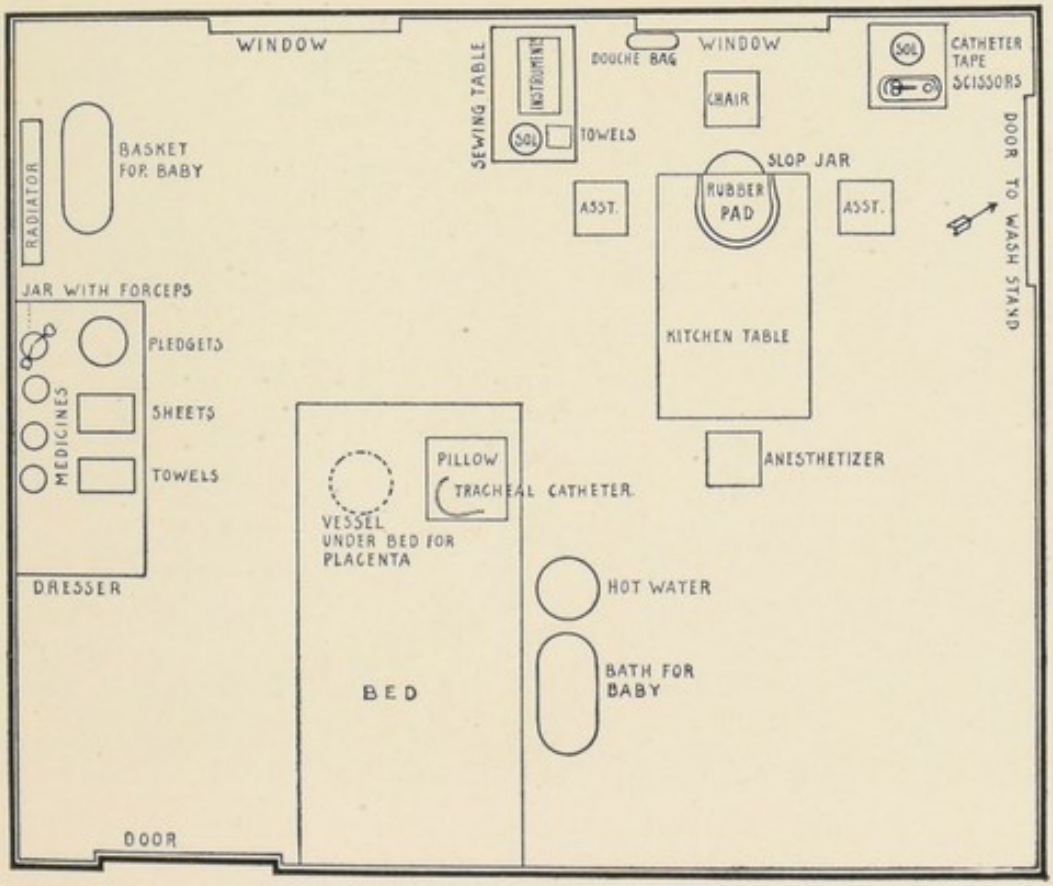


Fig. 50.—Diagram of same room as shown in Fig. 49, arranged for operation.

hangs below the side rails or boards. Three table boards or shelves from a bookcase should be put in the middle of the bed between the mattress and the spring, so as to prevent sagging in the middle. The mattress is now covered with a rubber sheet, over this comes a full sheet, then the small rubber sheet, on this a sheet folded once, the draw-sheet across the bed, and then all are securely

pinned with large safety-pins. The patient should be warmly covered, depending on the season. In winter she may need a hot-water bag at the feet. Occasionally one applied to the small of the back relieves the pains. The sterile sheets are put on at the first if there is a supply; if not, the bed is dressed with sterile things only



Fig. 51.—Patient across the bed, with preparations for the internal examination. Sheet used to drape patient. To the right is a sewing table with antiseptic solutions.

when the second stage draws nigh. The nurse should have a clean light blanket for the patient, not a soiled old comforter. The best in the house is not too good for the parturient.

No one, unless dressed in a sterile gown, may sit or lean on the bed, and a sheet or pillow that has fallen on the floor must not be put back on the bed. When a

patient is delivered on the side, something is needed to part the knees, and the nurse folds a pillow, covers it with newspapers, and then pins a sterile pillow-slip securely over it. (See Fig. 61.)

Preparation of Patient.—As soon as the patient is known to be in labor, the bowels must be thoroughly emptied by a soap-and-water or saline flushing. This must be repeated once or twice if the labor is slow and long. An enema may not be given in the second stage without the doctor's permission. The nurse must pay strict attention to the bowels and bladder, and call the accoucheur's notice to the fact that either is not emptied regularly. The parturient should void urine every four hours, and if she does not, she must be catheterized.

After the flushing the pudenda are shaved. The author cannot understand the position of those accoucheurs who will not shave an obstetric patient, but do so for a simple gynecologic operation. I am convinced that many cases of puerperal fever are due to the lack of surgical preparation of the patient. A little tact and explanation will readily overcome possible objections. Shaving is best accomplished with a safety razor with the patient on a table in the lithotomy position. In hospitals a shampoo table is used. The patient is then given a full shower-bath. The body is well drenched with warm water, then, with a bath-brush or a rough wash-cloth and green soap, all portions are briskly lathered. Particular care is given the area between the ensiform cartilage and the knees. The vulva is thoroughly soaped, and *any smegma removed from the clitoris*. This should be emphasized. The patient then stands under the shower again, and all the lather is thoroughly removed with friction. (An ordinary hand-spray or bath-ring will suffice.) Putting the patient in

a tub is not so aseptic a procedure as this one, because the particles washed off the skin may find their way into the vagina. While this danger is not great in primiparæ, it is present in multiparæ. After the bath, before the patient is dried, the trunk is washed with 1 : 1500 bichlorid from the ensiform to the knees, making the application of the solution to the genitals particularly thorough. Some physicians prefer lysol, 1 per cent., and other antiseptics for this purpose. While washing the genitals the nurse holds a sponge in the introitus to prevent wash-water or other solution from running into the vagina, and in washing the anal region a sponge that has passed over the anus must not pass over the vulvar orifice, but should always be thrown away. Sterile underclothes are now put on. The hair is braided in two firm braids. The patient wears a loose house-wrapper. The confinement room must be warm enough so that the patient does not require heavy clothing.

The patient is instructed not to touch the parts, and she must not sit on a water-closet after this preparation.

A sterile slop jar is provided for use in the confinement room, and a sterile bed-pan for use on the confinement bed.

Preparation for the Doctor.—Plenty of water for the physician to wash his hands, a nail-cleaner, and sterile brushes are provided, and antiseptic solutions are prepared according to his practice, which the nurse must inquire about. One per cent. lysol, 1 : 1000 bichlorid, 1 : 1000 sublamin, and 2 per cent. creolin are commonly used. (See pages 442, 443.) Some accoucheurs sterilize the hands and lubricate the examining fingers with sterile vaselin. Other physicians use sterilized rubber gloves, which is by far the best way. A sterile gown or apron is provided for the doctor to wear during the examination.

Both abdominal and vaginal examinations are usually made. For the abdominal, the patient is brought to the side of the bed or lies on a couch, and the physician determines the position of the child by palpating the

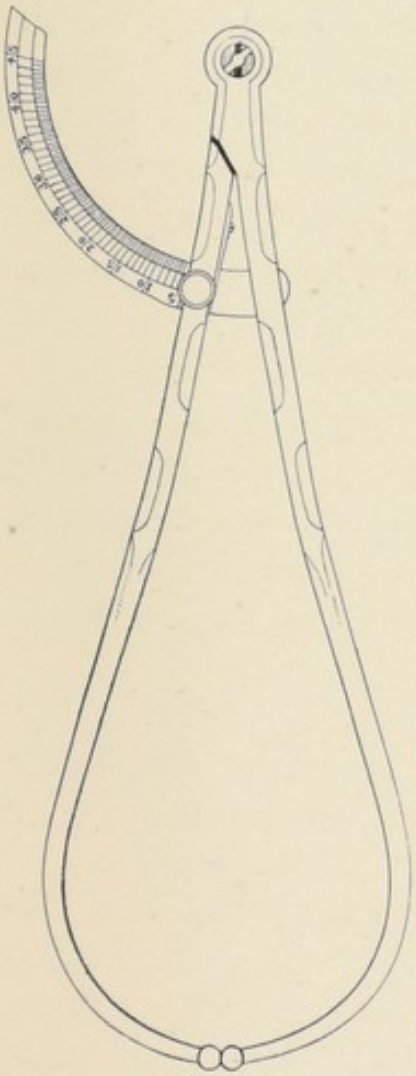


Fig. 52.

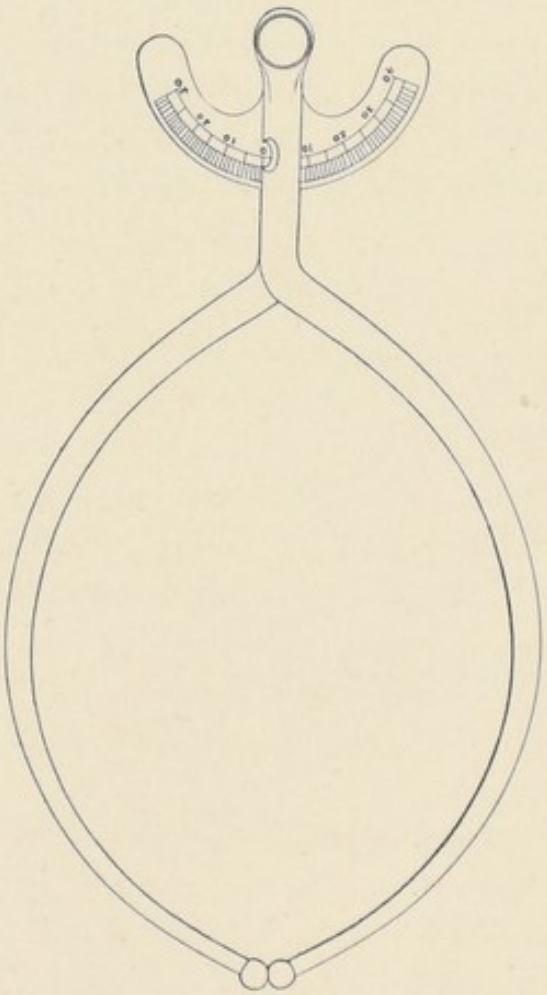


Fig. 53.

Figs. 52, 53.—Two types of pelvimeters.

uterus, and counts the heart-beats. The accoucheur measures the pelvis, if he has not already done so, using for this purpose an instrument known as a pelvimeter (Figs. 52, 53). To prepare the patient for this examination a sheet is thrown over the lower part of the

body and just covers the pubic region; the night-dress is drawn up over the chest and covered by a towel, so that the abdomen alone is exposed (Fig. 54).

After the external examination the patient is prepared for the internal examination (Fig. 55). The bed clothes are neatly folded over the foot-board of the bed, the knees are drawn up and separated, a sheet is thrown with its center over the pubis, on the bias; the opposite corners are drawn around each leg so as to cover it; the other two corners are drawn, one over the face and the other to form a flap between the knees. This is lifted up

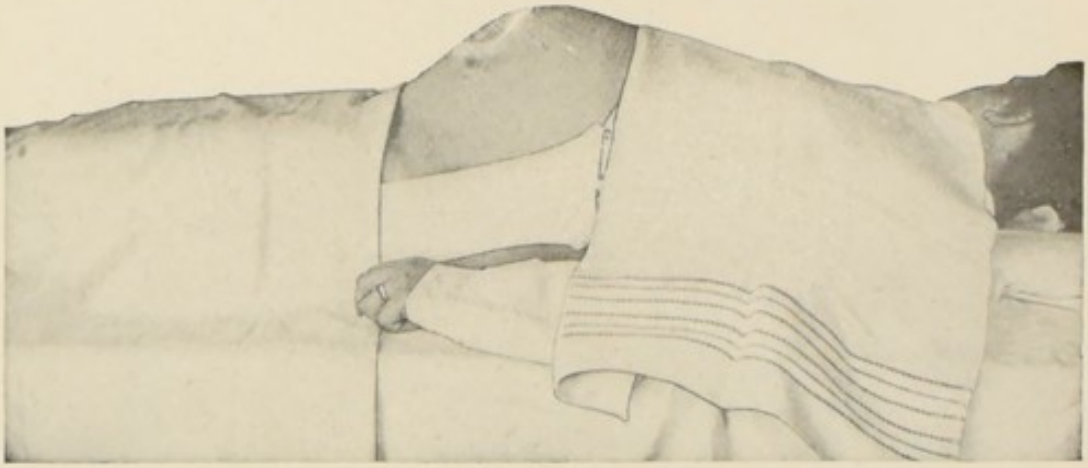


Fig. 54.—Patient prepared for the doctor's external examination.

when the physician is ready to pass the hand for examination.

The vulva is again washed by the nurse with 1 : 1500 bichlorid or 1 per cent. lysol, and a bit of cotton soaked in the solution is left between the labia, which the physician removes when he inserts the finger into the vagina. While the examination is being made the flap of the sheet may be dropped over the arm of the examiner. After the examination the vulva is cleansed again with solution and a sterile pad applied. These aseptic precautions are repeated before and after each and every examination.

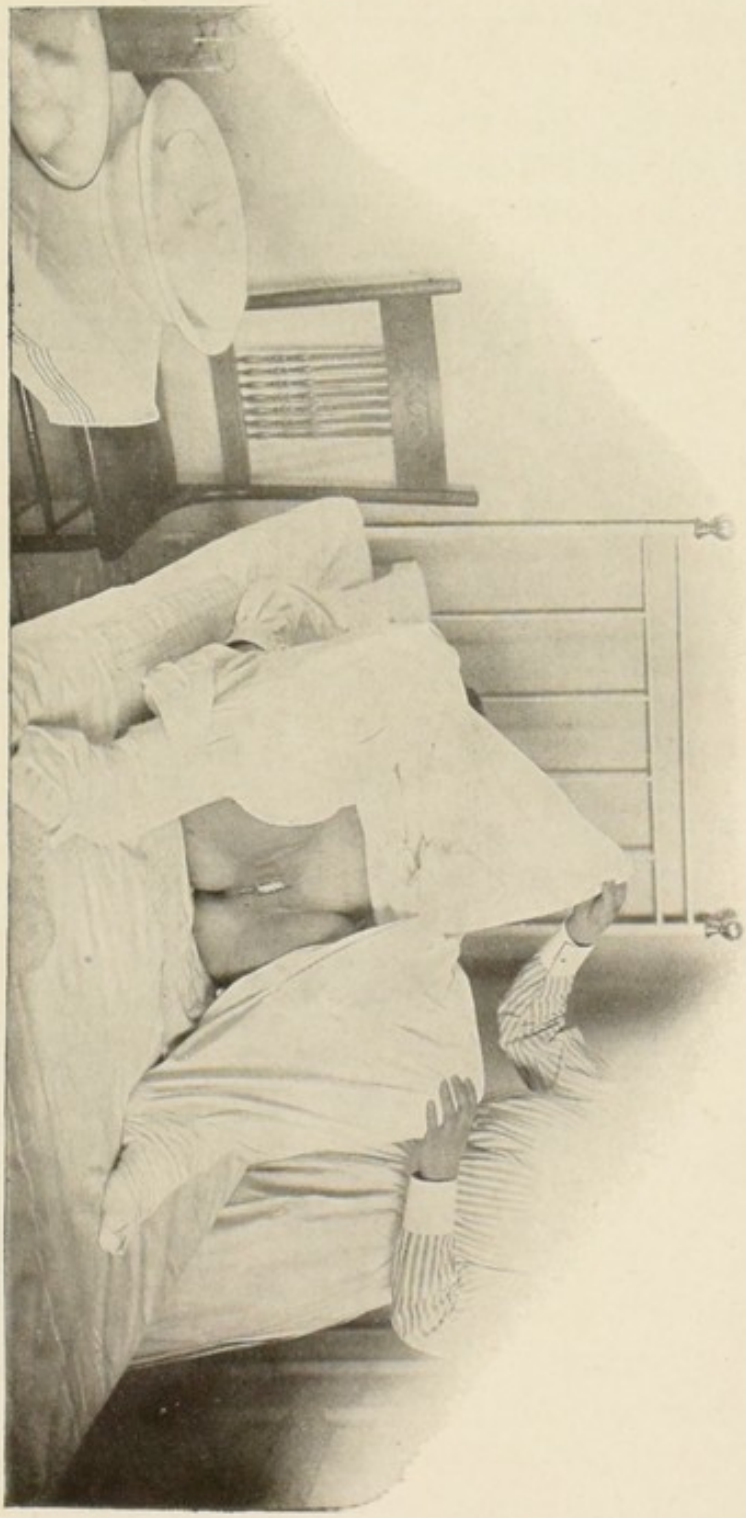


Fig. 55.—Patient prepared for the doctor's internal examination.

The Diet in the First Stage.—Most patients have no appetite after labor begins, but they must not be allowed to starve, since this causes faintness, which may delay

the labor. Serious postpartum hemorrhage may result from the general weakness. Light semisolid food, especially food drinks, must be urged at regular intervals during the labor, especially if it is prolonged. During summer the drinks from the soda-fountain may be given. The food should be daintily served, and with quiet insistence the nurse can usually succeed in getting the patient to take sufficient nourishment. Some patients vomit throughout labor. Some food must, nevertheless, be given.

The History-sheet.—As soon as a nurse arrives on a case she should start a record, and note the A. M. and P. M. temperature, pulse, and respiration, and other things of importance. This record may be very valuable if the patient later develops a complication. The happenings during labor, the strength and frequency of pains, the frequency of the child's heart-tones, the number of internal examinations made, the findings, the local and other treatment, the amount of sleep, the food taken —all should be noted on the record with great care. Not alone does this keep the nurse in practice and prevent her from becoming careless and desultory in her work, but it also has a good effect on the physician, stimulating him to better effort, and giving him a high opinion of the good qualities of the nurse and of the nursing profession in general. Outside of all this, it is of distinct benefit to the patient, in that a carefully kept record will shed light on any complication that might arise in the course of the case.

General Instructions.—The patient must be encouraged by the nurse to bear her pains bravely, but too much sympathy is harmful, because the patient then thinks she is in a serious condition. No babbling relatives or friends should be allowed in the room, and the nurse must tell no stories of her obstetric exploits or of

harrowing cases had with physicians. The patient will at once imagine these are perhaps her fate. The confinement room should be quiet, cheerful, and hopeful. The patient should be left much alone, so that the bowels and



Fig. 56.—A labor case in Holland in the seventeenth century (Witkowski).

bladder may be attended to, and other services rendered by the nurse.

Throughout the whole labor the nurse should see that the patient's person is not unnecessarily exposed, but she must not err with too much zeal, because at some periods of the labor exposure of the body is necessary. For

many centuries women were delivered under a heavy sheet (Fig. 56), all the laws of asepsis being defied. The parturient must also be protected from drafts, since during labor the skin is moist and sensitive to chilling. During winter the patient often needs a hot-water bag at the feet.

During the first stage the patient may be up and walk around, lying down occasionally on the sofa. This helps



Fig. 57.—Physician assisting parturient, and teaching her how to use her powers to best advantage.

the pains and takes her mind off them. As the second stage approaches, the pains coming closer together, and the patient complaining of their cutting or tearing character, the parturient will feel safer in bed on her back. She thus awaits the rupture of the bag of waters. When the waters break, the doctor usually makes an examination to see if the cord has prolapsed, to deter-

mine the amount of dilatation of the cervix, and the position the head occupies in the pelvis.

The patient may request that her husband be present in the room. During the first stage no objection may be made to this. During the second stage in most cases the husband may be excused unless he is needed as an assistant. He is dressed in one of the sterile night-gowns and washes his hands carefully.

If the first stage is prolonged, the nurse should see that both the patient and herself get some rest. The nurse should obtain some sleep, so that she will be able to stand the strain during the delivery and after. Self-sacrifice on the part of the nurse here is not good policy in the end.

When to Summon the Doctor.—It is best for the nurse to obtain exact instructions from the physician as to when he wishes to be called. Some accoucheurs allow the nurse to take pelvic measurements, to watch the fetal heart-tones, to make internal examinations, and actually conduct the labor until the head is about ready for delivery. Others place less responsibility on the nurse.

The physician should be notified when labor declares itself. After he knows that everything is in good condition he usually leaves the woman to the nurse, returning from time to time until the second stage begins, then remaining until labor is completed. As a general rule the doctor should be summoned when the pains are at three-minute intervals, when they are regular and very strong, and certainly when there is bulging of the perineum. A good way for the nurse to determine if the head is advancing is to press upward alongside the pubis, as in Fig. 58. At first a hard resistance is felt deep in, which becomes more marked as the pains force the head down on to the perineum. If the head can thus be felt the

physician is to be summoned. A rectal examination will also show the advance of the head. The physician should be called earlier to a multipara than to a primipara, because in the former the second stage is shorter.

Of course the nurse must notify the doctor if the fetal heart-tones grow irregular, or too slow, or too fast; if the parturient complains of headache or other symptoms of eclampsia, if there is hemorrhage, or fever, or when anything disturbs the normal course of labor. In the author's opinion such responsibilities in practice are too great to be placed on the nurse.

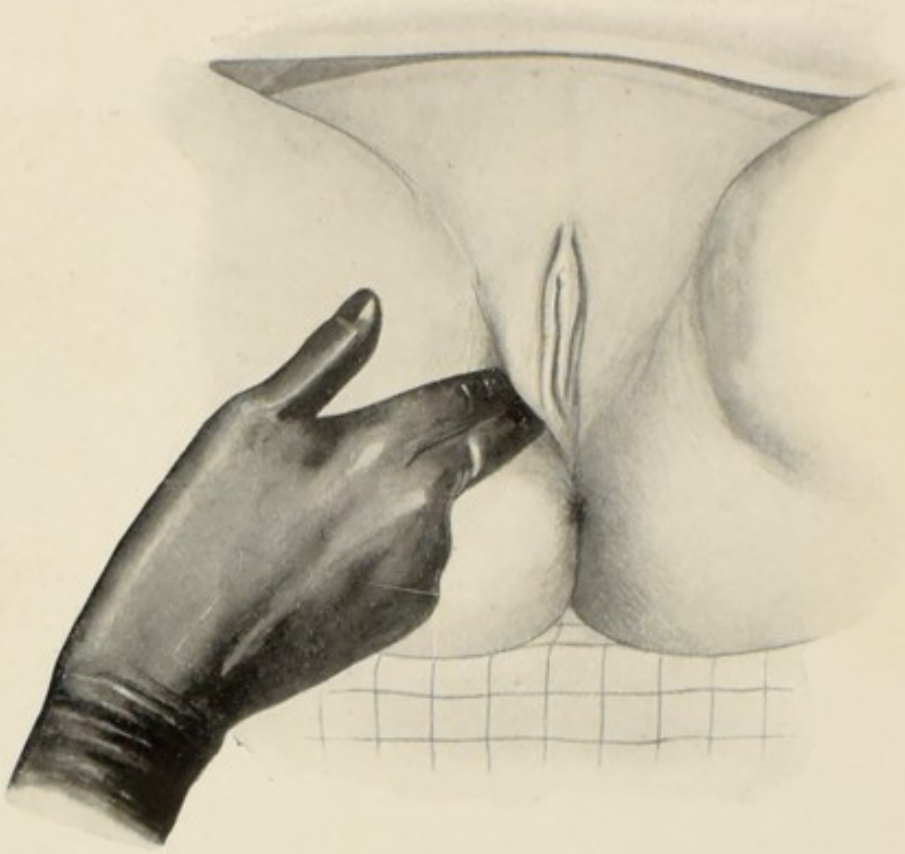


Fig. 58.—Determining the rate of advance of the head by pressing in the perineum.

Care During Second Stage.—When the patient arrives in the second stage, the bed is dressed with sterile sheets unless already so prepared. The aseptic confinement jacket (see Fig. 44) and leggings (see Fig. 45) are

put on, and extra clothing and unnecessary things are removed. This period is the stage of expulsion, and the patient may want to pull on something as an aid to her bearing-down efforts. Unless the nurse is strong, she should not allow the patient to pull much on her hands, but should tie a sheet to a strong post at the foot of the bed and let the patient pull on this. If the patient, as is often the case, wishes to hold a human hand, have the husband prepare his hands and put on a sterile gown.

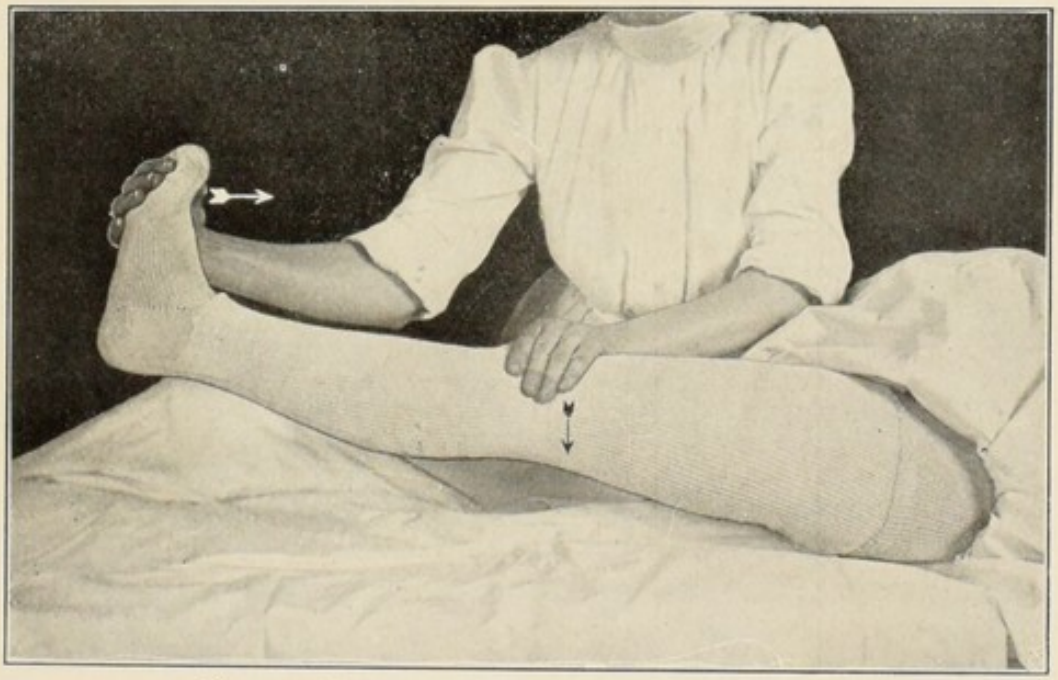


Fig. 59.—Nurse curing cramp in leg during labor.

He may thus help in the labor. The nurse should save her strength as much as possible, because obstetric work is hard.

The patient may feel better if pressure is made on the small of her back, or if that part be briskly rubbed, which the nurse may do. A hot-water bag may also be applied to the base of the spine. Occasionally washing the hands and face with cold water is also grateful. If the patient should have a cramp in her leg, which not seldom happens, the nurse stretches the limb out forcibly

and pulls the foot toward the knee, as shown in Fig. 59. It is the understanding of these details of nursing and caring for the patient's comfort that distinguishes the successful from the unsuccessful nurse.

Some patients are unruly, and persist, against advice, in putting the hands on the sterile abdominal towel or even on the vulva. In such a case the nurse should sterilize the parturient's hands with 1 : 1000 bichlorid or tie them loosely at the head of the bed.



Fig. 60.—Sewing table arranged near bed during second stage. Carries basin of 1 per cent. lysol and 1: 1500 bichlorid (or other solutions as ordered), with sponges, pitcher of hot sterile water, pile of sterile towels, saucer with sterile tape, scissors, and artery forceps.

When the pains are strong and frequent the physician usually gives the patient an anesthetic to the obstetric degree—that is, to partial anesthesia.

Scopolamin and morphin, pantopon, chloral, and other drugs are used to alleviate the suffering of the first stage. If the nurse is not familiar with the physiologic action of these remedies she should ask the physician what effect she should look for. In the second stage ether and chloroform are given. Ether is preferred by the author, as it damages the liver less.

SCOPOLAMIN-MORPHIN AMNESIA

Owing to the publicity accorded the method of scopolamin-morphin analgesia in labor by many magazines and newspapers, the medical profession has again been induced to try this means of relieving the pain of labor. It is popularly known as "twilight sleep," and, indeed, in many cases the patient seems to be in the borderland of consciousness and sleep. The procedure is by no means new. Introduced by v. Steinbüchel in 1902, it immediately was tried all over Europe and in America, but soon discontinued because of the dangers to both mother and child. As the result of the favorable experiences of Krönig and Gauss, published in 1907, the method was given another and more extensive trial, but again it lapsed into oblivion everywhere except in Freiburg, in Krönig's clinic. Now, because of the magazine propaganda, the women are clamoring for "twilight sleep," and we shall presently have a large amount of material from which to draw definite conclusions.

Scopolamin is a drug of the belladonna (atropin) and hyoscyamus (hyoscin) family and is almost identical with the latter. Hyoscin has been known for many years as a sedative, and by some it is used, with morphin, for "twilight sleep." Its action, except the hypnotic, is somewhat antagonistic to that of morphin, but we cannot say that the bad effects of the two drugs neutralize each other.

The object of this procedure is primarily amnesia, *i. e.*, forgetfulness of pain, and secondarily a moderate analgesia or diminution of pain. If carried beyond this point, it becomes very dangerous to both mother and infant, and nice discrimination between safety and danger is therefore required. For this reason the author holds that scopolamin-morphin analgesia is to

be practised only by a skilful obstetrician in a specially equipped maternity with a trained intern and nursing personel. Only certain cases are suitable for the treatment, contracted pelvis, atonia uteri, placenta prævia, abruptio placentæ, abnormal presentations being contraindications. The accoucheur must remain either in continual attendance or be most easily accessible throughout the labor, because occasionally complications arise demanding instant interference.

The method is, briefly, as follows: When labor is well established, the pains coming with five-minute intervals and lasting at least thirty seconds, with good strength, the treatment is begun. In multiparæ one may start the treatment a little earlier. The initial dose is usually $\frac{1}{6}$ gr. of morphin, followed at once by $\frac{1}{200}$ gr. of scopolamin given hypodermically. Most accoucheurs recommend the "scopolamin-stable" made by Hoffman LaRoche of Basel, Switzerland. In Freiburg, "narcophin," a morphin derivative, is used instead of morphin, but American accoucheurs do not believe it is better. At the end of forty-five minutes $\frac{1}{400}$ gr. of scopolamin is given, and in one hour another $\frac{1}{400}$ gr. By this time the patient is somnolent and in a state of amnesia. While she is going to sleep the attendant sits at the bedside and soothes and calms her. This tends to obviate scopolamin delirium throughout the labor. If she goes to sleep without fear and delirium, this calm is likely to continue. The action of the drugs is carefully watched, and the degree of amnesia and analgesia noted minutely on a special history sheet (Fig. 60*a*). The attendant asks the patient if she remembers her last hypodermic, or when this or that person entered the room. Analgesia is estimated by the appearance of pain expressions and direct questioning. It is better, however, not to annoy the woman too much with questions or anything that

TWILIGHT SLEEP—CHICAGO LYING-IN HOSPITAL

DATE NAME PARA AGE PRES. & P.N. RESPONSIBLE FOR CASE

TIME	TEMP	PULSE	RESP	FETAL HEART TONES	MEDICINE	CHARACTER AND FREQUENCY OF PAINS	REMARKS AND RECORD OF EXAMINATIONS MENTAL CONDITION

Fig. 6c*a*.—This sheet is 13×8½ inches. Every hour's observations occupy one space across the sheet. At the end of the labor a summary of opinion is noted, stating the success of the treatment, the condition of mother and child, outstanding features, complications, etc.

might awaken her, and, to sustain the action of the drugs, the room should be darkened, at least the face shaded, and the attendants should move about quietly and talk in quiet whispers. The family is to be rigorously excluded.

Every hour or two another hypodermic of scopolamin is given, the time and amount depending on the state of the patient. Only enough is allowed to abolish memory and dull pain, and it is here that the expert accoucheur is needed to decide how much of the drug is necessary. The memory test is the most reliable guide to exact dosage. If enough scopolamin is given just to abolish memory and dull the pain, the case is proceeding properly and the infant will not suffer. If the woman is so deeply asleep that she makes no signs of suffering during the pains, she has been given too much, and the baby will come asphyxiated. Some women require more, others less, of both drugs, and each case must be strongly individualized. If the labor is not within four hours of its termination, a second and smaller dose of morphin may be given, but most cases can be finished with but the initial dose of this narcotic. After the head is on the perineum both drugs are stopped, and, if necessary, a little ether used to complete the labor.

While under the influence of the drugs the patient lies in a stuporous condition, face flushed, skin dry, pupils slightly dilated, eyes suffused, the pulse rapid and full. She responds very tardily to questions, opens her eyes dreamily, often closing them and dropping off to sleep before finishing her reply. During the pains she stirs uneasily about or turns from one side to the other, sometimes groaning a little. She frequently asks for water to quench a persistent thirst. As the second stage nears, bearing-down efforts are made, the woman tosses about more, and often tries to put her hands to the genitals.

The intervals between pains are long, the patient sleeping quietly. She responds to requests to bear down. During the actual delivery she may cry out or be very voluble, even delirious, but will remember nothing of it later. She sleeps all the time of the third stage. Usually the patient wakes partially after the placenta is delivered, but soon goes to sleep, to awaken several hours later with no or little remembrance of the events preceding.

Nursing a case of "twilight sleep" is even more exacting than the usual labor, which always places much responsibility on the attendant. The administration of the frequent hypodermics demands care to prevent skin abscesses. The syringe must not be wet with alcohol—this destroys scopolamin. The action of the bowels and bladder must be closely watched. Sometimes the bowels move in bed and the woman forgets to mention it, the genitals being thus infected. The bladder may overfill and cause dystocia. Food is not given unless the labor drags on more than a day, but water is freely allowed to quench the marked thirst. The temperature is taken per rectum every four hours. Abdominal, vaginal, and rectal examinations are made as usual. Pulse and respiration are counted every hour, the fetal heart tones every fifteen minutes, all of which are carefully recorded on the special record. During the second stage the fetal heart tones are to be counted every five minutes, because it is at this point that the greatest fetal danger occurs. Throughout the labor the general condition of the woman requires unusually careful attention, because the symptoms of hemorrhage, of rupture of the uterus, myocarditis, etc., may be masked by the drugs.

The usual preparations for an aseptic delivery are made. In many cases the parturient is delirious and restless, tossing about, clutching at the pudenda, turn-

ing on her side, even trying to get out of bed. Naturally, these disturb the aseptic technic. It is unwise to restrain the woman too forcibly, because this is hard on her heart. In every case of "twilight sleep" one must be in readiness for a quick operative delivery at any time, and at the beginning of the second stage it is wise to have the birth room completely prepared for this purpose. In rare instances the fetal heart tones get bad with but a few minutes' notice, and only immediate extraction will save the child. This occurred once during my sojourn in Freiburg and twice since I have practised this method at the Chicago Lying-in Hospital.

The infant is frequently born in a state of oligopnea, or insufficient respiration. It is quiet, apparently narcotized, blue, but its heart is beating regularly and strongly. This state must not be confused with real asphyxia. The treatment is simple. With a catheter the air passages are cleared of possibly inspired material, then the infant is covered warmly and quietly observed —the heart action especially being noted. As a rule, after a minute or two, during which the cyanosis deepens, the child begins to make tiny respiratory movements, then follows a shallow gasp, then a deep inspiration, then a vigorous cry, after which the baby's color turns from deep blue to reddish blue, then red, when respiration is fully established.

Usually the child cries vigorously as soon as it is born, and has to be at once removed from the room so that it will not awaken its mother. If, however, it is asphyxiated or deeply narcotized, strong efforts of resuscitation must be employed to save the child. In a few cases these had to be continued for several hours. The nurse, therefore, must have made preparations for treating asphyxia neonatorum (see page 360).

Scopolamin sometimes causes a maniacal delirium,

and cases are on record where the woman during labor and even twelve hours after delivery has tried to jump out of the window. Proper restraint must be given such patients and especial watchfulness practised.

The after-care is the same as always. During the usual quiet sleep following delivery the nurse must keep the patient always in sight, to avoid a happening like that just mentioned. That the recovery from labor is less marked by weakness and soreness than with the old method has not been a prominent fact in my experience. These depend on the amount of local injury and the severity of the labor. The memory of the events is, if the case has been successful, entirely obliterated. Sometimes the woman will recall a few striking occurrences, but has little to say of her pains. Again she will, from these few "isles of memory," reconstruct the whole labor, but it will be in a hazy fashion. On several occasions the women remembered more immediately after delivery than they did the next day. In the children, except for the narcosis and occasional asphyxia, I have observed nothing unusual.

In general, it may be said of "twilight sleep" that, given by an obstetric specialist who has had experience with these particular drugs, in selected cases, with the patient in a maternity particularly designed and fully staffed for the purpose, the inherent dangers of the procedure may be essentially reduced. Nevertheless, in a small proportion of cases the death of the child and severe bodily injury will be the price paid by the mother for her relief from suffering.

The place, therefore, of scopolamin-morphin in obstetrics is small. If the method gains general vogue, is practised in the home without the above-mentioned precautions, it will cause such a terrific fetal and maternal mortality that its use would soon be abandoned altogether.

NITROUS OXID AND OXYGEN ANESTHESIA

Since 1878 nitrous oxid gas has been occasionally recommended for obstetric practice. Experience has shown that during pregnancy it may be used for the extraction of teeth with safety, because the short stage of asphyxia does not injure the child. Recently, since the dentists have demonstrated that, mixed with oxygen, nitrous oxid can be made to produce analgesia and even anesthesia with but little hypercarbonization of the blood, the surgeons have begun to use the combination for prolonged operative procedures. In the last few years the mixed gases have been employed in obstetrics, and this method bids fair to supplement ether, chloroform, and scopolamin-morphin in a large proportion of labors.

The administration is not simple, and a good mixing apparatus is needed. It is begun as the second stage of labor draws near. The gas is given with a small nasal inhaler and the method is similar to that of ether. Just as the pain begins the patient is instructed to take three deep breaths of the mixture—90 per cent. nitrous oxid gas and 10 per cent. oxygen. Then more oxygen is given—40, 50, 60 per cent.—and, as the pain disappears, pure oxygen; when the pain is gone the inhaler is removed. The patient is fully conscious, perhaps a little dizzy, but feels nothing. Unconsciousness means that too much gas has been given; also cyanosis, which must be at all times avoided. Thirst is a prominent symptom and water may be allowed. The woman bears down with the pains as usual. The labor is conducted as with ether anesthesia, but the heart tones of the fetus require careful watching. If they should be weak or slow, more oxygen should be put in the mixture or ether substituted for the nitrous oxid gas. After the delivery the administration is stopped, but may be begun again for perineorrhaphy, removal of the placenta, etc. Sometimes forceps and version are done under this form of anesthesia, but for these the author prefers ether.

The nurse now surveys the room to see if everything is in readiness for the delivery. She should see to it that the following things are ready: A basin of hand solution for the physician; a basin of pledgets soaking in an antiseptic solution (what these solutions are the doctor tells the nurse); tape for tying the cord, and scissors for cutting same, in a glass or saucer with a little 1 per cent. lysol solution over them; warm saturated boric acid solution for washing the eyes, and some gauze pledgets to open the lids with; nitrate of silver solution, 1 per cent., and salt solution or whatever drug the doctor prefers for preventing ophthalmia neonatorum. A sterilized douche-pan is in readiness, and the sterile douche-bag is gotten ready so that it can be filled with hot 1 per cent. lysol solution, and hung up near the bed for use in an emergency (postpartum hemorrhage) with a minimum of delay.

The nurse should have a good reserve of sterile pledgets, towels, sheets, hot and cold water, and she should know just where to put her hand on them when needed.

The baby's basket contains a warm receiver, a hot-water bag, and a warm wool blanket. The nurse should have a baby bath-tub nearby, with bath thermometer and plenty of hot water in case the child is asphyxiated when it comes and the accoucheur calls for a hot bath.

One of the sterile obstetric pads is put under the patient and the body is covered by a sterile sheet. If the patient is dressed with sterile leggings and jacket, all that is needed is to lay a sterile towel over the abdomen, letting one end drop between the thighs. For delivery on the back the woman lies as in Fig. 62, but if the physician prefers delivery on the side, the hips are brought to the side of the bed, and the pillow before described is placed between the knees (Fig. 61). The

patient is now protected from infection and exposure by a sterile sheet and towels.

During delivery the nurse's duties will consist of waiting on the doctor; renewing supplies of pledgets and solutions; adjusting the towels, pillow, sheet, etc., and little attentions about the patient, one of which is caring for any discharge from the rectum. If the enema has

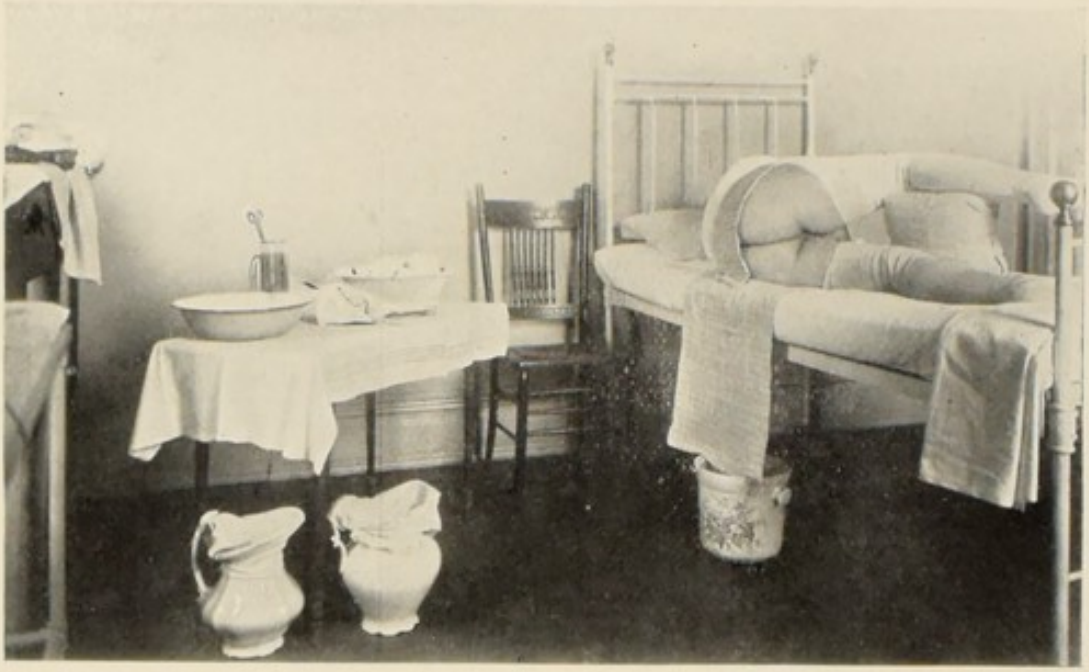


Fig. 61.—Arrangement for delivery on side in a home. Hot and cold sterile water in pitchers. One basin has bichlorid, 1:1500; another, 1½ per cent. lysol solution. Scissors, cord tape, artery clamp, and catheter lie in a saucer in 1 per cent. lysol solution. A pile of sterile towels and the nurse's hand forceps are on the table. At the extreme left is the warm receiver for the infant.

not completely emptied the lower bowel, as the head comes down the contents of the bowel are forced out and cause considerable annoyance to the accoucheur on account of the danger of infection from the feces getting into the vagina. Women have died from this. Aside from the danger of infection, the patient is much distressed about it; therefore the nurse should never allow her to learn that such an occurrence has taken place. The discharges from the anus are received in large

pledgets of cotton soaked in 1 : 1500 bichlorid, taking care that nothing touches the vulva, and the perineum must be sponged with the same solution, always rubbing from the vulva toward the anus, and not using the same pledget twice. Should the physician soil his hand, he will resterilize it, after which the nurse replenishes the antiseptic solution.

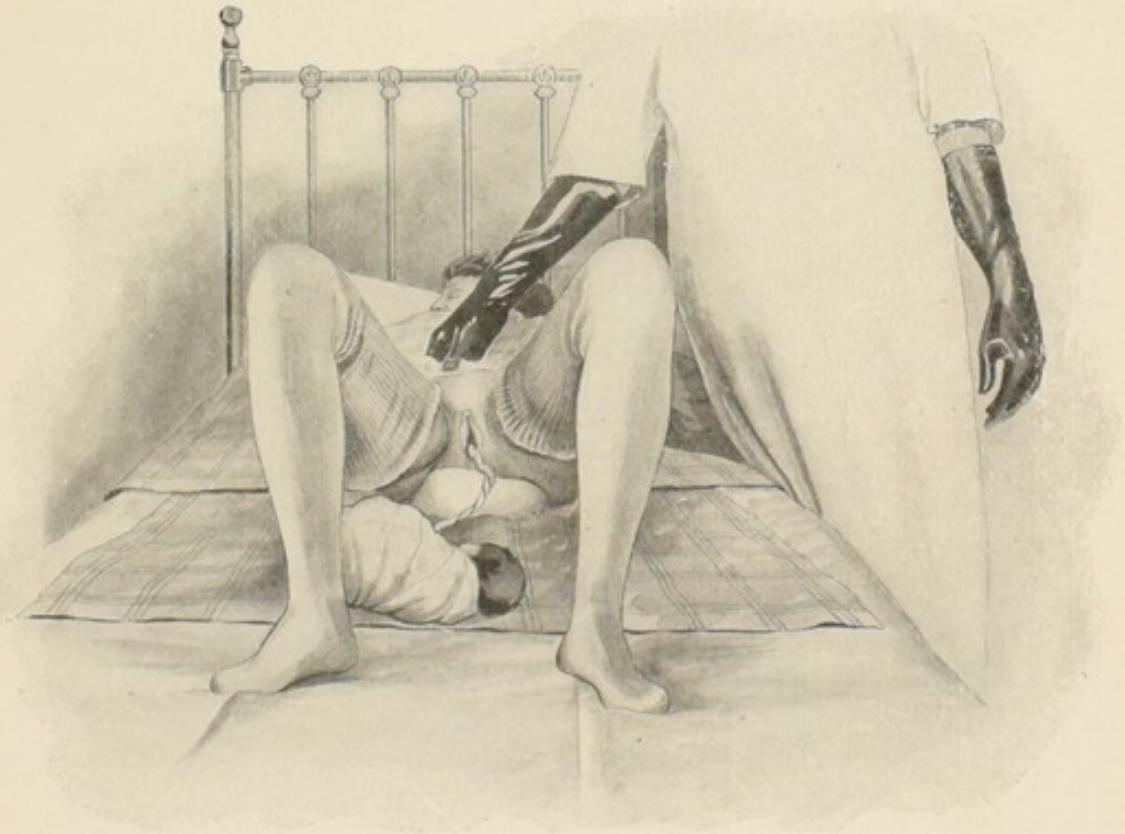


Fig. 62.—Patient arranged for the conduct of the third stage of labor.

When the child is coming through the vulva, the nurse may have to administer the anesthetic, which is done as follows: The bottle is arranged for dropping by cutting a long slit in the side of the cork. An ether can may be provided with an excellent dropper as in Fig. 63. A handkerchief or an inhaler may be used. Just as the pain comes on 15 drops of the drug are

dropped on the handkerchief; after a few moments a little more is put on, and as the height of the pain passes the mask is removed from the face. Toward the end of delivery the administration is more continuous, but ceases immediately the head is born. The nurse watches the doctor for instructions as to whether he wishes more or less of the anesthetic given. When ether is used one should not be too near an open flame, since the

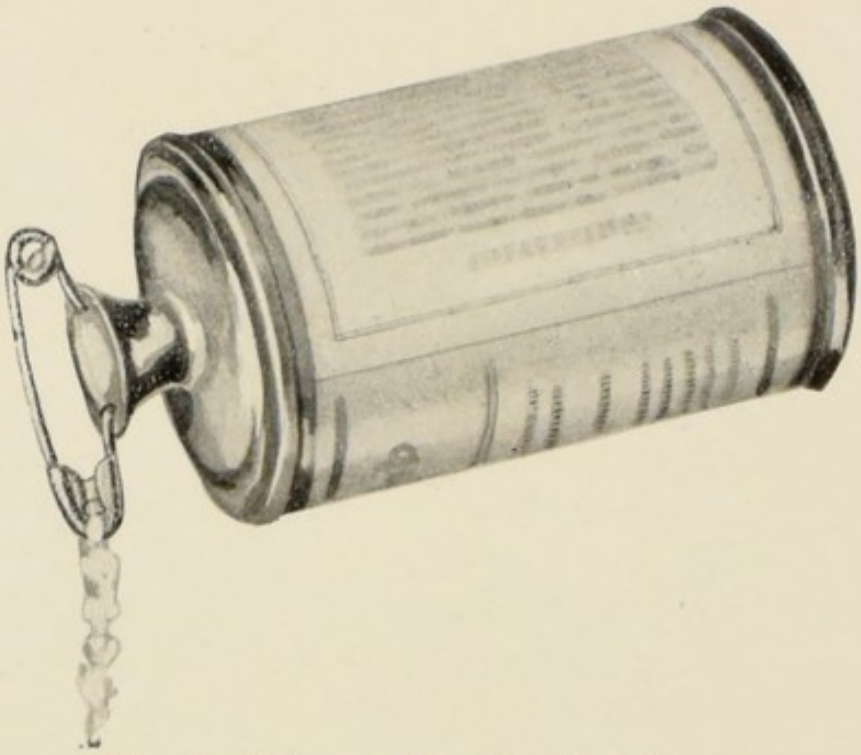


Fig. 63.—Ether can with safety-pin as dropper.

vapor is explosive. Chloroform is decomposed by an open flame into irritating and poisonous vapors.

As soon as the head is born the nurse must have ready warm boric solution for the eyes and gauze pledgets for wiping out the nose, mouth, and throat. Soft old linen or lintine is the best for this purpose. When the baby comes, it is received in a warm towel, and allowed to lie a short distance from the mother, the nurse taking care that it should not pull on the cord, and that the mother does not lie on it or squeeze its head between

her legs (see Fig. 62). The child must not be exposed, because it is very subject to chilling, being so wet.

In maternities the infant should now be marked, to avoid every chance of confusion in the nursery. Its name, written on a square of adhesive, is placed on its back, or a distinguishing number tied on its wrist.

A basin or bed-pan is placed under the vulva. Now the doctor calls for the bowl with tape for cord and scissors, and ties and cuts the cord. After the baby is separated from its mother it is wrapped in a warm receiver and placed in the warm basket, on its side, with the head lower than the body, so that mucus can run out of the throat and mouth. It is immaterial which side the child lies on.

The nurse must watch the infant closely to see that it does not choke and that it does not kick all the covers off; that it is not near a window or in a draft, and that the cord does not bleed. The nurse may have to delegate some of these duties to the father or some relative if her services are required by the patient or by the doctor.

Care During the Third Stage.—As the child leaves the vagina the nurse or doctor should follow down the receding uterus with the hand placed on the abdomen—this to prevent hemorrhage (Fig. 64). Since some physicians do not practice this, the nurse should obtain instructions. When the child is delivered the uterus is the size of a cocoanut, and the nurse grasps it in the full hand and notes whether it is hard or soft. If too soft, she gives it a gentle massage until it hardens, and, as a rule, there is no trouble. If the nurse is uncertain as to its condition, let her not hesitate to ask the physician about it. As soon as the cord is tied the doctor usually takes the uterus, and the nurse is now free to rearrange and refill basins, see a little to the baby, and to get things ready for the placenta.

After the child is removed the nurse takes away, if necessary, gently and without jarring the patient, all the



Fig. 64.—Nurse holding the uterus during third stage.

soiled towels, etc., from about her, and puts a folded, dry, warm sheet under her, or the other sterile obstetric pad. A sterilized basin or bed-pan is again slipped snugly

under the vulva to catch all discharges. This prevents soiling the bed and gives the accoucheur an idea of the quantity of blood the patient is loosing. The nurse observes and notes the amount of blood in the clothes, so as to form some estimate of the total amount lost. The patient is then arranged and made comfortable and covered with a clean blanket, which is protected by a sheet from being soiled.

If the nurse is to guard the uterus (see Fig. 64), she must observe the following points:

1. That the uterus is hard, and that when it relaxes a little, as it should, it does not balloon out with blood.

2. She must look between the thighs every three minutes to see if blood is accumulating in the basin or on the clean sheet she has placed there.

3. She must keep her finger on the patient's pulse and her eye on the patient's face, to detect unusual rapidity of one and paleness of the other.

If there is a hemorrhage, the nurse must firmly but gently massage the uterus. The thumb lies in front, the fingers on the back, of the uterus, and together they describe circles on the organ, wiping the abdominal wall over the uterus—not kneading the abdominal wall, but the uterus. Of course, the physician is informed of it.

The nurse will notice when the after-pains come on that the uterus gets very hard and rises up under the hand. These contractions of the uterus loosen and expel the placenta. The contractions of the uterine muscle also prevent postpartum hemorrhage. During the active uterine contraction the hand may be removed from the fundus. The separation of the placenta is shown by the uterus rising up in the abdomen, up above the navel, and the cord advancing from the vulva. It is usually time now to expel the placenta, though many physicians arbitrarily wait thirty minutes.

When the physician is ready to do this, the nurse presses the sterile basin against the perineum, the cord is dropped into it, and the after-birth is gently expelled from the vulva, from which it drops slowly into the basin. The membranes are carefully pulled from the uterus by gentle, steady traction, so that they do not tear off. The physician will inspect the placenta and membranes carefully to see if no piece of either is left in the uterus—a serious danger—therefore the nurse will place the basin containing them where he may see them before he leaves the house. It would not be improper for the nurse to call the physician's attention to this point if he should forget it, and the information obtained might later be of signal service.

After the placenta and membranes are removed the physician inspects the vagina and vulva to discover the presence and extent of the lacerations of the birth-canal. If none are found, soiled towels are taken away and a clean sheet spread under the patient. The hand guards the uterus, noting the same points as before. The physician usually does this, but the nurse may have to do it. A short period of rest is given the woman, then the blood-stains are washed off, using cool sterile water unless the room be cold, when warm water should be used. Great care should be taken not to rub, hurt, or infect the vulva. A sterile pad is placed against it to catch the discharges. The bed is now dressed.

During these manipulations the patient must not be roughly tossed about. Whenever the parturient is turned or lifted, one hand must be on the uterus, seeing that it is hard, and the legs must be tightly closed together. This precaution is to prevent air from being drawn into the vagina and thence into the large veins of the uterus, thus causing air-embolism, which is usually fatal; this is an important warning. The confinement

jacket is removed, and a clean plain night-gown is put on. The abdominal binder is now applied. This is broad, going from the ensiform to the hips, and is pinned from above downward. No pads are needed under it.

PERINEORRHAPHY

If a perineorrhaphy must be done, or, as the woman may express it, if it is necessary to "put in stitches," the plan of procedure must be altered. While waiting for the placenta the nurse prepares for the operation. The necessary instruments are:

Three pairs scissors.
Three tissue forceps.
Four short artery forceps, two 8-inch forceps.
Two needle-holders.
Six curved needles.
Three vaginal retractors, two large and one small.
Two vulsellum forceps and two cervix forceps.
Long uterine packing forceps.
Catheter, and, if a douche is to be given, a uterine douche point.

Suture material is usually catgut and silkworm gut, which may be boiled with the instruments unless already sterilized.

The nurse refills the basins with hot solutions, sees that there is a good supply of pledgets, preferably gauze, or covered sponges, and that the light is good. Things are arranged as in Fig. 87.

After the placenta is out, the patient is slowly moved across the bed, or—and the writer heartily recommends this—she is put on a table, and the basins, instruments, etc., arranged as for a major operation. Too many women date lifelong invalidism to the neglect of proper repair of injuries of the pelvic floor, and one

should not spare any effort to secure primary union of such lacerations. It goes without saying, that better

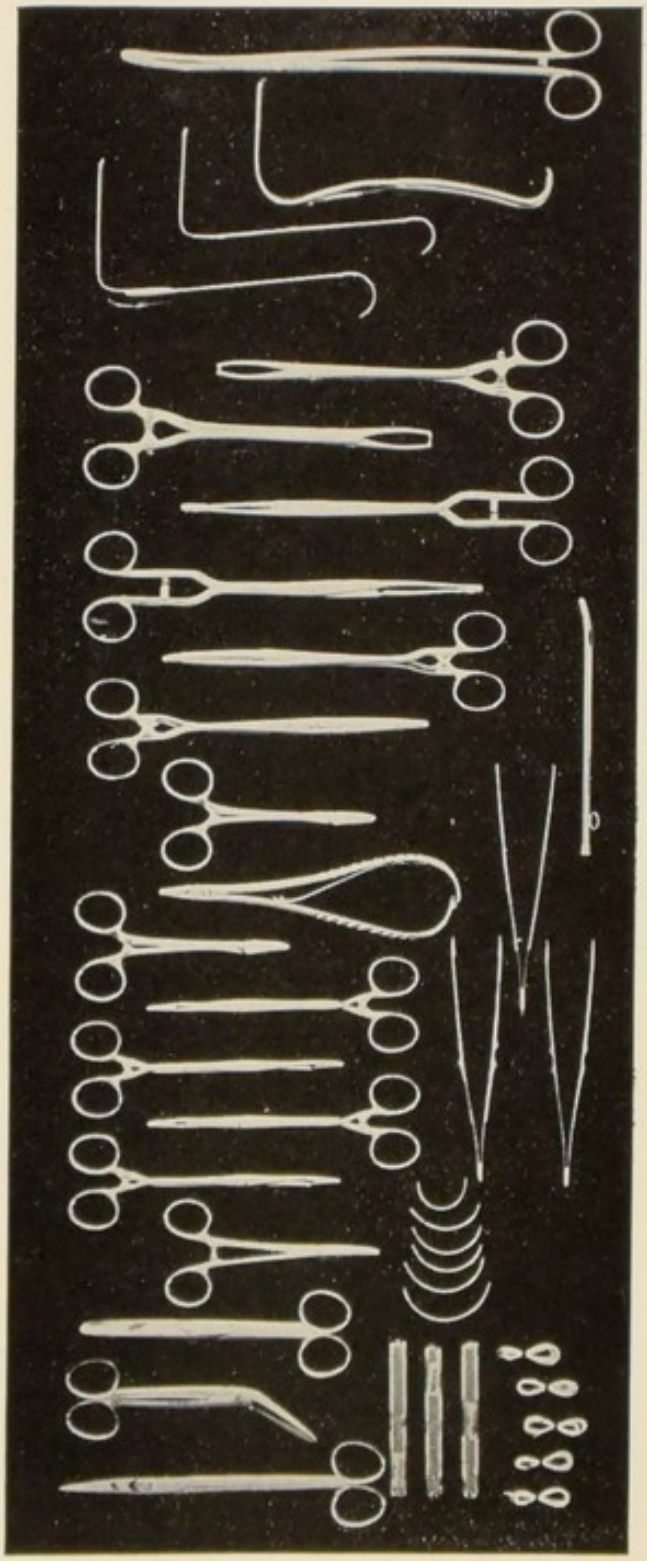


Fig. 65.—Instruments needed for perineorrhaphy.

results may be obtained when the accoucheur has his work comfortably arranged than when he must operate

over a low bed in a strained attitude, where it is difficult to carry out the demands of an aseptic technic.

In the absence of sufficient trained assistance the husband or a courageous woman may be asked to hold the patient's legs; or the sheet-sling (see Fig. 90) may be used. An anesthetic is often not necessary, most women being able to stand the pain, and further, the parts are not so sensitive at this time, as they have been benumbed by the stretching caused by the child. When the operation is completed, the nurse should ask the physician to catheterize the patient, and at the same time show her where the urethral orifice is, as sometimes the bruising and tearing caused by the delivery make it so swollen that she is unable to recognize it by the usual landmarks.

Lacerations of the perineum are of three degrees: first, through the fourchet; second, to but not through the sphincter of the anus; and the third degree, through the anus into the rectum. The last form is a very serious accident, as the patient loses control of the bowel unless repair can be successfully made.

There is a popular notion that when a woman acquires a laceration of the perineum during labor, it is the physician's fault. While it is true that by a proper conduct of labor most lacerations and nearly all serious ones can be avoided, still it is also true that sometimes the perineum will tear like wet blotting-paper, and no skill can save it. In communities where the above notion is prevalent the physician is often tempted to neglect the repair of lacerations of the perineum, as he will acquire a reputation of "tearing his women." His neighbor does not have lacerations because he does not put in so many "stitches." The nurse may do much to assist the conscientious physician by explaining to the family the frequency of injuries to the pelvic floor and the

necessity for their repair. Good obstetrics is thus furthered.

When the mother is in bed and made comfortable, the room is aired and darkened a little, and ordered neatly, so that the patient may obtain some well-earned rest. Temperature, pulse, and respiration are taken and recorded, and a warm drink is given. After this the soiled towels, sheets, etc., are gathered together and put to soak in cold water. The linen soiled with fecal matter should be soaked separately, and those articles that are very bloody should be rinsed out before being put with the rest. After soaking in several changes of cold water and thorough rinsing, they may be sent to the laundry. Hot water should not be used on bloody clothes, as the heat coagulates the blood in the mesh and thus permanent stains are left. Towels wet with bichlorid should also be well rinsed before being boiled, as the mercury stains cannot be removed. Cotton sponges and the placenta must not be thrown into the water-closet. They clog the pipes.

THE FIRST CARE OF THE NEWBORN CHILD

The nurse assures herself that the mother is in good condition, that the uterus is firm, and that there is no hemorrhage from the vulva. She then takes the infant, after arranging all her material for oiling and dressing it, near the radiator or fire, away from a strong light or draft. The eyes are attended to usually by the physician. He has simply washed the lids outside and inside with boric solution, or he has used Credè's or some similar treatment. For Credè's method or the nitrate of silver method the nurse prepares a weak solution of common salt, and has a 1 or 2 per cent. nitrate of silver solution at hand. The lids are gently separated, and 1 drop of the silver solution put in each eye. It is then neutral-

ized with the saline solution. Unless the silver solution is made fresh every day or so, severe "nitrate reactions" of the conjunctiva may result. Lately, 10 per cent. solution of protargol, or 25 per cent. argyrol, is being used for the prevention of ophthalmia neonatorum.

The infant is oiled all over with warm olive oil, albolene, or benzoated lard, great care being taken that the hand does not rub anything into the eyes. The vernix caseosa is thus softened and dissolved. Use the oil freely, especially in the groins and armpits, where the vernix gathers, and wipe the child dry with a warmed soft towel. Do this quickly, and keep the infant covered as much as possible. The child may be held on the lap or placed on a pillow on a table. The room should be warm.

After this the hands are sterilized and the umbilical cord stump is dressed. First the stump and adjacent skin are washed thoroughly with 1 per cent. lysol solution or pure alcohol, then wrapped in dry, sterile gauze; then the sterile binder is applied. The baby's temperature is now taken, after which the child is quickly dressed and put in a warm crib on either side, with the head low.

The infant, especially if it is premature or if it was delivered by a hard operation and was more or less asphyxiated, must be watched carefully until it is known to have a good hold on life. Sometimes such infants are found dead in their cribs, and often they secrete large amounts of mucus, which chokes them. This mucus may be sucked into the lungs and cause atelectasis (incomplete unfolding of the lungs), pneumonia, and sepsis.

The child's color should be pink or red, its cry should be vigorous, and if it sleeps, it should be calm, and not grunt or whine with each expiration. If there is a rattling in the throat, the nurse should wipe the mucus out with the little finger covered with a soft cloth—gently, so as not to scratch the mouth. The infant may be sus-

pended by the feet for a few minutes to allow the mucus to run out, and when replaced in the crib should be put on the side with the head lower than the chest and supported by a small pillow. Sometimes a sip of water given to the child carries the mucus down with it. The infant usually needs a hot-water bag, even in summer. It should not be needful to admonish the nurse that the bag be water-tight and not hot enough to burn.

CARE AFTER THE THIRD STAGE

While the nurse is attending to the infant she should look after the mother a little also, noting her color, restfulness, the rapidity and strength of the pulse, the firmness of the uterus, and the amount of bloody discharge. She must early detect a hemorrhage if one occurs, and determine if the patient is in good condition and not shocked, which is done by observing the above symptoms.

The normal flow of blood from the genitals in the first two hours after delivery will not exceed 2 ounces, and there will be no clots. If there is more discharge, the nurse should massage the uterus and give 1 dram of ergot. The puerpera should lie on the back for three hours after delivery, after which she may be turned on her side, supported by a pillow at the back. If the uterus has been packed with gauze, the nurse is to support the abdomen carefully while moving the woman, since brusque motion may tear the uterine muscle over the packing.

Headache is a very important symptom during and after labor. It should always be reported to the physician. An examination of the urine for albumin, and of the patient for other signs of impending eclampsia will be made.

One of the duties of the attendant at this time is the filling out of a birth certificate.

CHAPTER II

CARE DURING THE PUERPERIUM

First, last, and all the time during the puerperium the nurse must consistently practice asepsis in everything that concerns the genitals and the breasts in the mother, and the eyes, nose, mouth, and navel in the child. The nurse must remember that while she is only in small part responsible for the asepsis of the labor, the major part being assumed by the physician, she is in large part responsible for the asepsis of the puerperium of both mother and baby. She dare not relax her vigilance at any period of her attendance on the case.

DAILY CARE OF THE MOTHER

The Breasts.—After the mother has slept, usually about eight hours, the nurse prepares the breasts. They are gently washed with soap and water, then with bichlorid, 1 : 1500, which is allowed to dry in. A loose breast-binder is now applied, simply to prevent the gland from sagging. Tertullian tells us that the Roman women used a breast-binder made in the temples and possessing mystic powers.

A short time after this the baby is applied to the nipple (Fig. 66). Before and after each nursing the nipple is washed with saturated boric solution, poured fresh from a bottle, not kept in a glass, and using sterilized cotton pledgets on tooth-picks—so-called "applicators" (Fig. 68). No further treatment is required unless the nipple is tender, when it may be anointed with sterile

albolene or cocoa-butter. The fingers do not come in contact with the nipple at all; if it is necessary to do



Fig. 66.—Woman in proper position for nursing an infant.

this, the hands must be disinfected. The baby is put to the breast every four hours until the milk comes,



Fig. 67.—The mammillaris. (From a painting in Pompeii—Witkowski.)

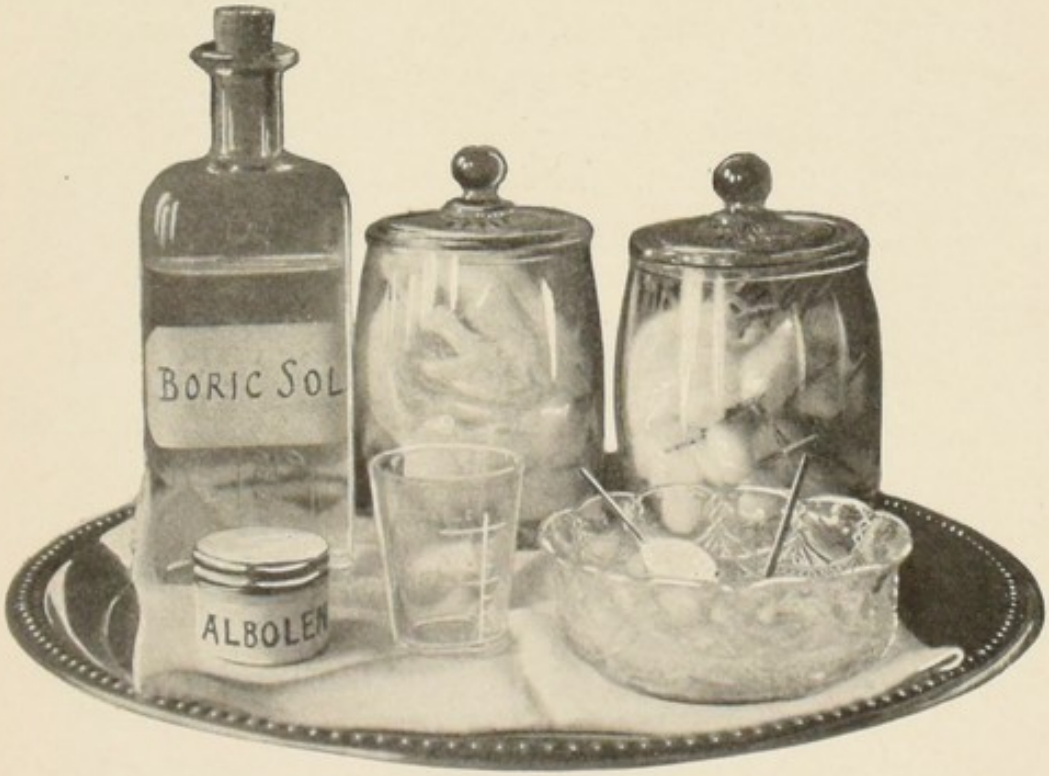


Fig. 68.—The breast tray and its contents.

then every three hours during the day and every four hours during the night. The first nursing is at 7 A. M., the last at 10 P. M., and the child is put to the breast

once in the interval to 7 A. M., at about 2 A. M. Later in the puerperium the child is allowed to sleep as long as it will, and finally it is habituated to sleep all night through. Some physicians prefer the four-hour interval for robust children.

When the milk "comes in," which usually occurs on the third day, the breasts need more support from the breast-binder. The treatment of cracks, engorgement, and other conditions of the breast will be taken up in the chapter on Complications. Too much care and too careful asepsis cannot be given the breasts, as infection, with resulting abscess and impaired nipples, with resulting necessary weaning of the child, must be avoided.

Care of the Genitals.—Every four hours, and after each bowel movement and urination, the vulva is dressed. The patient is put on a douche-pan, the nurse provides everything she will need close at hand, and arranges the patient and coverings. Then she sterilizes her hands, or uses sterile rubber gloves, gently separates the labia, and pours, from a narrow-lipped pitcher, a solution of lysol, 1 per cent., or bichlorid, 1 : 2000, over the parts. A little of the solution may run into the vagina. After this she dries the vulva with gentle pressure by means of cotton pledgets, puts on a sterile pad, and adjusts it with a T-bandage, or pins the ends of the pad to the abdominal binder. This dressing must not be too tight, and the binder must not be soiled or wrinkled. A few physicians desire the patient tightly bound up in a long binder reaching nearly to the knees. Fig. 69 shows such a binder applied. When a dressing is to be made, the nurse removes the pins at the sides and slides the binder up over the hips.

After the first day these attentions are not needed so often—only every six hours—unless there is much lochial discharge.

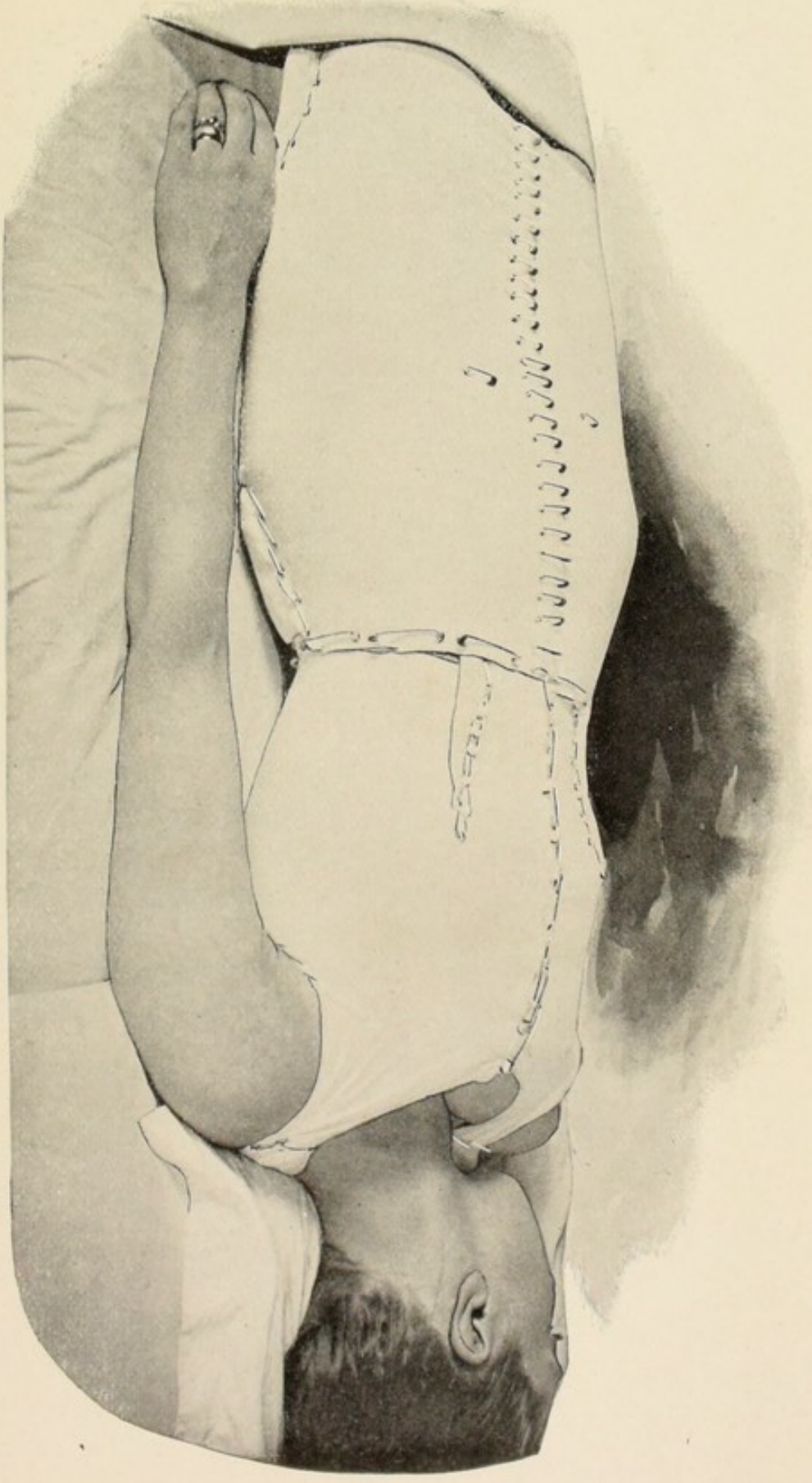


Fig. 69.—The long binder applied. (From a photograph taken at the Chicago Lying-in Hospital.)

If there are stitches in the perineum, the nurse must redouble her carefulness and not pull on the ends or knots in any of the manipulations, as in passing the bed-pan under the patient, removing the pads, etc. The physician's best work may thus be spoiled. If the patient complains of the stitches hurting her, the nurse should inspect the wound to see if they are cutting through, in which case she should notify the doctor. Sometimes there is marked swelling of the vulva on the second day. The doctor may order warm, moist, medicated applications to the parts. If left to her own devices, the nurse may apply a warm boric solution dressing to relieve the swelling and pain. It is not necessary to bind the knees together after perineorrhaphy unless the physician so orders.

Often after several days a whitish substance forms in the creases of the vulva. This is composed of epithelial scales and dried and coagulated secretions. It may be removed by anointing the parts freely with sterile albolene. After an hour the softened and dissolved material may be gently rubbed off. The parts about the vulva need an occasional washing with soap and water.

The hands must never be soiled with lochial discharges. This is an important injunction, because these discharges are infectious, and they may infect the puerpera in the next bed, the mother's breasts, or the umbilicus or the eyes of the infant, and also the finger of the nurse.

Special Care in Cases of Complete Laceration of the Perineum.—In cases where the sphincter ani has been torn and sutured the nurse will ask the physician for special instructions regarding the diet, and the attention to the bowels, *i. e.*, cathartics and enemata. Often liquid diet will be ordered for four or five days

and food free from seeds and woody fiber. Some physicians give opium to bind up the bowels.

Eight hours before the bowels are to move for the first time the nurse will inject 6 ounces of sterilized olive oil into the rectum. This softens the fecal mass and lubricates the passage. Just before the bowels are to move an enema of 6 ounces of warm salt solution is given. Under no circumstances should the patient be allowed to strain during the evacuation. The tendency to strain is due to the presence of a hard mass of feces in the rectum. If the nurse detects such a tendency she should pass the index-finger, gloved, into the rectum, and gently soften and break up the mass by pressing it against the sacrum. No pressure may be made on the line of sutures. A saline enema (6 ounces) is now given and the patient instructed to retain it as long as possible. Subsequent evacuations are aided in the same manner.

The History-sheet.—Every morning, after bowels and bladder are empty, the nurse measures the height of the fundus of the uterus from the pubis and notes it on her history-sheet as follows: Fundus 6 x, meaning six fingers' breadth from the pubis. She also notes the character and amount of the lochia, as described on page 63, and must not forget to note and call the doctor' attention to clots, membranes, etc., expelled, and to all unusual occurrences. If everything progresses smoothly, the nurse's notes on her record may be a little neglected by the attending accoucheur, but if a complication should arise, he will be grateful indeed for all the information he will find there. Therefore let the history-sheet always be neatly and accurately kept until the case is discharged.

Diet.—There was an old notion that a woman after labor must be kept on a milk-and-water diet, in the fear

that errors in eating would cause puerperal fever and other diseases.

This notion has some basis, although nowadays we give the puerpera a much more liberal dietary. If a healthy person is put to bed, one must restrict his diet or he will become ill, and the same is true of a puerpera. Lack of exercise causes the organs to work less, and a quiet body needs less food. If food is given in large quantities, it is not properly oxidized or assimilated and "clogs the system" with waste matters. The excretory organs are thus given more work to do, and they are not in fit condition because of the lack of exercise.

Headache, lassitude, an odor to the skin, tympany, high-colored urine, even graver troubles, may be the evidences of overfeeding.

During the first eighteen hours after the labor the patient should have liquids in amounts sufficient to quench her thirst. After a few hours a cup of broth or tea and a small slice of buttered toast, a glass of milk, plain or with seltzer, may be given.

On the second day, tea, coffee, milk-toast, oyster-stew, salt wafers, and chocolate may be added. On the third day after the bowels have freely moved the amounts may be increased and the patient may have soups, thickened with rice, barley, etc., bread and butter, cereal foods, and stewed fruits, omitting the strongly acid. In summer ice-cream and ices are allowable. On the fourth day a small piece of meat, as a chop, the breast of chicken, or squab, may be given at noon. Fresh fish is also now allowable. The other meals are prepared from the dietary of the preceding days. On the fifth day a small piece of tender steak, eggs, light puddings, blanc-mange, baked apple, jellies, and other delicacies may be given. Tea and coffee are given sparingly and should not be strong. Fresh vegetables are allowed with salt or cream

dressing, not vinegar. Baked potatoes, beans, and peas are best omitted, as they produce tympany. Stewed fruits, as prunes, dried apples, and peaches, bran and molasses biscuits are given for their laxative effect. After the fifth day the diet is as above, and this has been found sufficient for the patient until she is up and about.

Three meals a day are served. At ten in the morning a glass of cool milk, and at three in the afternoon a cup of chocolate with a wafer are given. Occasionally an egg-nog is prepared instead of the chocolate at three. At midnight, after the nursing, a glass of hot milk or malted milk is usually administered.

Throughout the puerperium the nurse will see that the patient drinks pure water freely, to make up the loss caused by the free action of the skin and kidneys and the fluid required for making milk.

Foods to be Avoided.—Acid fruits, as lemons, grapefruit, oranges (sour), plums, strawberries, boiled tomatoes, onions. These are likely to cause colic in the infant, but after a few weeks the mother should add these to her diet to accustom the infant to them. Potatoes, beans, peas, lentils, and turnips cause flatus and tympany in the mother, and sometimes in the child, and should also be avoided until the mother is up and about. Highly spiced dishes, heavy sauces, spiced sauces, dressings, such as French and Mayonnaise, are all to be avoided—they throw too much work on the kidneys.

Should the physician order the liquids restricted on account of the breasts, the nurse will leave out the milk, tea, coffee, chocolate, and fresh fruits, but give a certain amount of water.

If the patient has had eclampsia or is threatened with it, the physician may order milk and hot water as the sole articles of food.

The Bowels.—Puerperæ are almost invariably constipated. Strict attention must be given to see that the patient has at least one good alvine evacuation every day. The nurse should ask the physician what she should do, getting minute instructions. The practice of the Chicago Lying-in Hospital is as follows: On the morning of the second day the patient receives 1 ounce of oleum ricini (castor oil) suspended in whisky and sherry wine, or administered in soft gelatin capsules.



Fig. 70.—Castor oil in glass ready for administration.

To suspend the castor oil, as shown in the illustration (Fig. 70), the medicine-glass is wet with the sherry, and 1 dram of the same left in it. The oil is then poured on the sherry, and, just before the dose is given, 1 dram of whisky is flowed on top. The oil forms a ball. This is followed in six hours by a saline enema. Every day for the first week the patient receives a saline enema, and if this does not produce a free daily evacuation, fluid-extract of cascara sagrada in 15-drop doses is given

thrice daily. The medicine is put in empty capsules just before it is administered. This method is better than giving a single large dose, although sometimes, administered in this manner, the baby's bowels are made loose. In this case give a single dose of 30 drops after the ten o'clock nursing, and the effect on the child will be avoided.

In giving enemata the nurse should exercise great care to avoid injuring a sutured perineum in passing the rubber enema-tube. The tube should be passed by sight, under good illumination, and pressed downward at first toward the coccyx, and then slightly upward. A long tube is not necessary. It need pass only a few inches beyond the anus.

If the breasts are too much engorged, a saline cathartic—for example, effervescent citrate of magnesia—may be given instead of the oil, cascara, or enemata, as the free, watery movements reduce the fluids in the breasts. If the nurse cannot get the patient's bowels to move properly, she should notify the physician. It is of great importance that the bowels move freely, because sometimes fever may result from their neglect. Castor oil is, in the writer's opinion, the best cathartic when administered as described. It was known and cultivated by the Egyptians five hundred years before Christ.

The Bladder.—During labor the urethra and bladder are bruised more or less. The urethra is bent down and sometimes torn from its attachments, so that there is slight prolapse, which causes a kinking of the channel. As a result of this and the swelling from the contusion, plus the horizontal position, the patient cannot urinate. There may be a spasm of the neck of the bladder. The bladder must be emptied within ten hours after labor, and at least three times daily thereafter, and if the patient cannot void urine the bladder must be catheter-

ized. Before doing this several expedients should be tried:

1. Place the patient on a warm douche-pan, half-full of warm water, cover her, and leave her alone.

2. Allow the water to run in the wash-stand, so that she may hear it, the patient being arranged on the bed-pan as before; nurse leaves the room.

3. Wet a large pledget of cotton with warm sterile water and put it on the pubis; the water dripping over the parts may start the flow of urine.

4. A hot fomentation over the bladder, patient on bed-pan.

5. Give the patient a bottle of smelling salts.

6. Give patient an enema. When the bowels move the patient may urinate.

7. Pressure over the bladder with the hand—gently carried out.

8. Raise the patient with pillows to a half-sitting position. Some physicians allow the patient to sit up.

9. The catheter.

With these measures the nurse may use a little suggestion, and she should leave the patient alone, because some people cannot relax the sphincter of the bladder unless alone and quiet. The catheter should be used only when all other means fail, because of the great danger of causing a cystitis. Sometimes a little glycerin applied to the urethra starts the flow, and lately pituitrin has been given for the purpose.

Catheterization.—The nurse prepares the patient as for a dressing, sterilizes her hands, and washes off the vulva, and particularly the urethral orifice, with an antiseptic solution. This opening should be swabbed out with lysol solution, 1 per cent., with an applicator. The sterile rubber catheter is passed by sight, never by

touch, and the urine is caught in a clean vessel, so as to note its character and amount.

Cases are rare where more than one catheterization is needed, but it may be necessary to draw the urine every eight hours for a few days. The physician is usually asked for permission to catheterize; at least he should be acquainted with the necessity for it, and perhaps he will prescribe a diuretic.

Sleep.—It is highly important that the puerpera obtain sufficient actual sleep as well as rest. One of the symptoms, and perhaps a cause, of puerperal insanity is lack of sleep.

After the patient has been cared for on the completion of labor she is allowed to sleep as long as possible and the room is darkened and quieted to favor this. Subsequently the nurse must arrange the duties of the day so that the puerpera has a little nap in the afternoon and at least six hours good sleep at night. If the puerpera is persistently sleepless the physician should be notified.

General Treatment.—This is the same as for any bed patient as regards bathing, changing bed, and so forth. Unless the weather makes it agreeable, a full bath is not needed every day, but may be given twice a week. Daily, however, the whole body may be sponged with alcohol and water, 1 to 3 parts, paying especial attention to the axillæ. There should be plenty of light and fresh air in the lying-in chamber. Sun and air are not harmful by any means. In the olden time both were feared, and the puerpera was kept in semidarkness all the time, and all air excluded to prevent her from catching cold. It was thought that "catching cold" caused puerperal infections and mastitis, but now we know these complications are due to infection and are in high degree preventable by proper asepsis. Free ventilation and light are strong opponents to infection. The nurse,

while providing both, must see that at no time either mother or child is exposed to a direct draft, and that the bright light does not fall directly on the eyes of either.

After the first week the nurse may give the patient a general light massage. She should avoid the inside of the legs, where there are veins, and the uterus and breasts. Passive motions of the arms, legs, and trunk are also sometimes recommended. These exercises while away the tedium of the bed, improve the circulation, and hasten the return of the patient's strength.

The temperature, pulse, and respiration should be taken at least three times a day—about 7 A. M., 3 and 10 P. M.—and record made of them on the history-sheet. Other points to be noted are how much the patient has slept, her general condition, also her diet, enemata and bowel movements, catheterizations, the number and amount of urinations, all medicines given, the doctor's visits, and all unusual occurrences.

Visitors.—The lying-in room should be quiet and restful. The puerpera must be given opportunity to recover from the strain of labor and recuperate her strength from the exhaustion of pregnancy and delivery. Therefore only the nearest relatives are to be allowed in the lying-in chamber during the first week. Even these visits should be very short. Aside from the nervous disturbance caused by too many visitors, there is the danger of the introduction of contagion.

The Time of Getting Up.—This varies in the practice of different physicians. While most accoucheurs allow the woman to get out of bed on the tenth day, others allow this only in the third or fourth week. A very few physicians allow the women to get up when they feel able for it, even if it is the second day. The attending physician will specify what the nurse should do in these cases. The writer's practice is to allow the

woman to sit up in bed on the ninth day, to get out into a rocker or Morris chair on the tenth, stand on her feet



Fig. 71.—Mother nursing infant when out of bed. A low rocker without arms and a low foot-stool provide an unstrained attitude.

on the eleventh, have the freedom of the room on the twelfth, and go down stairs on the fifteenth day. In operative cases these acts are postponed a day or two,

depending on the patient's strength. Nurses say that while the women are physically able to get up at the end of the second week, their getting out of bed brings a host of callers and household duties which are too great a strain, therefore it is better for the puerpera to stay an extra time in bed recuperating.

When the patient gets up she should wear the abdominal binder, and in some cases a binder or jockey strap may be worn for several weeks with comfort. Corsets may be resumed after the fourth week.

Occasionally the lochia rubra reappear on arising from bed. In such an event a rest on the couch for a few days will bring relief. If not, the physician is to be notified.

The first menses after labor, usually about the sixth week, are likely to be very profuse. Recovery is the rule.

The patient may take a tub-bath after the third week.

Nursing After the Patient is Up.—The breasts should be supported by a light breast-binder or supporter. The same aseptic care is practised as when the puerpera was in bed, as mastitis may come on at any time during lactation. The woman is warned about infection and instructed how to prevent it. When up the mother holds her infant as in Fig. 71, sitting on a low rocker, a shawl over her shoulders and her foot on a low stool.

CHAPTER III

CARE OF THE CHILD

THE child is usually kept in its basket in the mother's room during the day, but at night it is taken to an adjoining apartment, so as to allow the mother to rest.

Visitors.—None but the husband, father, and the mother or other near relative are allowed in the lying-in chamber for the first week. After this a few near friends are admitted. The nurse must be assured that no visitor is allowed to enter who has been near a contagious disease, as measles, scarlatina, diphtheria, la grippe, "cold in the head," or pus cases, carbuncles, etc. Altogether, the puerpera should not be required to make too frequent effort to receive visitors, and the nurse may do much by tactfully reducing the number and length of the visits. Further, the child must not be disturbed by being exhibited to curious, if friendly, neighbors and relatives.

Bathing.—Until the umbilicus is healed the child should not be put in the full bath. Daily the head and face are sponged with lukewarm water, using a little Castile soap if necessary. The buttocks when soiled are sponged with cool water. The body is gently rubbed with benzoinated lard; this is removed by means of a soft towel, which is usually all that is needed to keep the infant sweet and clean. After the cord is off and navel cicatrized the child is given a full bath. In summer the child may be given a sponge-bath instead of the oiling, because the perspiration and fat macerate the skin.

Ordinarily no dusting-powder is needed, but if the infant shows a tendency to chafe—that is, if there is any intertrigo—a powder of stearate of zinc should be evenly applied after the bath. Much powder should not be used, and no friction is to be employed, because this rubs off the delicate epithelium. Where the skin is



Fig. 72.—Arrangements for bathing the infant.

already eroded, no friction is at all allowable, the nurse laying the cloth on the skin and rubbing her finger over it similarly to the use of an ink-blotter. In obstinate cases the physician will prescribe an ointment. The nurse should pay especial attention to the ears, the palms, the axillæ, and the groins, and in girls take care not to injure the external genitals. To remove the whitish secretions

which sometimes accumulate in the little labial folds, albolene is very successful. The nostrils are cleaned with cotton wrapped smoothly on a tooth-pick (an applicator), after softening the mucus with benzoinated lard or albolene.



Fig. 73.—Proper method for holding the infant during the bath. The fingers and thumb are distributed over the head and shoulders, so that the child cannot slip out, and also when it kicks that it cannot strike its head against the sides of the tub. The thermometer may be removed after the child is immersed.

In hospitals, where there is danger of carrying an infection on the skin, such as pemphigus or gonorrhea, from one child to another, special precautions are necessary: First, the nurse must watch for and report at once to her superior any eruption or sore, however slight, on the infant, and note the same on her record.

Second, the nurse individualizes the babies as much as possible, *i. e.*, she disinfects her hands and the tub, uses a sterile washcloth, etc., for each infant. Third, she isolates a child under suspicion, provides separate tub, lard, clothes, etc., dresses it wearing rubber gloves, or delegates these duties to another. Its clothes are thrown into a 3 per cent. carbolic solution before being sent to the laundry. Only by extreme care can spreading of the infection be prevented.

Care of the Navel.—The original dressing is allowed to remain as long as possible. If the babe is oiled, not bathed, or given only a half-bath each day, it is seldom necessary to change the cord dressing. This should be done whenever it is displaced or soiled by urine. The gauze is soaked off with 1 : 2000 bichlorid solution, washed with same or 70 per cent. alcohol, and dressed again with dry sterile gauze. If the cord is moist, a thorough washing with 95 per cent. alcohol will improve it. No powders are used unless ordered by the physician. In this manipulation the nurse need touch the cord only with the cotton pledget. The navel is treated exactly as a surgical wound.

The binder must be smoothly adjusted and sewed on, taking care that it is not too tight, impeding the infant's respiration. The nurse should observe and note the conditions of the cord, whether it is moist or dry, whether the line of separation is red and angry or clean and pink; whether or not there is a purulent discharge; if there be any odor—in other words, whether the navel is healing properly or not. (See Plate III, opposite page 351.)

The falling off of the cord should be noted, and the antiseptic treatment of the wound continued until it is cicatrized and healed over. Occasionally a little bloody oozing comes from the cord or from the surface left after it separates. The doctor may prescribe the appli-

cation of a little powdered alum to the spot, or a mixture of starch and alum.

The Eyes.—There are two important injunctions regarding the eyes: the first is to prevent infection from getting into them, and the second is to avoid mechanical injury, as the wiping of rough sleeves, scratching with rough clothes, or too brisk manipulations.

During the oiling or bath extreme care must be exercised to prevent fluid getting into the eyes, and this precaution must be observed throughout the puerperium. The skin of the infant may be infected with gonorrheal virus, and this, getting into the eyes, sets up severe inflammation, which may cause blindness.

If the Credè method for preventing ophthalmia neonatorum has been used, there may be, in three to six hours, some inflammatory reaction of the eyelids, with redness, swelling, and seropurulent secretion. No alarm need be felt at this. Cold applications to the lids and a few irrigations of the conjunctival sac with 2 per cent. boric acid or normal salt solution will relieve it. If a freshly made nitrate solution is used such reactions are exceptional.

Every morning the nurse washes the outsides of the lids with cotton wet in saturated solution of boric acid.

In normal cases this care is all that is needed, but should there be a continued mucopurulent discharge which glues the lids together, this must be gently soaked off with warm boric solution and the eyes irrigated with the same several times daily. Should a slight conjunctivitis resist this mild treatment, the doctor will prescribe a collyrium of sulphate of zinc or similar astringent, or one of the newer preparations of silver, as protargol or argyrol.

If on the second day or later a thin, cloudy discharge appears between the lids and runs down the cheek, and

the lids become swollen and of deep red color, little flocculi of fibrinopus being seen on them, the case is serious; the physician must be notified at once by telephone, because the case is one of ophthalmia neonatorum and requires instant and vigorous treatment. (See pages 347–352.)

The Bowels.—Unless the meconium is thoroughly evacuated, it is a good plan to give the infant castor oil at

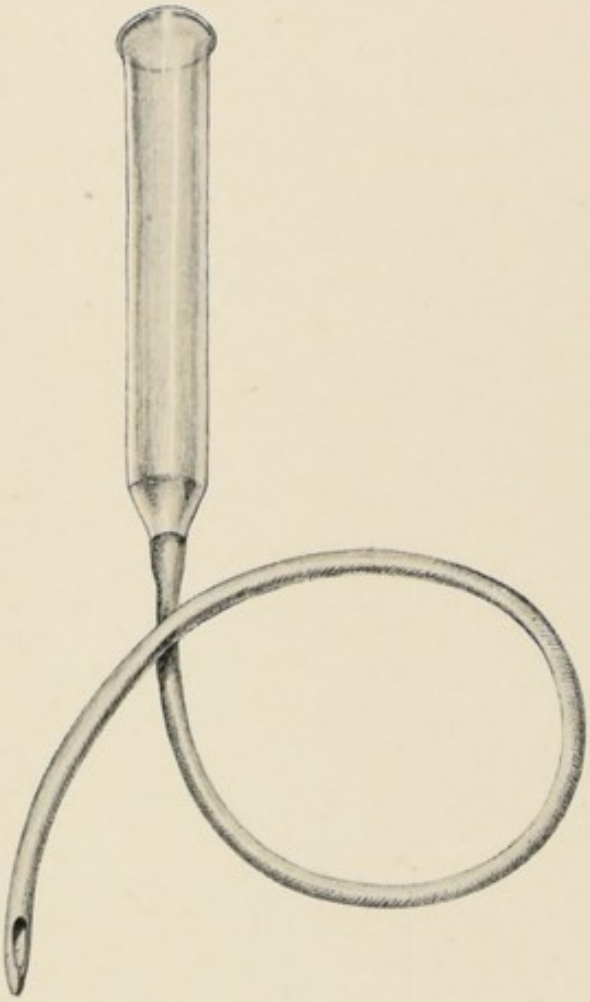


Fig. 74.—Rectal irrigator. A simple funnel will answer as well.

the same time the mother takes hers—that is, on the morning of the second day. If the bowels do not move freely, this is the best cathartic for infants. The castor oil is dropped into the child's mouth from a medicine-

dropper, not given from a spoon. Only in this way can one be sure the infant obtains the right dose.

The nurse should observe closely the number and character of the bowel movements, and note the same on her history-sheet. The condition of the infant is read from the bowel movements. If the infant is restless and colicky, with audible borborygmus (rumbling in the bowels), a colonic flushing of normal salt solution (0.6 per cent.) may be given. This is done with a soft-rubber catheter (size No. 10 or 12 American scale), to which is attached a little funnel or the barrel of a glass syringe (Fig. 74). The salt solution is allowed to run in and out, 2 or 3 ounces at a time, for five or ten minutes, until the bowel is well cleansed and evacuated. The room should be warm and the infant exposed as little as possible. The tube and funnel are boiled and sterile water used to make the salt solution.

The child is laid on its side across the nurse's knee. A rubber drainage sheet is arranged under the buttocks of the infant, and thus the discharges are conducted into a jar on the floor (Fig. 75). A catheter cannot be passed very far into the sigmoid flexure, and an attempt to do so is dangerous. If the tube is inserted beyond the sphincter, it is enough. Anything unusual (blood, mucus) is to be saved for the physician's inspection.

If the bowel movements are acrid and irritating, the anal region may become deeply eroded. This can almost always be prevented, but if the condition of the bowels cannot be improved, and especially if the baby is fed by the bottle, the disease is obstinate and hard to cure. There is danger in allowing the buttocks to become sore—danger of infection.

When the diaper is changed the buttocks and thighs are sponged off with a soft cloth and cool water, using

little and gentle friction. If the skin is healthy, no powder is needed, but if there are redness and beginning



Fig. 75.—Giving a colonic flushing. The infant rests on its left side, warmly covered. A towel covers the rubber drainage sheet.

irritation, stearate of zinc powder is applied, although not enough to form flakes.

If an erosion forms or threatens, no water at all may be used, but the buttocks are cleansed with the finest olive oil procurable (not vaselin), and the excess is removed with gentle pressure with an old linen towel or lintine. The cloth is used as one would use an ink-blotter. The stearate of zinc is also sometimes useful here, but if it fails, the pure oxid of zinc ointment may be applied. The physician's advice should be asked regarding all erosions, as they may indicate a constitutional taint. These instructions are not to take the place of the physician's prescription, but are given to those nurses who have to do much on their own responsibility.

Attention to the intestinal tract is of prime importance in preventing and curing this "chafe," or eczema intertrigo.

The Diaper.—It is important to have a large, thick, soft diaper, flatly folded and smoothly applied. Gauze diapers are useful for the first week. The use of rubber sheeting to prevent soiling the dress is bad; for this purpose an extra diaper should be wrapped around the trunk of the infant.

The diapers should be scrupulously clean, and soap alkali and washing-powder thoroughly rinsed out of them. If strong soaps are not thoroughly taken out of the fabric in the laundry, they irritate the delicate skin of the babe and may cause eczema. The same may be said of all the infant's clothes. A diaper wet with urine must be washed in water and dried before being used again. Even though the infant's urine is clear, when dried it gives off an odor and is irritating. In boys the diaper must be applied a little differently than in girls, care being taken that the parts are not pressed into an uncomfortable position.

Urination.—The infant should urinate freely, and, since it does so, is often wet. Unless the diaper is

frequently changed the skin will macerate and the nates become sore or chafed. The nurse should insist on having washed diapers for the infant. If the urine is allowed to dry on them, the salts concentrate and irritate the tender skin.

If the child passes the reddish brick-dust sediment described before and known as uric acid, this should be noted; it calls attention to the fact that the child needs more water.

If the child does not urinate within a few hours after birth, the nurse should carefully inspect the parts to determine the existence of any abnormality of structure. If she suspects such, the physician should be notified.

In order to get the infant to urinate, it should be given water freely; then it should be held sitting in a bowl of warm water for five minutes; a warm fomentation over the kidneys, a prolonged saline solution colonic flushing —all these may be used to stimulate the flow of urine. The condition may go thirty-six hours without danger. In one case the infant passed no urine for three days and did not suffer. Catheterization is necessary only in the rarest cases. It must be remembered that the child may urinate, unobserved, in its bath, or the urine, being colorless, leaves no stain on the diaper and evaporates before the nurse notices the latter. If the condition is obstinate, the physician will usually order a diuretic, of which the sweet spirit of niter is a favorite.

Nursing.—The child should be put to the breast after the mother has rested, which is usually about eight hours after birth, then every four hours until the milk comes in, then every three hours during the day and once during the night. The best hours to choose depend on circumstances. In the home, 7 and 10 A. M., 1, 4, 7, and 10 P. M., and once about 2 or 3 A. M., are usually the best. Before and after each nursing, if necessary, the

diaper is changed. Occasionally, if the tongue is coated it may be cleaned with cotton pledgets wrapped around the finger and saturated with boric solution. The nurse should be careful not to scratch the delicate mucous membrane, as it may easily be infected. Should the whitish pellicle on the tongue not come off readily, a pinch of baking-powder on the surface will accomplish it. The mouth requires no routine treatment. To try to disinfect the child's mouth to prevent breast infection is futile. In fact, the writer believes such attempts favor infection by making sores in the mouth at the angle of the jaws. Before nursing the nipple is washed with boric solution on an applicator, and afterward likewise, and if there is any soreness at all, the nipple is anointed with albolene or cocoa-butter. Neither before nor after nursing is the infant's mouth to be washed. Each nursing should last not over fifteen minutes, and the infant must be watched to see that it gets enough. The babe must suck and swallow too. If the breast is dry the child will suck, but will have nothing to swallow. A good supply is shown by the milk running out of the infant's mouth. It must not be allowed to sleep at the breast, because this macerates the nipple and favors the formation of cracks, which may easily lead to infection and mastitis.

By adhering to these rules the child soon learns correct habits, which make the whole period of infancy healthier and less troublesome.

In the long intervals between nursings the child may need a little warm water, but not more than 3 ounces a day, and it should not get into the habit of water-tippling—lying with the bottle in its mouth all night. Some children do not take to the nipple well, but fret and fuss over the nursing. This is sometimes due to too full breasts, a small or flat nipple, or because the milk

does not agree with the child, or because there is none there. Sometimes the milk is salty or bitter, which may be true of only one breast, or the milk may flow readily from one breast and not from the other. The child will prefer the easier side always.

Various expedients may be tried to get the child to nurse: First, squeeze a little milk in the child's mouth. Second, put a nipple-shield (Fig. 76) full of sterile water over the nipple; the child will empty this, and will learn to suck the milk following. Third, put a hot wet compress over the nipple for a few minutes before nursing to bring the "milk to the surface"—really to facilitate the making of milk. Fourth, start the flow with a breast-pump (Fig. 77), and then put the infant to the breast. Fifth, use, especially if the child is weak or premature, the teterelle. (See Fig. 196.) The mother sucks the milk into the bulb and then allows it to run into the child's mouth. Sixth, pump the milk and feed the child from a bottle until it is stronger and feels the sensation of hunger.



Fig. 76.—Glass nipple-shield.

The nurse must be convinced that the child gets sufficient nourishment. If there is no milk in the breast the child swallows air, and then suffers both colic and hunger. Some infants, especially little ones, fall asleep after nursing, and are "good children," but lose weight steadily and die of marasmus. If there is any doubt about the child getting enough milk at each nursing, it should be accurately weighed before and after being put to the breast. These weights are recorded, and the difference represents the amount swallowed. It is

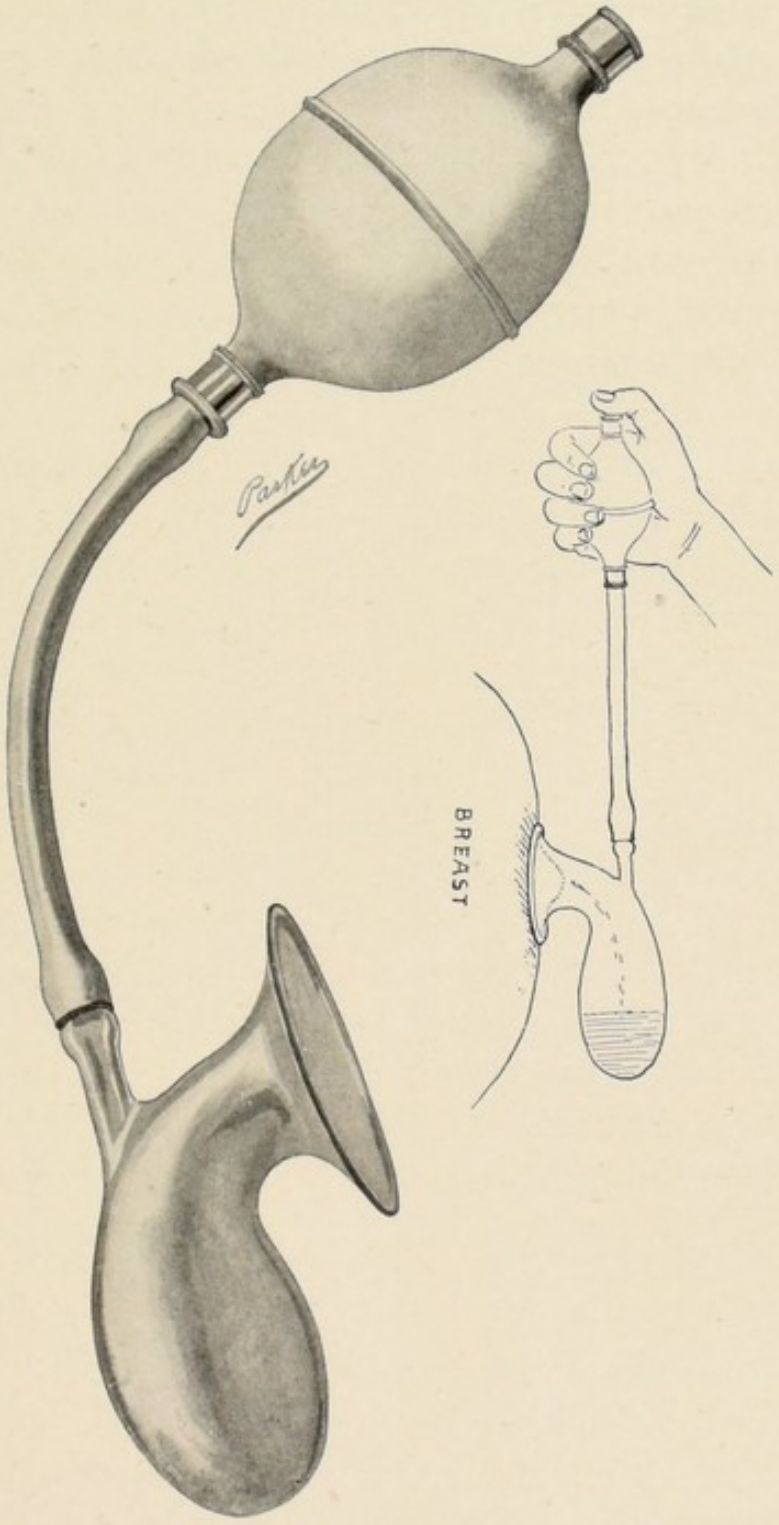


Fig. 77.—Breast-pump. Chicago Lying-in Hospital pattern. Diagram shows method of using it. Rubber bulb must always be vertical, so that milk never gets into it. One should pump with short, gentle squeezes, not to exhaust all the air, but to imitate the sucking of the infant. Only the glass portion of the apparatus need be boiled.

not necessary to undress the babe for these weighings. Adding these amounts for twenty-four hours gives the daily amount of nourishment. Herewith is a table showing the daily amounts taken by an infant for the first three weeks:

TABLE[1]

	Number of Nursings.	Average Amount Drunk at Each Nursing.	Total Grams.	Total Ounces.
1st day.....	2	2.5 grams	5.0 grams	$1\frac{1}{4}$ drams
2d "	5	29.0 "	145.0 "	$4\frac{3}{4}$ ounces
3d "	6	41.0 "	246.0 "	$8\frac{1}{4}$ "
4th "	7	58.8 "	411.6 "	$13\frac{2}{3}$ "
5th "	6	67.5 "	405.0 "	$13\frac{1}{2}$ "
6th "	7	73.0 "	511.0 "	17 "
7th "	6	92.2 "	553.2 "	$18\frac{1}{2}$ "
8th "	7	97.0 "	679.0 "	$22\frac{2}{3}$ "
9th "	6	93.0 "	558.0 "	$18\frac{3}{5}$ "
10th "	7	86.0 "	692.0 "	23 "
11th "	6	96.0 "	576.0 "	$19\frac{1}{5}$ "
12th "	6	93.0 "	558.0 "	$18\frac{3}{5}$ "
13th "	7	86.0 "	602.0 "	20 "
14th "	7	91.0 "	637.0 "	$21\frac{1}{4}$ "
15th "	6	93.0 "	558.0 "	$18\frac{3}{5}$ "
16th "	7	90.0 "	630.0 "	21 "
17th "	7	92.0 "	644.0 "	$21\frac{1}{2}$ "
18th "	6	96.0 "	576.0 "	$19\frac{1}{6}$ "
19th "	7	105.0 "	735.0 "	$24\frac{1}{2}$ "
20th "	6	112.0 "	672.0 "	$22\frac{1}{3}$ "
21st "	7	102.0 "	714.0 "	$23\frac{5}{6}$ "

The Diet.—For the first few days there is nothing but colostrum in the breasts and the baby gets this. The colostrum is laxative, because indigestible. The child needs water besides, which should be given every two hours, 1 ounce at a time. Most children are satisfied with these for the first two days, but sometimes it is necessary to administer food and water, and unless these are given the child will fret, cry, even develop fever—the so-called "starvation or thirst fever." One must

[1] This table is from Ahlfeld, and was from his own child.

be very careful not to call all fevers of the newborn starvation fevers, because most of them are due to sepsis—intestinal, bronchial, or from the navel or throat.

A fever later, especially when the child is on artificial food, is often due to intestinal fermentation, and subsides after castor oil and a colonic flushing have been administered. In a maternity hospital the child can obtain nourishment for the first few days from one of the nursing women in the wards, but in private practice, if the mother has no milk, artificial food must, if needed, be substituted. A dram of cream to an ounce of water, or weak milk of "peptogenic powder" may be given to tide the infant over until the secretion in the mother's breasts is established. *Before putting a child to any breast but that of its mother, the nurse must know that neither is syphilitic nor otherwise diseased.*

After the milk comes these foods should be discontinued. Should the mother permanently have no milk, or not enough, or milk of poor quality, artificial feeding must be resorted to, which is really a great calamity, or a wet-nurse must be procured, which is the lesser of the two evils. It is hard, sometimes impossible, to find a good wet-nurse, in which case the child must be given artificial food—a difficult and often unsatisfactory task. The nurse should urge the mother to nurse her infant, and only give up in the presence of real danger to herself or because the milk does not agree with the baby. Remarkable as it may seem, the milk of some mothers acts like an irritant intestinal poison to the infant and may produce enteritis or even death.

If there is a scarcity of mother's milk, one may try to stimulate the glands, first, by daily massage, cold bathing of the whole body, giving much fluid to drink—especially milk, water, cocoa, gruels, and oyster-stews, but no tea, coffee, beer, or malt liquors. The two last fatten the

patient and reduce the milk-supply. A strong baby is the best stimulant to the breasts, and if this fails to bring milk, usually there is no gland tissue there, and all efforts will be futile. Occasionally the milk-supply is not abundant until the patient is up and about and takes out-door exercise.

If the baby must be reared on the bottle, the first difficulty is to select the proper food, and infants show remarkable peculiarities in this way. Some will thrive on a preparation that seems to poison the next. Medical opinion also sways from one kind of feeding to another. (See chapter on Infant Feeding.)

If the mother can give the baby only one nursing a day, she should do so, because there is something in mother's milk that the finest chemistry cannot find nor imitate—a life-giving something—and it helps the baby to digest and assimilate the supplied food.

Weighing the Infant.—The child should be weighed directly after birth; it should be naked, but protected from the cold. Thereafter, every day before its bath, its weight should be taken and recorded.

The scale used should be an "even balance" grocer's scale, with a scoop on one side and iron weights on the other (Fig. 48). A sliding weight on a scale-bar in front gives the ounces. The scoop should be wired fast to its supports, so that the infant cannot shake it off. A napkin is placed in the scoop, and one of exactly the same size is folded up on the weight plate. These balance, and the actual weight of the infant is thus easily obtained.

If there is any suspicion that the child does not obtain enough nourishment from the mother, it should be weighed before and after each nursing, and the difference will show how much the babe has ingested. The amount varies with the age of the infant—1 or 2 drams

the first few days to 2 or 3 ounces by the tenth day; it varies in different infants, some taking less than others, this being governed somewhat by the child's size, and it varies at different nursings, a large nursing usually being followed by a lighter one, which means that the appetite of the child varies.

The Temperature, Pulse, and Respiration.—These should be taken A. M. and P. M.—certainly the temperature, and, when possible, the others also. The infant should have a record-sheet of its own, and all notable occurrences recorded. It is very difficult to count the respirations, and even normally they are irregular. With a little practice the pulse can be readily counted, the best place being just in front of the ear and when the child sleeps. The radial pulse is also sometimes countable.

The room in which the child lies should be airy, and kept at a temperature of about 72° F. It must be light, but the infant must not lie in too bright a glare. The child's feet are often cold, so a hot-water bag must be used, sometimes even in summer. The bag should be warm, not hot, so as not to burn the infant. The child must not lie with dresses moist from urination or vomiting, from a leaky hot-water bag, or from a bottle given it to drink.

All these precautions are especially necessary with premature or weak infants.

Training the Baby.—The infant must not be disturbed except for needed attention and for nursing. It must not be on show to all the relatives and friends. It must be handled carefully, and when being lifted up the head must always be supported and not allowed to fall to the back or side. When bathing the child the large abdomen or breasts must not be pressed too hard. After nursing the child must not be jarred, because it

may regurgitate the milk. The nurse must not allow the infant to get into bad habits—for example, water-tippling, peppermint-tippling, sucking on a nipple or the finger, water- and whisky-tippling, sleeping with its mother or other person, being taken up when it cries, held, rocked, or carried, etc.

By proper training the child may be taught to sleep nearly the whole night through, to sleep between nursings, and to cry only when hungry, uncomfortable, or sick. Adherence to the above rules will bring this about.

CHAPTER IV

PRESENTATIONS AND POSITIONS

HERETOFORE labor has been spoken of as if it occurred with the child always presenting by the head. Such is by no means the case. The fetus may present any part of its body to the parturient passage.

The term "presentation" has reference to that part of the fetus which presents itself at the internal os first for delivery. The most common presentations are occipital, breech, shoulder, face, and brow. Of all presentations, 96 per cent. are occipital and $2\frac{1}{2}$ per cent. are breech.

In order to study the mechanism of labor the physician must know what position the child holds in relation to the mother's pelvis.

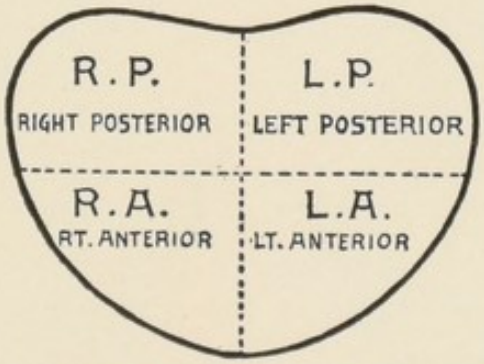
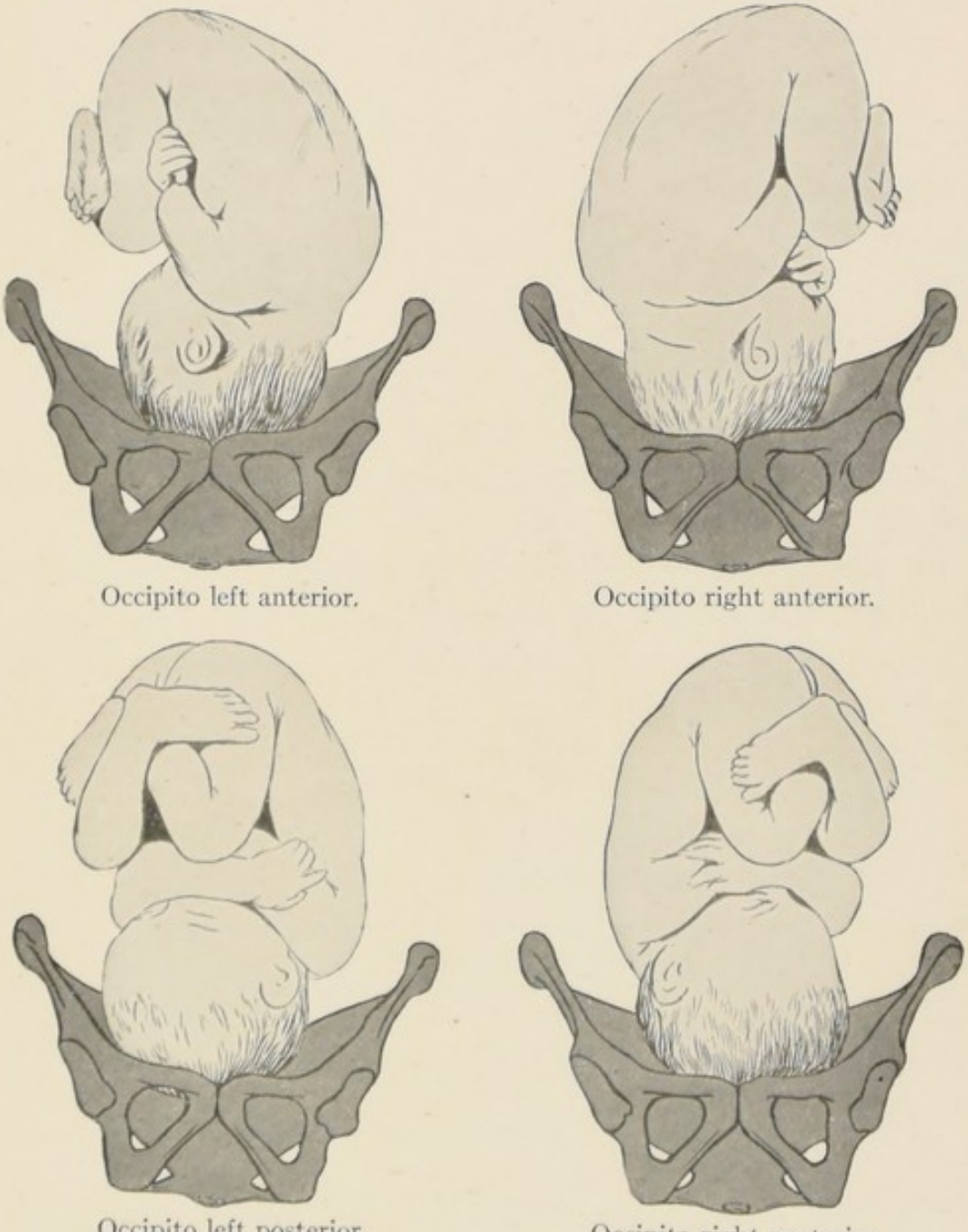


Fig. 78.—Diagram of the four quadrants of the pelvis.

The pelvis, therefore, is divided into four quadrants as follows: Left anterior, left posterior, right anterior, and right posterior (Fig. 78).

The technical term "position" has reference to the relation the presenting part bears to these four quadrants

of the mother's pelvis—for example, if the occiput occupies the left anterior portion of the mother's pelvis, we speak of an occipito left anterior position—O. L. A.



Occipito left anterior. Occipito right anterior.

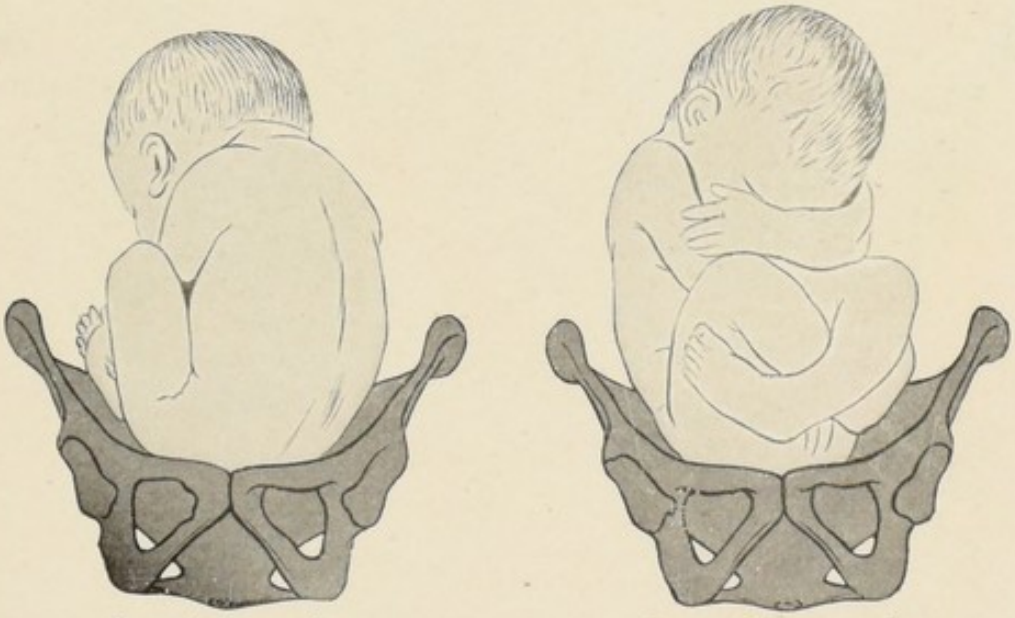
Occipito left posterior. Occipito right posterior.

Fig. 79.—The four positions of occipital presentation.

We choose arbitrarily a prominent point in the presenting part from which to determine the relation of the presenting part to the four quadrants of the pelvis.

This point is called the "point of direction." In vertex presentations the point of direction is the occiput; in breech presentations, the sacrum; in face presentations, the chin; in shoulder presentations, the scapula.

When a doctor seeks to determine the presentation and position, he must find out what part of the fetus is presenting and then what relation the point of direction bears to the pelvis, which gives him the position.



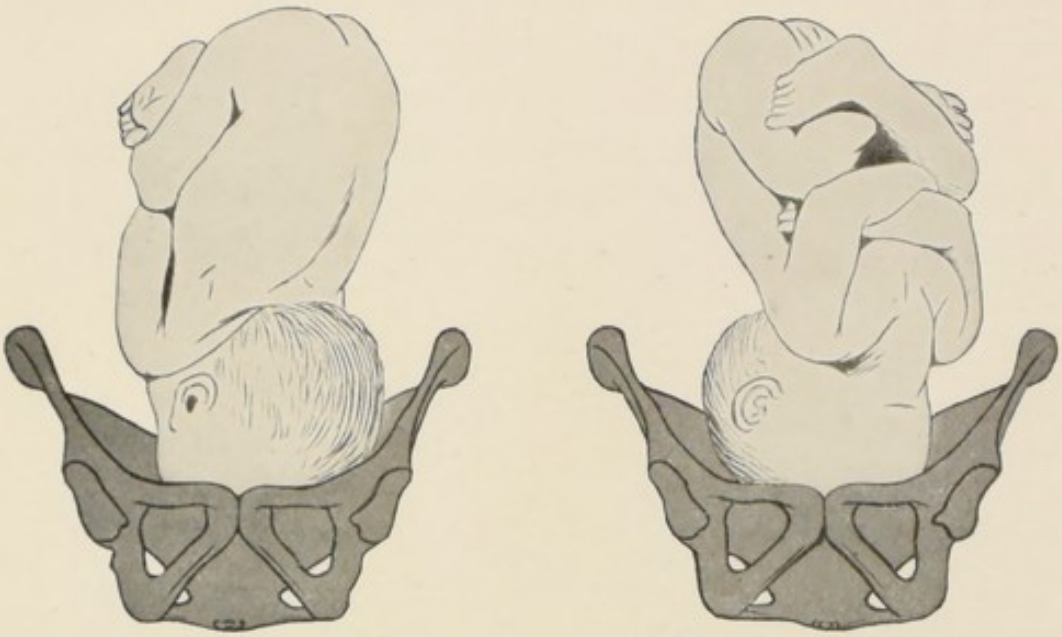
Sacro left anterior. Sacro right posterior.

Fig. 80.—Two of the positions of breech presentation.

The most common presentations are vertex (often called occipital), breech, face, shoulder, and brow. In breech cases the feet may be doubled under the child, as a tailor sits on a bench; the feet, one or both, may fall down and be visible at the vulva (single or double footling); the knee may come down, or, curiously, the legs may be extended upward along the chest so that the toes are against the face. These last are difficult cases, although most often breech deliveries are spontaneous.

In each of these presentations we have four or more positions: for the occiput, left occipito-anterior, O. L. A.;

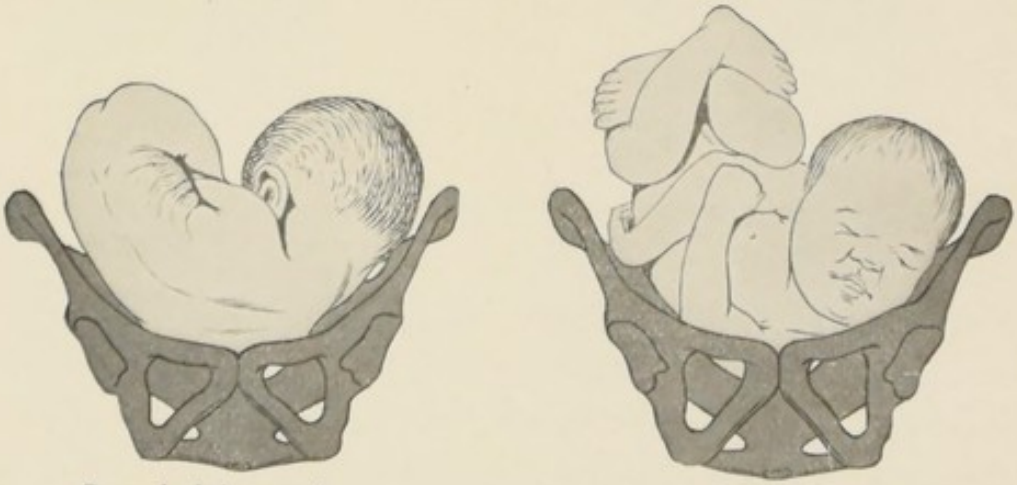
right occipito-anterior, O. D. A.; right occipito-posterior, O. D. P.; and left occipito-posterior, O. L. P. (Fig. 79).



Mento right posterior. Mento left anterior.

Fig. 81.—Two of the positions of face presentation.

The abbreviations are those of the Latin terms used for these positions.



Scapula left anterior. Scapula right posterior.

Fig. 82.—Two of the positions of shoulder presentation.

For the breech, the sacrum is the point of direction, and we have the sacro left anterior, sacro right posterior, etc. (Fig. 80). For the face, the chin is the point of

direction, and we speak of mento left anterior, mento right posterior, etc. (Fig. 81). In shoulder presentations we have scapula left anterior, scapula right posterior, etc. (Fig. 82).

The Diagnosis of Presentation and Position.—It is often desirable that the nurse be able to tell whether or not the presentation is normal. Particularly is this



Fig. 83.—Is the ovoid longitudinal or transverse?

true in country practice. With a little experience the nurse will learn how to determine the position of the child in the uterus in most cases. There are four principles in this diagnosis which may be put in the form of questions:

1. *Is the uterine ovoid longitudinal or transverse?* (Fig. 83). If longitudinal, the child lies in either head or

breech presentation. The nurse lays her hands along the flanks of the patient, and brings the large uterus between them. If the greatest diameter lies parallel with the mother, the uterine ovoid is longitudinal.

2. *What is over the inlet?* (Fig. 84). The nurse places the hands over the lower abdomen and presses inward

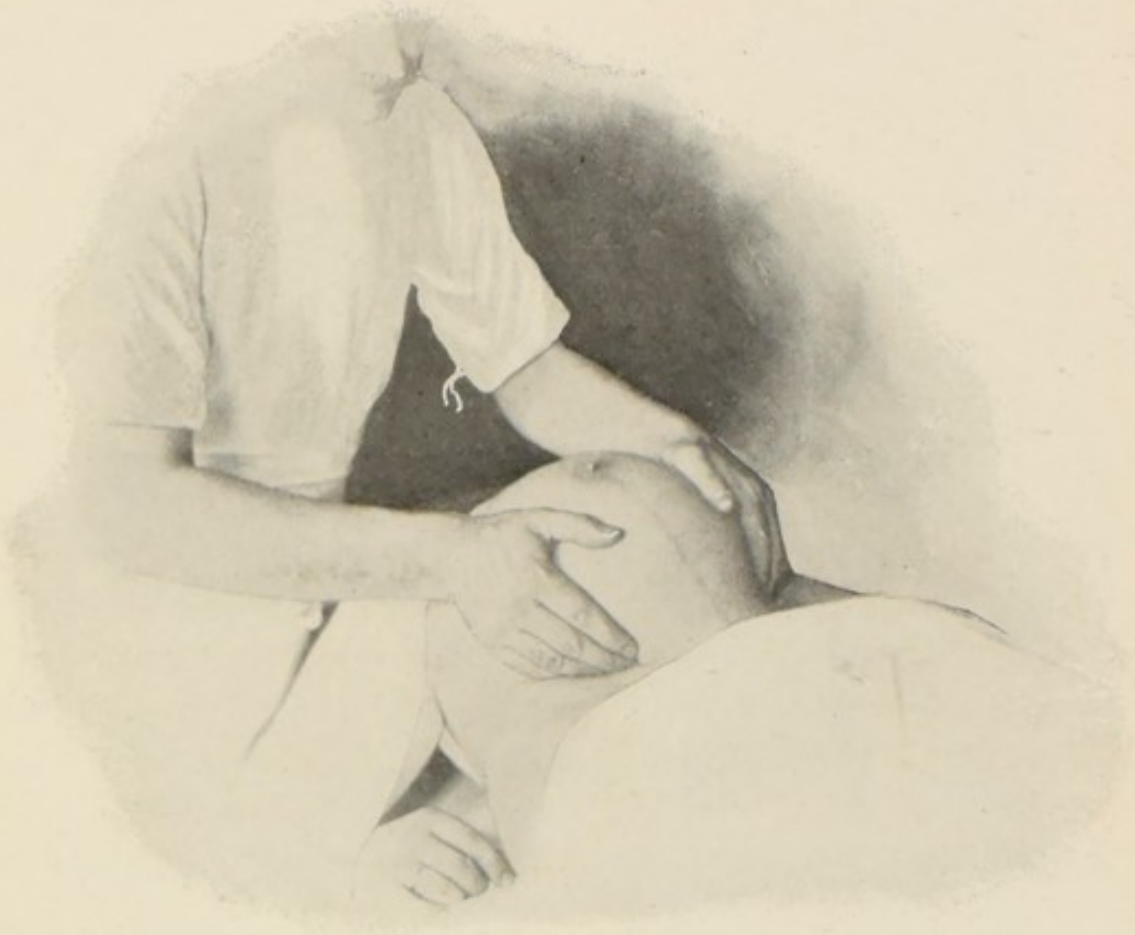


Fig. 84.—What is over the inlet?

with the finger-tips until she feels the lower pole of the child. If this is hard and round, it is the head; if soft and irregular, the breech.

3. *What is in the fundus?* (Fig. 85). The hands are placed in a corresponding position on the top of the uterus, and the same points noted.

4. *Where is the back?* One hand is placed on each side

of the uterus and, pressing inward with them alternately, the nurse determines which side is more resistant. The more resistant side represents the back.

With these points of information one can usually construct the diagnosis. For example, if the ovoid is longitudinal, the head over the inlet, the breech in the fundus, and the back on the left side, the case is one of occipito left anterior or posterior. There are many finer points

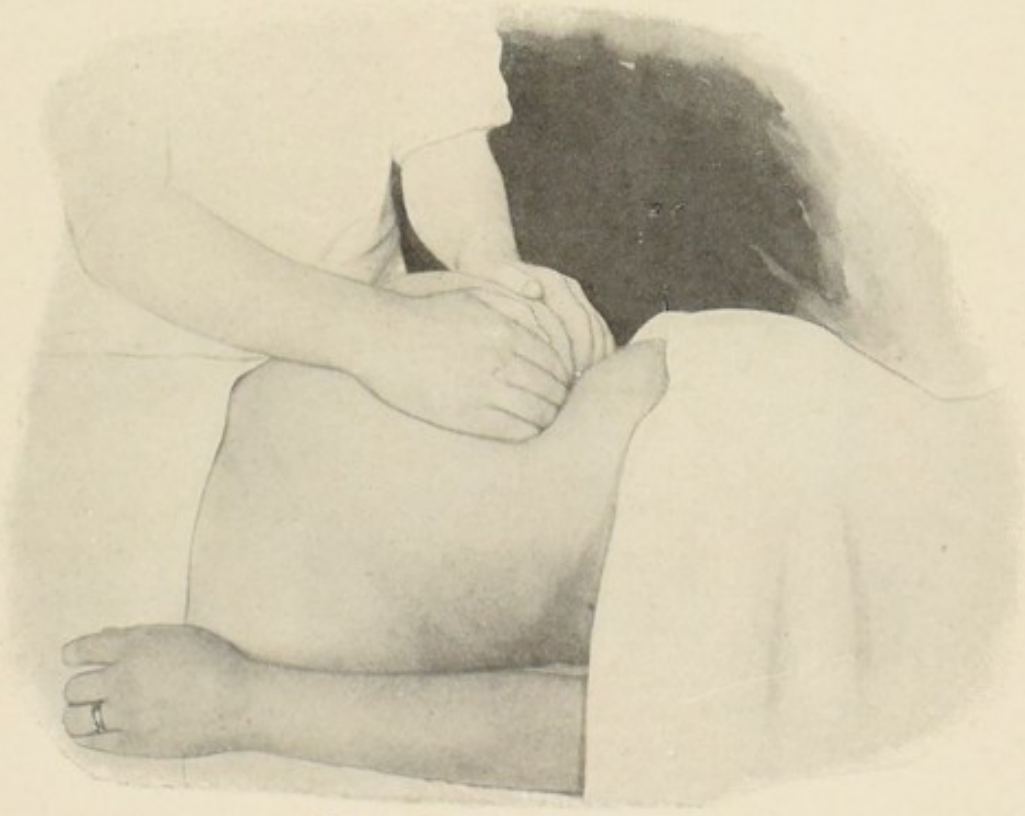


Fig. 85.—What is in the fundus?

in this method of diagnosis which the physician practices, but which cannot be gone into here.

Of all the presentations, the occipital is the most favorable for mother and child, and of the four positions of the occiput, O. L. A. is the best. Fortunately, this is the one most commonly met in practice.

The nurse is aware that the head, in order to pass through the pelvic canal, must rotate horizontally on the

neck, so as to bring its long axis to correspond with the anteroposterior diameter of the outlet. If the occiput is in the left anterior quadrant of the pelvis, it has only to rotate a small part of a circle to get in front; but if the occiput be in the right or left posterior quadrant of the

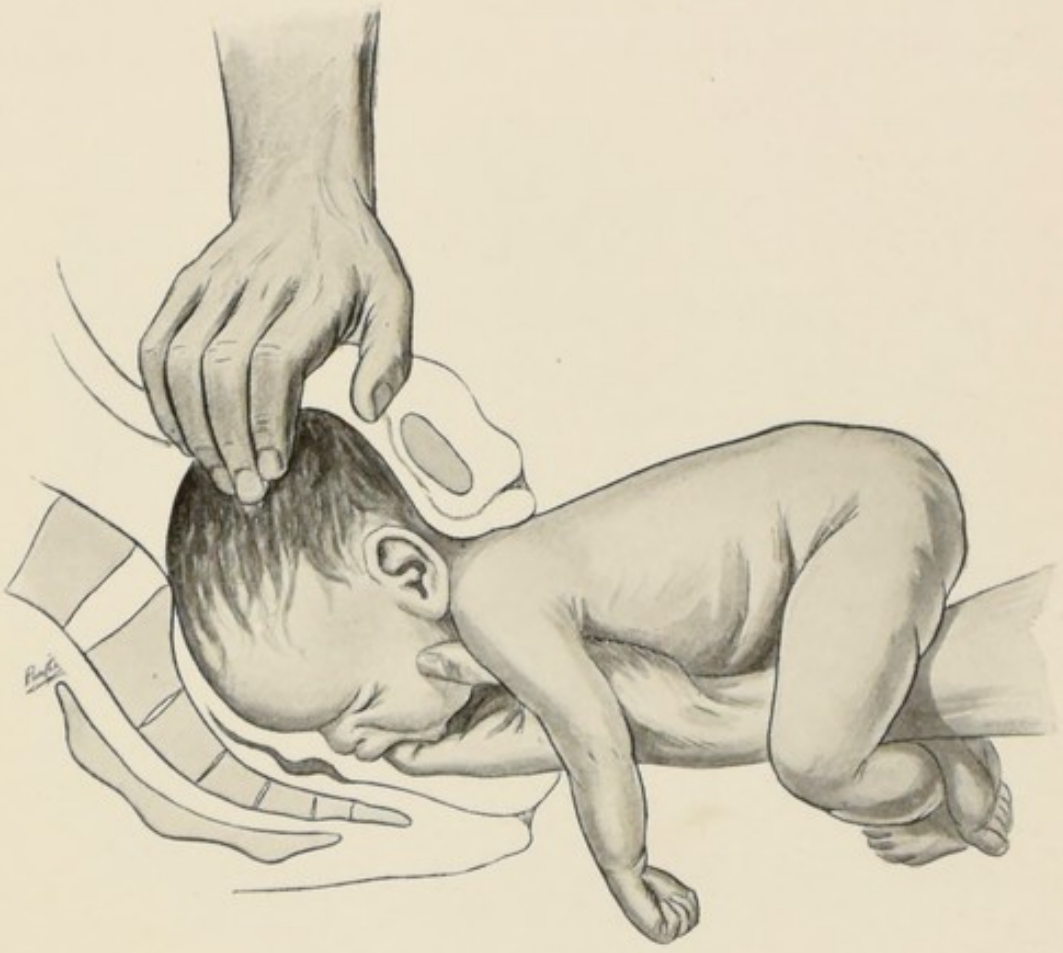


Fig. 86.—Wiegand-Martin method of delivering the after-coming head by flexion through seizure of lower jaw, and extrusion by means of pressure in axis of brim.

pelvis, it has to rotate nearly half a circle to get in front under the pubis. This rotation takes a long time, is painful and tedious, so that sometimes the patient's strength gives out before it is accomplished. Then the doctor must aid her with the resources of art. These are called "posterior positions," and the accoucheur

usually prefers not to meet them. On page 262 is a description of labor in occipital presentation.

Breech Cases.—The mechanism of breech deliveries is this: under strong pains the breech comes through the vulva and rises up toward the pubis, the accoucheur simply receiving the child as it appears. The legs now drop out as the child emerges; the patient bears down strongly, and the shoulders are delivered, after which, unless there is some abnormal delay, the head comes with the face over the perineum.

Should there be any delay in the delivery of the shoulders, the patient is exhorted to bear down, and an assistant, the nurse or the husband, makes steady pressure over the top of the uterus, thus forcing the child down. If this is not successful, the doctor delivers the arms gently, then inserts the fingers into the infant's mouth, and, with the other hand over the fundus of the uterus, carefully and slowly brings the face over the perineum, after which the occiput comes from behind the pubis (Fig. 86).

Shoulder or Transverse Presentation.—When the child presents other than longitudinally we speak of transverse presentation. The laity call it a "cross birth," and it is a serious accident, for, unless the infant can be turned so that its long axis corresponds with the long axis of the mother, either one or both of the lives will be lost. As soon as such an unusual condition is discovered the accoucheur will turn the child into a more favorable presentation. This operation is called version.

CHAPTER V

OBSTETRIC OPERATIONS

The frequency of obstetric operations in some localities is out of proportion to the actual demands. The practitioner, trusting to the safety promised by the new aseptic and antiseptic technic, attempts and performs many operations which in former years were considered dangerous and were employed only in extreme conditions. As a result of this the mortality of child-bearing women has not decreased as much as it should have done by grace of sterile operating. Those men who have command of a good aseptic technic are the ones that appreciate the dangers of all operations and the safety of leaving the case to nature, while those men who cannot practice asepsis properly are the ones that are bold in operating, basing their confidence on the success obtained by their skilful and more conservative confrères.

The general practitioner will attempt obstetric operations of the gravity of capital laparotomies when he would not think of performing the latter himself, but would send the patient to a skilled abdominal surgeon. The idea of a specialist in obstetrics is fast gaining ground among the better educated classes, and they are demanding a higher standard of obstetric work from their doctor, and, when this demand is unsatisfied, are seeking the accoucheur who devotes his time and efforts to this particular work.

The general mortality of eclampsia is 33 per cent.; of placenta prævia, 15 per cent.; of rupture of the uterus, 60 per cent., and yet inexperienced practitioners will under-

take the care of these cases unconcernedly, while if the patient had appendicitis the best surgeon obtainable would be called, although the mortality from appendicitis is seldom more than 10 per cent., and in some hands only 3 per cent.

The child-bearing woman is neglected, both in regard to her medical attendance and her nursing, and it is largely her own fault. She does not demand the highest obstetric skill in her accoucheur, nor does she always pick out the best obstetric nurse obtainable. While for a surgical or gynecologic operation or for a medical consultation all considerations are brushed aside and the *best* man selected, for a confinement some "old friend of the family," or "a married man," or "one who does not make so many preparations," or "one who does not charge so much," is selected, the patient entirely forgetting that conditions may arise that will suddenly throw her into unprepared, unskilful hands, where, to save her infant's or her own life, the most rapid, dextrous operating may be necessary.

For her nurse, some "monthly" nurse or a "woman that has nursed many cases" is often chosen, and in the emergency which so often arises the unwise mother or the innocent babe is the sufferer.

Lack of space prevents going further into this vitally important subject, but these propositions may be easily defended by reference to the state mortality records and case-books of the gynecologists.

1. Except in women of perfect health, labor is not a physiologic process, and is always beset with dangers of no little gravity to both mother and infant.

2. The importance of a labor is minimized by the public and also by the general practitioner, and to a much greater extent is the seriousness of the obstetric complications underrated.

3. The practice of obstetrics requires the highest kind of surgical skill, a complete and consistent technic, a special and extended experience in normal and pathologic labors, a clear head, unbefogged by alcoholics, a steady hand—not one trembling from use of tobacco or other drugs—a brave and courageous spirit, one that, seeing danger, steps boldly in to rescue one or both lives from peril, and a sympathetic heart, yet one strong enough to allow the mother to suffer pain when it is for her good. Added to these must be the willing sacrifice of the personal comfort and convenience which obstetric work so often demands.

The public, by honoring the obstetrician and remunerating him properly for his arduous labors, will draw to this specialty the best minds and the most skilful hands, and thus serve its own interests better than it is now doing. There should be at least one obstetric specialist in every community. These remarks apply with equal force to the nursing.

Preparation for Operation.—The general rules of surgical nursing apply in every way to obstetric cases. Everything that is liable to come in contact with the patient must be sterile. It is not true that the stringent rules of asepsis in general surgery may be disregarded in obstetrics. Therefore the nurse will need no advice to prepare sterile towels, sheets, pledgets, gauze, basins, brushes, hot and cold sterile water, etc. All these things the obstetric, as well as the general, surgeon needs.

Obstetric operating is more bloody than any other, and there are many factors which make it the most mussy. Such are liquor amnii, meconium, vernix caseosa, and sometimes urine of the baby, the bowel movements and urination of the mother, all of which discharges not seldom take place during the delivery. Aside from the

necessity of using much linen and many pledgets, there is great danger of infecting the mother from the fecal matter. Deaths have occurred because of it.

Further, obstetric operating requires more exposure of the field than any other, and the patient may take cold. Frequent changes of the position or attitude of the patient may be required, so that sterile sheets are thereby disarranged. The nurse must see, therefore, that the patient is not too much exposed, either to cold or to infection. Obstetric operations are not the deliberate technics of the surgeon, but often necessarily rough and rapid, and with the exhibition of much physical strength. The nurse must not lose her presence of mind and imagine the patient will be torn to pieces, though, sadly enough, in unskilled hands, such may be literally true. Properly, a man may use power of 150 pounds and not injure the patient or the baby. Improperly used, 10 pounds may do damage.

Obstetric operating is full of surprises and acute emergencies, therefore the nurse must keep her mind focused on the doctor's work. If she has the room, tables, supplies, etc., properly prepared and arranged things will go more smoothly. So she should, as a labor progresses, like a general during the battle, frequently survey the field to assure herself that everything is in readiness.

If, as the labor goes on, the possibility of an operation is considered, the nurse should provide a suitable operating table. Most physicians, unfortunately, content themselves with putting the patient across the bed. This is to avoid alarming the patient, but while the doctor may spare the woman a little nervousness, he often does her and her babe real injury and is unjust to himself. I know that both women and babies have been lost because the physician did not avail himself of the best

auxiliaries obtainable for his work. It goes without saying that an operation can be better performed on a proper table than on a low, back-breaking bed.

The physician who does not insist on the best possible conditions in which to work is unfair and unkind to the mother and babe, and unjust to his art.

The accoucheur should have plenty of assistants for obstetric operations. A rational mind cannot understand why an accoucheur, when fully able to do other-

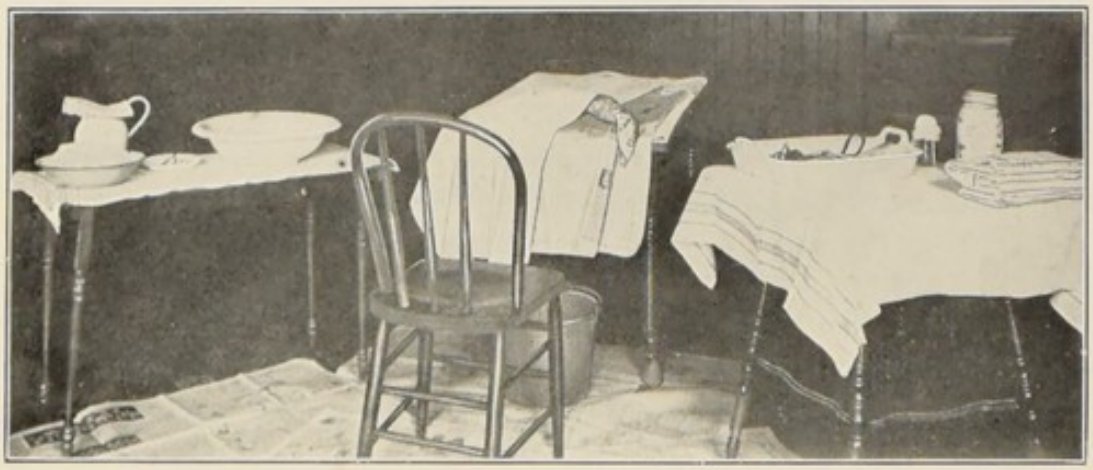


Fig. 87.—A room in a private home arranged for operation. In the center is the kitchen table with a Kelly pad made of newspapers, and covered with a sheet. To the right is a euchre-table carrying a pile of sterile towels, a jar of pledgets, a bottle of sutures, and the instrument pan. On the left is a sewing-table with one bowl of 1 per cent. lysol, one bowl of 1: 1000 bichlorid, each with pledgets, a pitcher of fresh hot lysol solution, and a saucer containing scissors and tape for the cord.

wise, should work short handed in such difficult and serious operations, when the surgeon, for his simplest operations, has an anesthetizer, at least one other assistant, and one or sometimes two nurses. This lack of assistants throws extra work on the nurse and often overtaxes her strength. If no other nurses or physicians are obtainable, the nurse should call some courageous woman to hold the limbs of the patient while on the table. The husband usually cannot be relied on; he is likely to faint.

The room should be arranged to resemble as closely as possible the operating room of a lying-in hospital, and every house has the necessary tables, basins, etc., so that this can almost always be done if the will is there (Fig. 87). The instruments vary with the operation to be performed.

Preparation of the Room.—A kitchen or library table makes an excellent operating table; a sewing-table

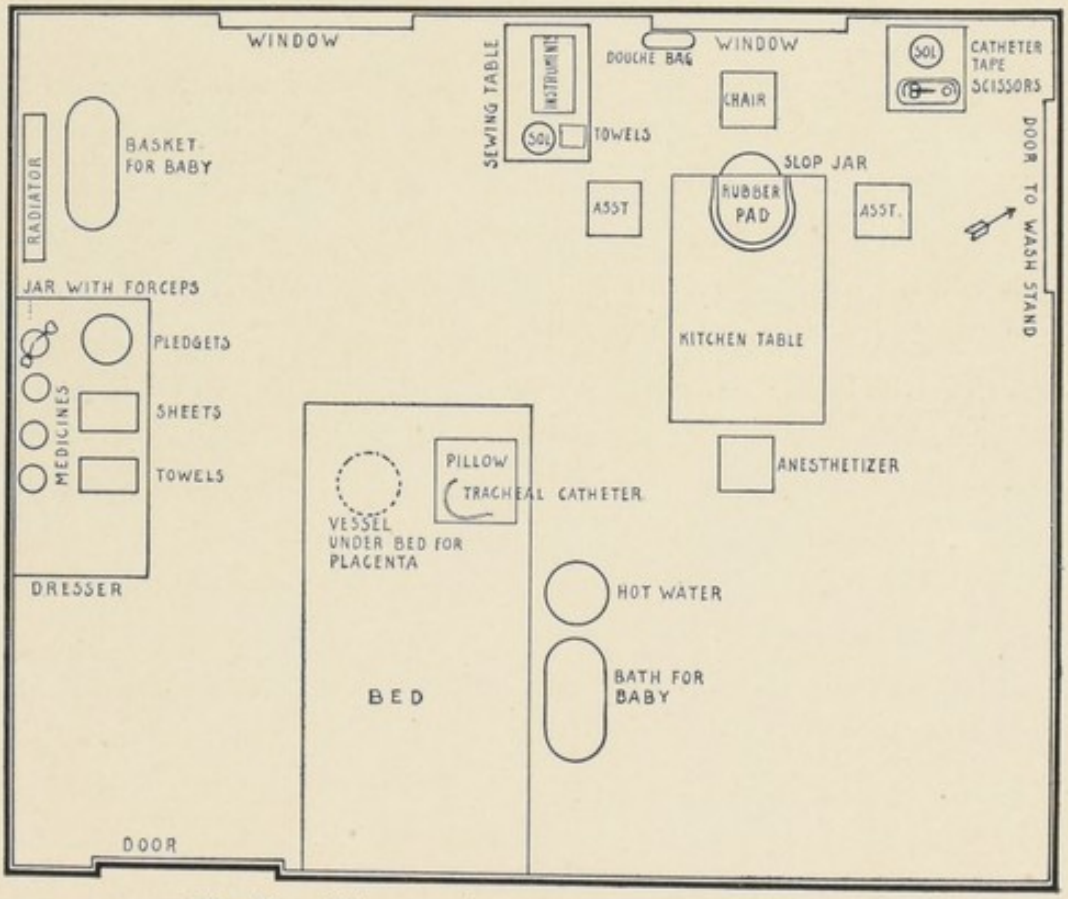


Fig. 88.—Diagram of room arranged for operation.

does well for the instruments and basins; a euchre-table gives additional space. Two kitchen chairs with a table board on them make an excellent side table. A blanket is folded so as to make a pad to put under the patient; this is covered with newspapers. A roll of newspapers is shaped like a Kelly pad, covered with a rubber sheet, or, in the absence of this, with more newspapers, and

pinned in shape with large safety-pins. Over all is thrown a clean sheet. Care is taken to protect the floor around the place of operation. A rug is removed; carpet is covered with heavy paper or a rubber sheet. The sewing-table is put on one side of the operator, within easy reach, and yet far enough away not to interfere with his motions. It holds the hand solution (with a brush in it), the basin of pledgets lying in an antiseptic solution (to wash the parts with), and a saucer with a catheter, scissors, artery clamp, and tape for tying the cord lying in lysol solution. The other table stands on the other side in a corresponding position. It carries the pan of boiled instruments, a pile of clean or, preferably, sterilized towels, a jar of sterile pledgets, and the suture material. A kitchen chair is placed before the table for the operator (Fig. 88).

Not far away the nurse places a pillow covered with towels, with a tracheal catheter handy, and next to it a bath-tub with hot water. These preparations are for the resuscitation of the newborn if it should arrive asphyxiated. The hot-water bag is wrapped in the baby receiver and placed on the pillow.

The sterile douche-bag is gotten in readiness, being hung near the table, and the solutions in the basins are replenished and warmed by the addition of hot water just before the patient is placed on the table. Then the nurse assures herself that she has a good supply of hot and cold sterile water.

Preparation of the Patient.—If the woman comes to operation in the course of an ordinary labor, she is already partly prepared and needs only an antiseptic washing after she comes on the table. If the operation is an emergency, the patient had better be prepared on the table, and then the ordinary surgical method is here employed—shaving carefully the hair, scrubbing with

soap and water, with bichlorid 1 : 1500, or lysol 1 per cent., or both. Some operators use tincture of iodin. (See p. 110.) The nurse should ask the accoucheur if she is to give the patient a vaginal douche and catheterize her. Most operators dispense with douches nowadays, and catheterization is usually done after the patient is put on the table.



Fig. 89.—Patient in modified lithotomy position for operative delivery.

After the preparation, sterile leggings are put on and the body protected by a blanket and sterile sheets. The exact position a parturient should hold, for operative delivery from below, is shown in Fig. 89. The buttocks are brought 3 inches over the edge of the table. The Kelly pad should have no sleeve, nor should the air-

cushion project beyond the edge of the table. The legs are held in a modified lithotomy position by an assistant, on each side, with one hand on the instep of the foot and the other at the knee. If there is a lack of assistants to hold the legs, the patient is arranged as in Fig. 90, with a sheet supporting the limbs.

A large square sheet is rolled together on the bias, the middle placed around the shoulders, and the ends are

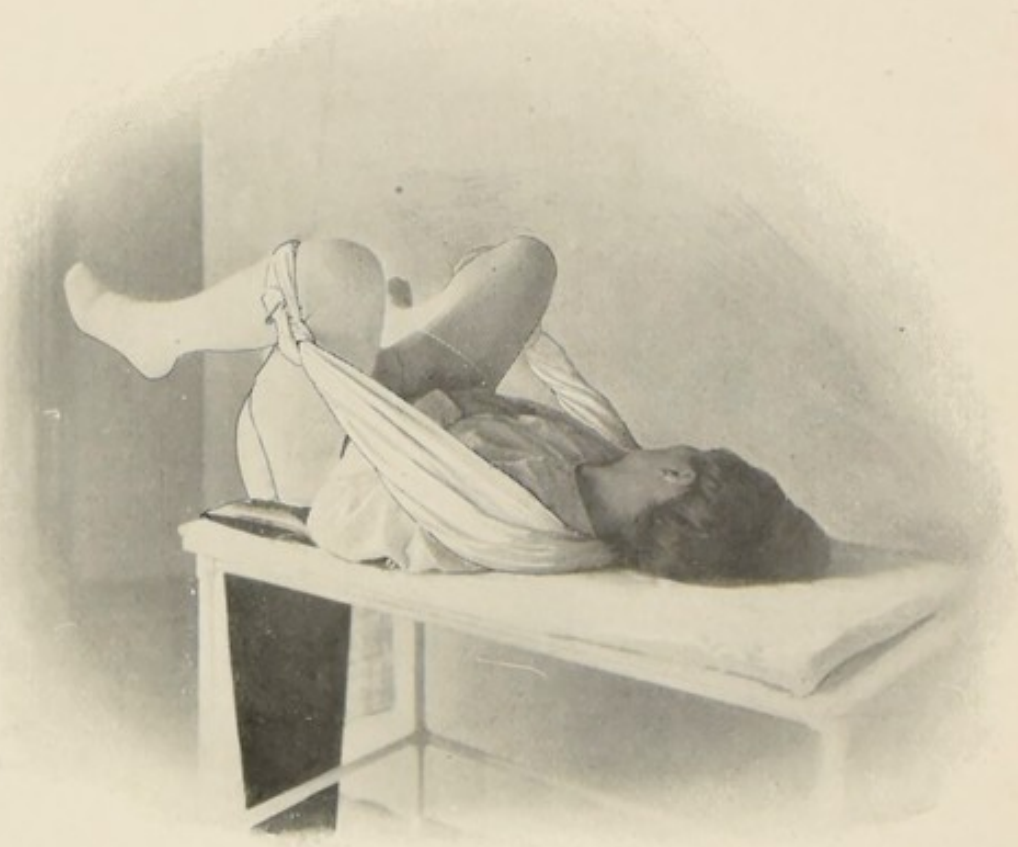


Fig. 90.—Lithotomy position with limbs supported by a sheet-sling.

tied securely around the outside of the limb just below the knee. After the knot is firmly tied, for additional security the end of the sheet is pinned. The sheet should be stretched over the shoulder, not over the back of the neck. The nurse must remember that this position is very fatiguing to the patient, even under an anesthetic, and the limbs should be stretched out occasionally during

the operation, and the sheet removed at the first opportunity after it.

Preparation of Instruments.—The physician will usually select such instruments as he will need for the particular operation to be performed, but the nurse should familiarize herself with the names and appearance of those commonly used, so as to get for him whatever asked. The instruments should be boiled in a 1 per cent. soda or a 1 per cent. borax solution for at least five minutes before the operation. If the physician carries a pan in his satchel for this purpose, it is much better than if the nurse has to use the wash-boiler, fish-boiler, roasting-pan, or other large household utensil. In general it is best to use as few house utensils as possible in this work. Nickeled instruments tarnish if boiled in water without an alkali. For this purpose soda bicarbonate or washing-soda is used, 1 dessertspoonful to 1 quart of water, borax in the same proportion, or a little lysol. Lists of the instruments needed for the most common operations will be found with the descriptions of these operations.

Light and Heat.—These two important factors must receive adequate attention. In the daytime the operative end of the table is put toward the window, and at night toward the center of best light. In country practice a sufficient number of good lamps, filled and trimmed, should be at hand.

The room must be warmed, as the patient is often much exposed, and the child too should be given a warm welcome. When the operation is prolonged, and in abdominal work, a few warm-water bottles should be laid alongside the chest and arms. In hospitals the operating table may be provided with a hot-water pan or an electric heating pad. Both must be watched for overheating.

The bed should be warmed for the reception of the patient after the delivery, although usually there is not so much shock following obstetric operations as follows severe surgical measures.

Anesthesia.—The nurse occasionally has to administer the anesthetic, but she should always have it understood that the physician assumes the responsibility. It is best, in such cases (which, in the writer's opinion, should not occur), for the physician to put the patient to sleep and let the nurse continue the narcosis. For operations the full surgical anesthesia is employed. In justice to all concerned, an anesthetizer ought to be employed.

The face should be smeared with vaselin to avoid the unpleasant burns that may be produced by chloroform, and care should be taken that none of the latter is dropped into the eye.

In small rooms, where gas is burning and chloroform is used, the gas decomposes the chloroform and irritating vapors are liberated. These vapors are more active in the presence of steam, and they are poisonous when concentrated. Fatalities have been reported. Coughing and sore throat are the milder symptoms. To avoid these evil effects the nurse will provide free ventilation in the confinement room.

The author prefers ether as an anesthetic. While the danger of explosion from an open flame is present, ordinary care will obviate it. The mask and bottle should not be within 8 feet of the grate or less than 3 feet from the gas jet. Ether vapor is heavy and sinks to the floor.

Care After Operations.—After the delivery the physician has usually cleansed the vulva of blood, but he leaves the nurse to clean the nates and limbs. This she does with a towel wet with warm solution, taking extreme care not to approach the perineum with the

cloth or disturb any packing that might have been inserted.

The abdominal binder with T, holding the vulvar dressing, is now snugly applied, after which the patient is removed to her bed. Great care and gentleness are required during this procedure so as not to jar the woman, and the head must be held low, so that fainting is prevented. The nurse now has to rearrange the room while the physician or his assistant watches the patient and the infant; she cannot do all three. Bloody pads, pledgets, and the placenta (the last only after the physician has inspected it) are wrapped in newspapers and sent out to be burned. Bloody towels and sheets are thoroughly rinsed in cold water and wrung dry before being sent to the laundry.

The instruments are thoroughly washed in cold water and scrubbed with a brush, especial care being given the locks, hinges, and corrugations. Then the darkened spots are scoured with damp Hand Sapolio, the instruments then scalded, and dried out of a hot lysol solution; being hot, they dry quickly and do not rust. After septic operations the instruments should be boiled in an alkaline solution before being put away.

Care of the Child.—After operative delivery the child requires special guarding, as it is likely to choke up with mucus, or it may become cyanotic because its lungs, not having been fully unfolded (atelectasis), do not present enough air surface for oxygenation of the blood. If the infant is troubled with mucus, this should be removed by the little finger covered with a soft linen cloth. Then the child should be placed on its side, with the head lower than the chest; the mucus thus escapes from the side of the mouth. A little water may be given. It carries the mucus down with the swallowing action.

Should the infant turn blue, the case is serious and the physician should be notified. While he is coming the child may die, so the nurse must do something to save it. (See chapter on Asphyxia Neonatorum.)

The nurse may glance at the navel to see if it is securely ligated, and that there is no hemorrhage from it. If the head of the babe has been injured by the forceps, great care is required to prevent infection. In the absence of instructions from the physician the little wounds are washed with 1 : 2000 bichlorid solution, dried, and dressed with sterile gauze sewed on the head like a cap. The physician's attention should be directed to these and other unusual conditions of the newborn. It is important that a child delivered by an operative procedure be kept specially warm, as it suffers shock. This is a fact not sufficiently appreciated.

Care of the Mother.—The usual attention given the mother after labor will suffice here unless the operation has been very difficult, with lacerations of the soft parts, or of a special nature, as symphysiotomy or cesarean section. The bed should be warmed, the uterus watched carefully for relaxation and hemorrhage; the room should be aired and darkened.

After-treatment of special operations will follow the description of same.

MAJOR OPERATIONS

The Forceps.—The most common operation is the application of forceps. When the woman has labored hard and long, and in spite of her best efforts cannot deliver the head through the pelvis, the physician lends her aid by means of the forceps. This instrument should never be applied until the woman has proved her inability to deliver the infant or to deliver it quickly enough for its safety or her own. The baby may be a little larger than

usual, or the parts not so elastic and dilatable as necessary, or the nervous system may prove unequal to the strain of labor. This last is more common in the delicately bred woman.



Fig. 91.—Simpson's forceps.

The instrument was invented by a member of the Chamberlen family in 1683, and was held for many years as a secret. It consists of two blades which are applied separately to the sides of the head and locked. By traction on the handles the head is delivered, the body

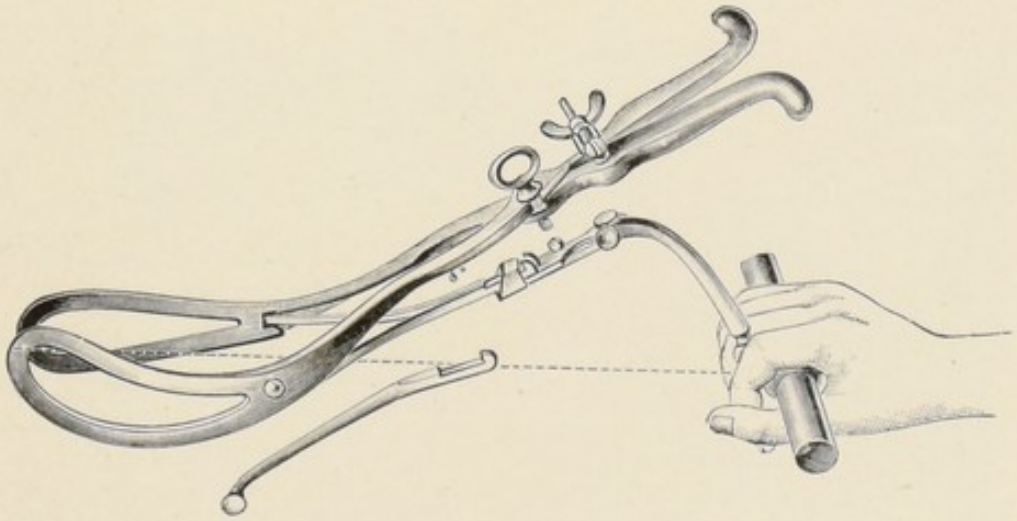


Fig. 92.—Tarnier's axis-traction forceps. Below is one of the traction rods.

following (Fig. 91). Unless properly applied and manipulated the instrument may do great injury to the mother's organs, and also damage the child more or less permanently.

The axis-traction forceps (Fig. 92) is larger than the Simpson, the type of ordinary forceps. The axis-

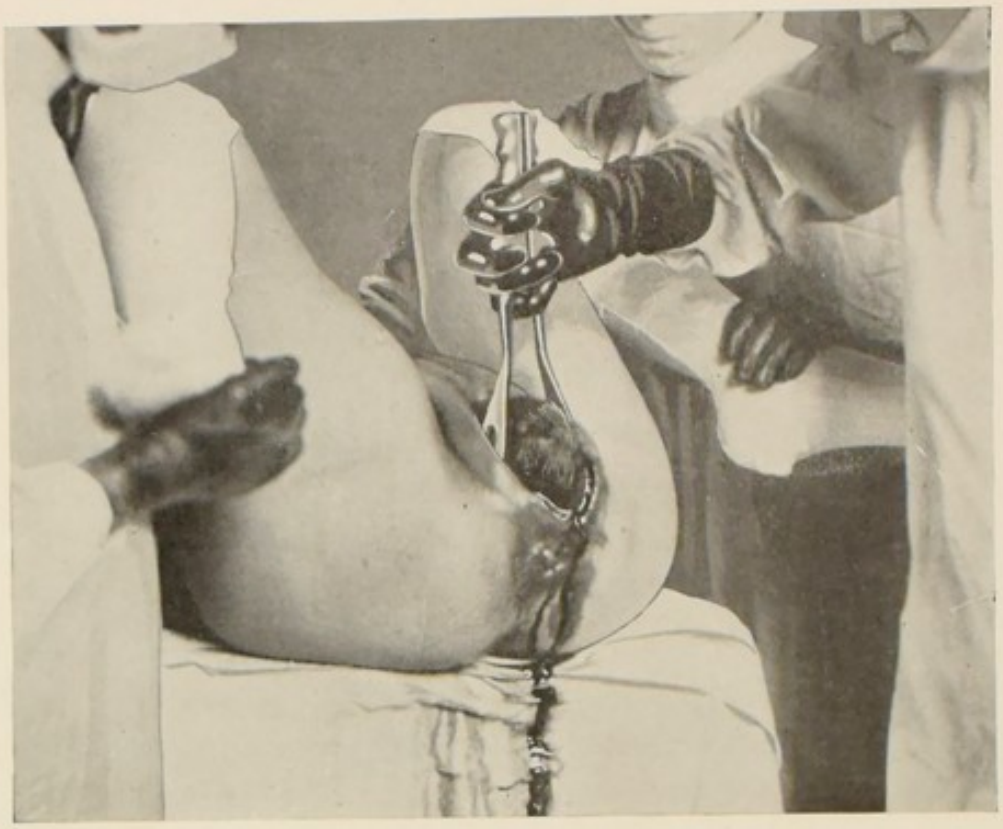


Fig. 93.—Delivery of the head, after episiotomy. (A photograph.)

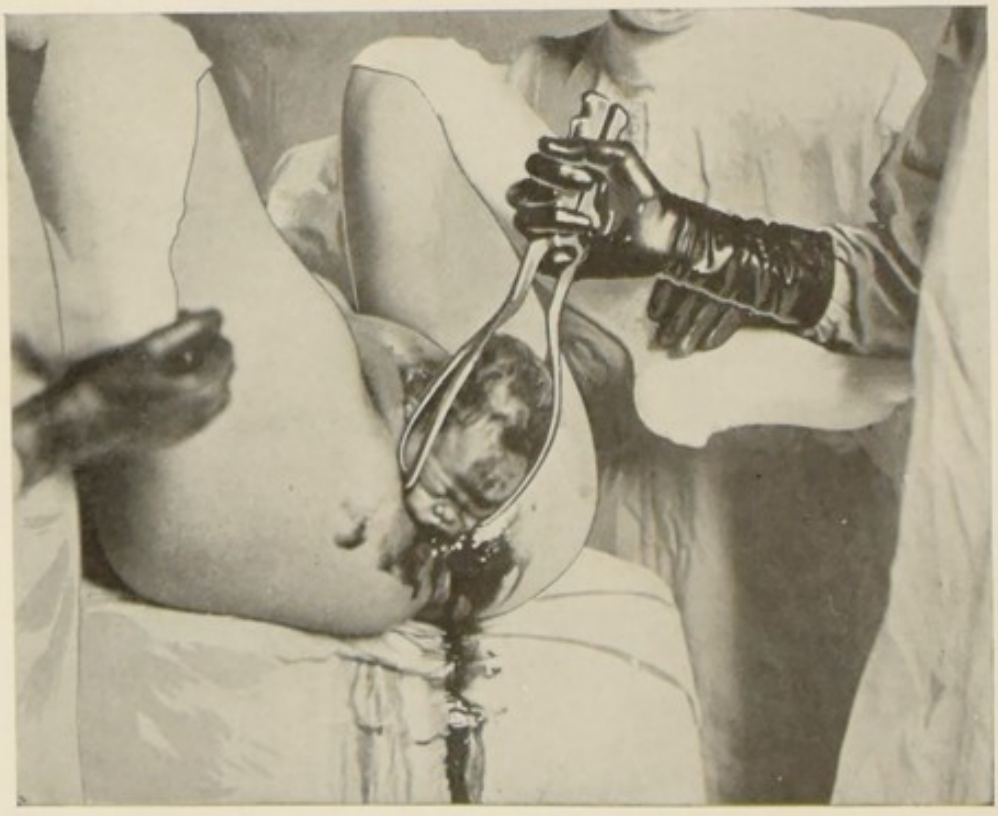


Fig. 93*a*.—Head just delivered. (A photograph.)



Fig. 94.—Delivery of anterior shoulder. Nurse holds ready swab for wiping out baby's mouth. (A photograph.)

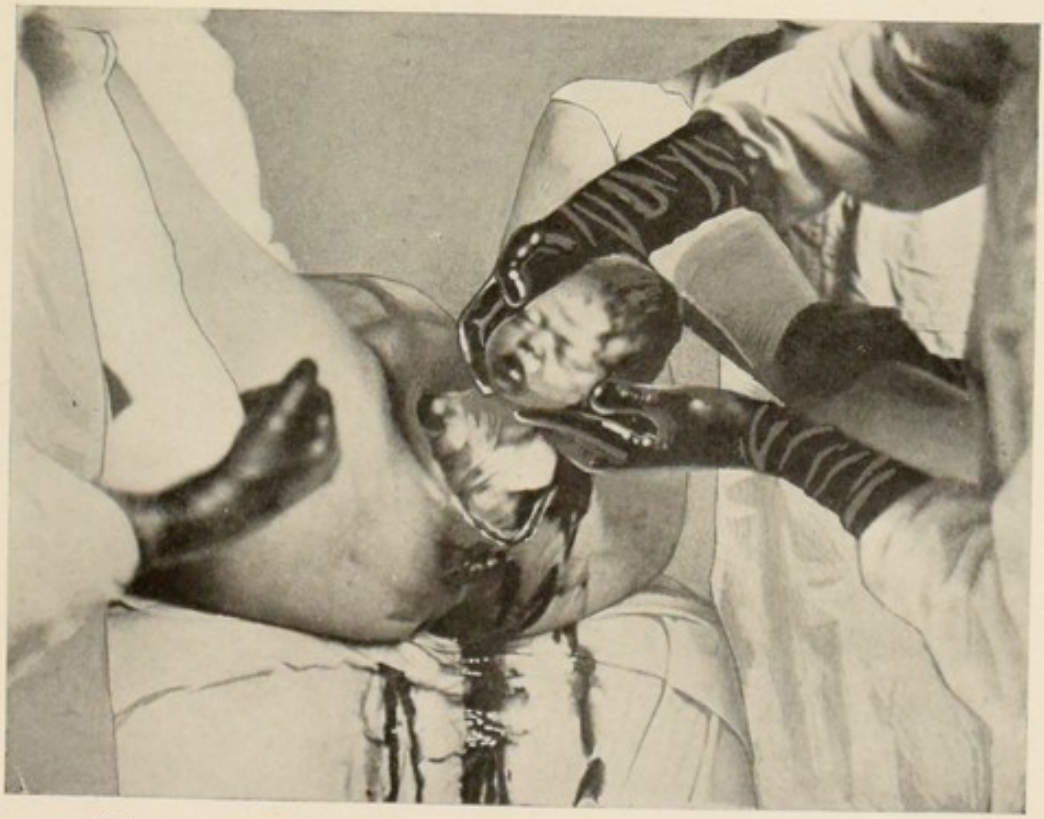


Fig. 94*a*.—Delivery of posterior shoulder. (A photograph.)



traction instrument is used when the head is high up, therefore the operation is often called the high forceps operation. This latter is attended with a higher mortality for the mother and infant. It is very bloody, and nearly always the mother's tissues suffer severe injury. The baby is also frequently marked. Later it may die of hemorrhage in the brain.

List of Instruments for Forceps Operation

Obstetric forceps, ordinary or axis-traction, as ordered.
Two long artery forceps.
Four short artery forceps.
Two vulsellum forceps. (See Fig. 96.)
Two tissue forceps.
Three scissors (one long).
Two needle-holders, six needles.
Two large perineal retractors, or specula.
One long uterine packing forceps. (See Fig. 111.)
One uterine douche-tube.
Suture material: silkworm-gut or catgut, as ordered. (See chapter on Sterilization of Supplies.)
One catheter (soft rubber).
Stethoscope.
Salt solution needle.
Two tracheal catheters for aspirating mucus from trachea; these must not be boiled.

The supplies, as sheets, towels, gowns, sponges, basins, pitchers, etc., required are identical with those needed for normal labor.

Duties of Nurse During Forceps Operation.—The nurse, having prepared everything as described, and having enough help, will only need to wait on the operator, handing him such things as he needs. She need not have absolutely sterile hands—in fact, had

better not be expected to touch aseptic things. When necessary to replenish basins, she should touch only the

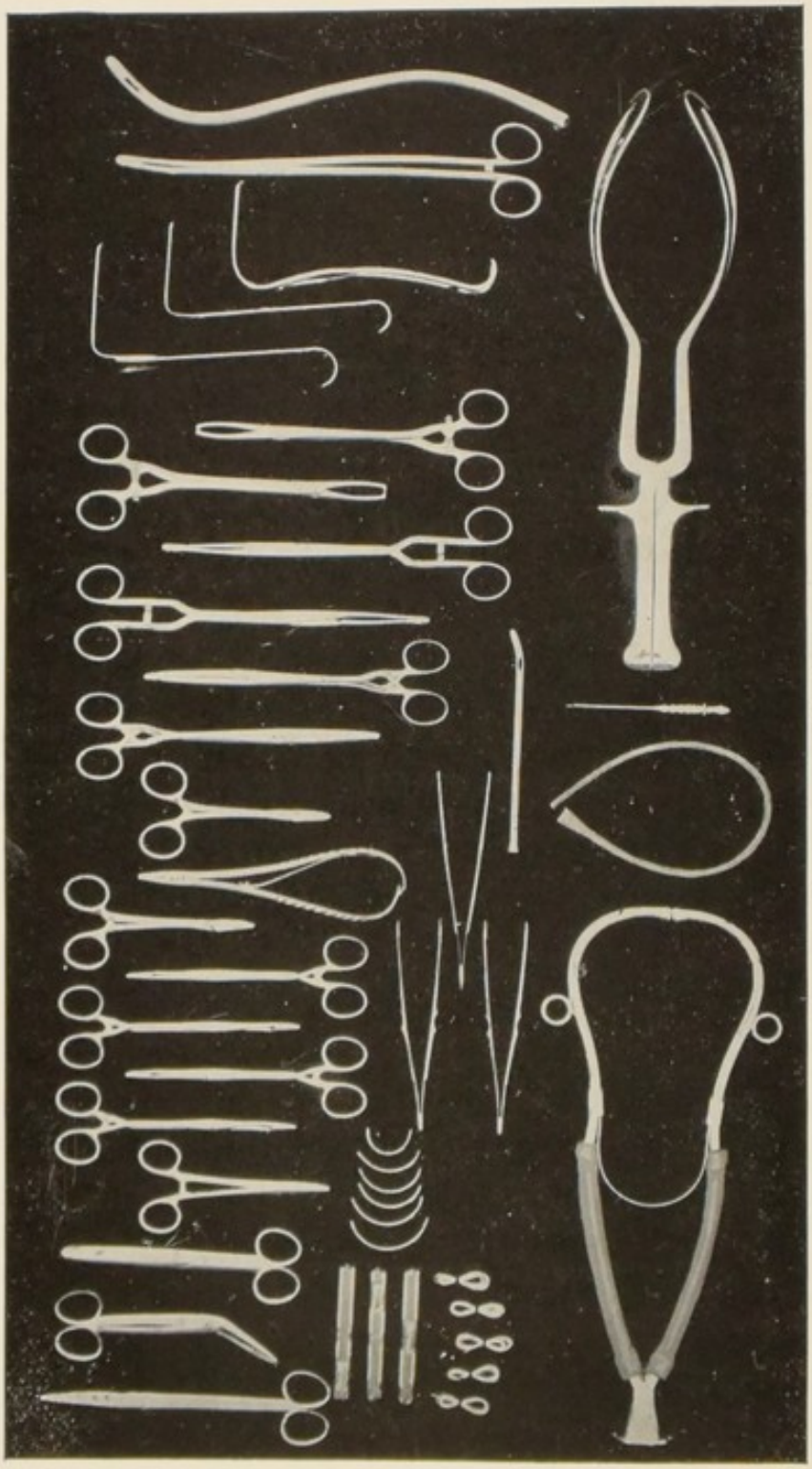


Fig. 95.—Instruments for forceps operation.

outside; when necessary to supply sponges, she carries them with a sterile dressing forceps. For this purpose

she provides a tall, wide-mouthed jar, with a 1 per cent. lysol solution, in which the forceps stand when not in use. (See Fig. 219, page 446.) It is remarkable what dexterity a nurse acquires in handling sterile towels, pledgets, etc., with the long dressing forceps.

When the child is born, she washes the eyes with boric solution, as directed under Normal Labor. Now she may have to grasp the uterus. The duties resemble much those required at a normal confinement.

During difficult high forceps deliveries, and also when in breech deliveries the after-coming head gives trouble

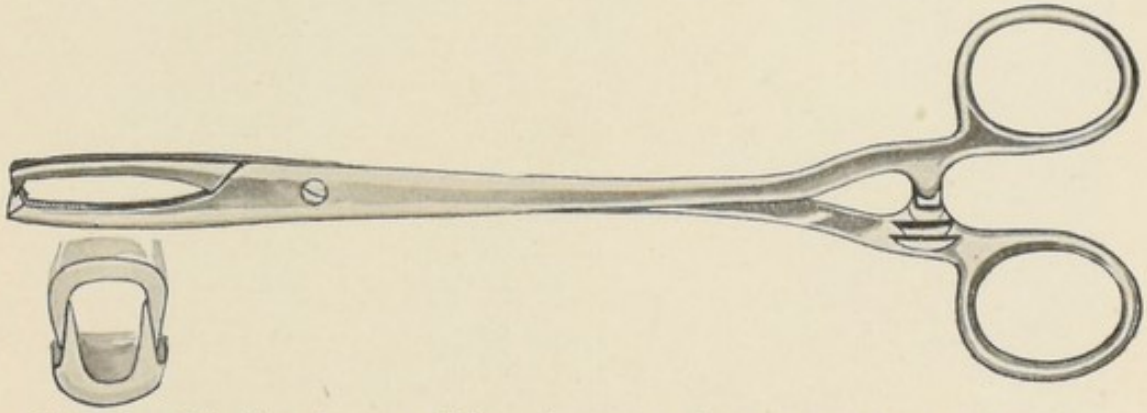


Fig. 96.—Vulsellum forceps with teeth protected to prevent injury to rubber gloves while operating.

in passing through the pelvis, the patient is sometimes ordered put in the Walcher position (Fig. 97).

The Walcher Position.—This attitude of the patient cannot be held long, as it is very fatiguing. The nurse allows the legs to fall very slowly and gently toward the floor, until they rest in the position shown in Fig. 97.[1] The sacrum must rest just on the end of the table, which is protected by a soft blanket; the back arches up, as can be seen in the illustration; the shoulders rest on

[1] This figure and many of the others were photographed from a model by the author. The woman was attired in a closely fitting union suit, and great attention was paid to the finest details, so as to get a scientifically correct picture.

the table. The legs are held securely, so that the patient does not slide off the table. As soon as the head is well down in the pelvis, the legs are put back into the pose they have in Fig. 89.

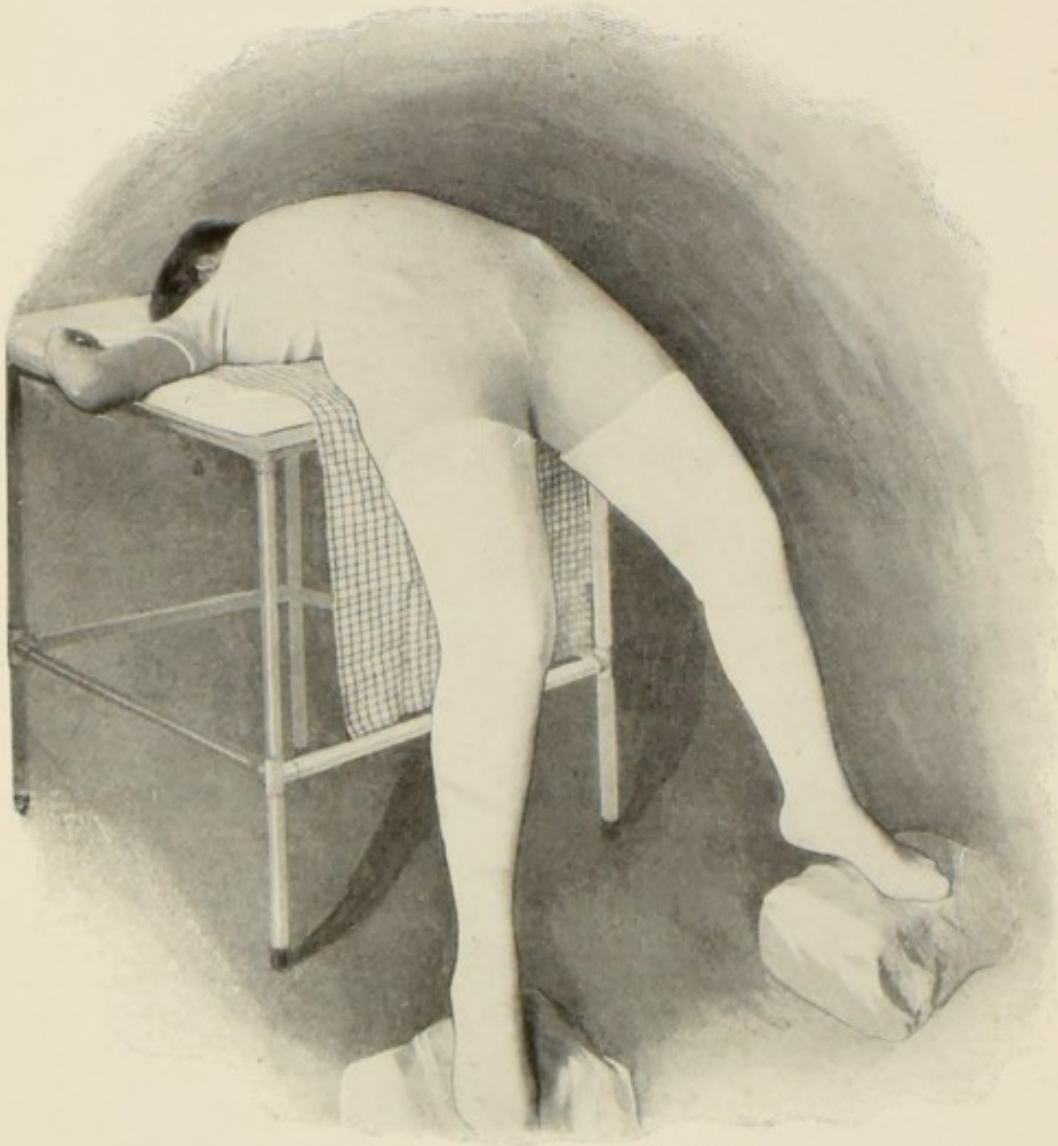


Fig. 97.—The Walcher position.

Breech Extraction.—In some breech labors, in spite of powerful pains, the breech will not come down, and the doctor finds it necessary to help nature deliver the child. As in forceps cases, the child may be a little too large, or the maternal parts a little too small or too rigid.

The accoucheur, after the same preparations as for any major operation, folds the hand into a narrow cone, inserts it into the uterus, grasps a foot, and gently draws this down into the vulva. Now, by steady traction, the infant is drawn out, first by one foot, then by the leg, then the thigh, then aided by drawing on the other leg, proceeding carefully. The shoulders sometimes cause great difficulty, and the operator throughout has a great task to avoid fracturing the bones. When the head is to come, two fingers are inserted into the child's mouth; the other hand is over the nape of the neck, and, aided by an assistant pressing from the outside over the uterus, the head is delivered.

The instruments necessary for breech extraction are the same as those for forceps operation, as it is sometimes necessary to apply the forceps to the after-coming head, and frequently lacerations are to be repaired.

Version.—This means turning the child from an unfavorable presentation to a favorable or normal presentation. In practice we have most commonly version from a shoulder presentation to a breech presentation. The operation is often difficult and laborious, and sometimes very dangerous. The child is often lost by the untimely detachment of the placenta, and the uterus is sometimes ruptured in the effort to turn the child. Rupture of the uterus is a sad accident, as even with the best treatment over 60 per cent. of the mothers and 98 per cent. of the children die. The preparations for version are the same as for the forceps operation, and to the instruments should be added two version slings. These are of $\frac{1}{2}$-inch tape and each 1 yard long; they are applied around the leg or arm which has been delivered, so as to aid subsequent extraction.

Decapitation.—When a labor in which the child presents transversely, that is, a "cross-birth," is allowed

to go on and has become neglected, the child is found wedged into the pelvis so that it cannot be turned nor straightened out so as to be extracted lengthwise. These cases are called "neglected transverse presentations," and are very formidable. In such emergencies the accoucheur is compelled to cut the child into two parts and deliver each separately. The section is usually made at the



Fig. 98.—Braun's decapitation hook.

neck, but sometimes the trunk is divided. The neck is divided by means of strong scissors or a blunt hook invented by Carl Braun (Fig. 98). It is a horrible operation, and fortunately rare.

Craniotomy.—This is another of the mutilating operations on the fetus, and consists of opening the skull of the infant with sharp scissors or a long trephine,

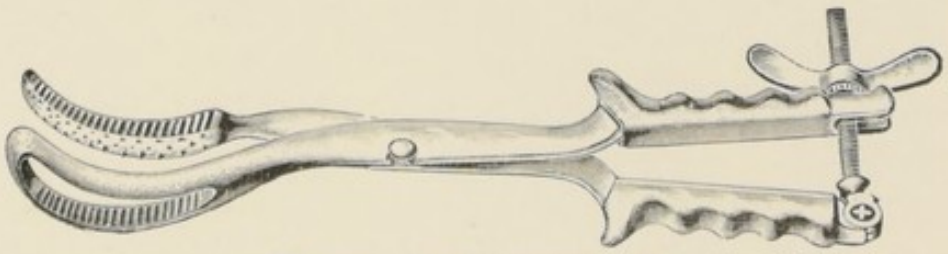


Fig. 99.—Braun's cranioclast.

evacuating the brain matter, then crushing the bones together so as to reduce the size of the head, and extracting it after this reduction in size. Fig. 99 shows the crushing instrument; Fig. 100, a common form of perforator. *Embryotomy* is a term used to designate all the mutilating operations on the child. *Cranioclasis* means the crushing of the child's head, and *cephalo-tripsy* the same, but without opening the skull. When per-

formed on a child already dead these operations are disagreeable enough, but when the obstetrician is called upon to sacrifice the child's life by them, truly they require moral courage. Yet conditions arise in which the accoucheur stands before dreadful alternatives—to try to save the infant will almost surely lead to the mother's death; to sacrifice the infant will almost surely save the mother. The question is a difficult one; it is delicate, it is serious, because both lives usually hang in the balance either way, and many considerations not medical in their nature, such as religion and social status, enter into it. At no place in all medicine and surgery does the physician meet a more heart-felt, perplexing, and weighty question.



Fig. 100.—Smellie's perforating scissors.

The conditions which usually lead to this difficulty are those of mechanical disproportion between the baby and the maternal parts. The baby is too large or the parts (pelvis or soft passages) are too small to allow a natural delivery. If the patient cannot deliver herself, and if labor cannot be accomplished by forceps or by extraction by the breech, the questions arise, Shall we reduce the bulk of the infant, or shall we remove the child by a new passage (cesarean section), or shall we enlarge the pelvis (symphysiotomy)?

The last two operations are quite safe if performed very early in labor, before the patient is infected or exhausted. If performed late, when either infection or exhaustion is present, the mortality is very high, while the craniotomy has hardly any mortality. If the child

is dead, the question is simple, but if it is alive, the decision is extremely difficult, and requires the highest kind of obstetric judgment.

The author's practice is this: If the woman is in prime condition—that is, if she is not infected, her earlier attendants having been aseptic, and if she has not been in labor long and no attempts at operative delivery have been made—he strongly counsels removal to a good hospital and the performance of cesarean section or pubiotomy. If the conditions are not favorable for a successful abdominal delivery or opening of the pelvis, he advises the sacrifice of this child, and the performance of cesarean section or premature delivery in the next pregnancy.

Unfortunately, most labors are conducted in a blind manner, and the difficulty is not recognized until operative attempts, sometimes to the number of fifteen, have been made and proved fruitless. Then only is special skill called in, and in such forlorn cases one is to be congratulated if the mother can be brought through alive, even though not whole.

Early recognition of impending difficulties will avoid most of them, and this is the reason why specially skilled attendants should be employed for all obstetric cases.

Preparation for the Mutilating Operations.—The nurse will prepare for craniotomy, decapitation, and the other operations of this class as for any major obstetric operation. The instruments are shown in Fig. 101. After the child is delivered the head should be reshaped by filling it with cotton and sewing up the injured skin. The feelings of the family should be spared as much as possible.

Baptism.—If the family is Catholic, the nurse, unless the physician has attended to the matter, should arrange

for the baptism of the child when the possibility presents that it will die. The physician may give the child intra-uterine baptism.

Even a non-Catholic may administer these rites, and the nurse will do much for the mental comfort of her patient if she sees that her religious beliefs are conformed with.

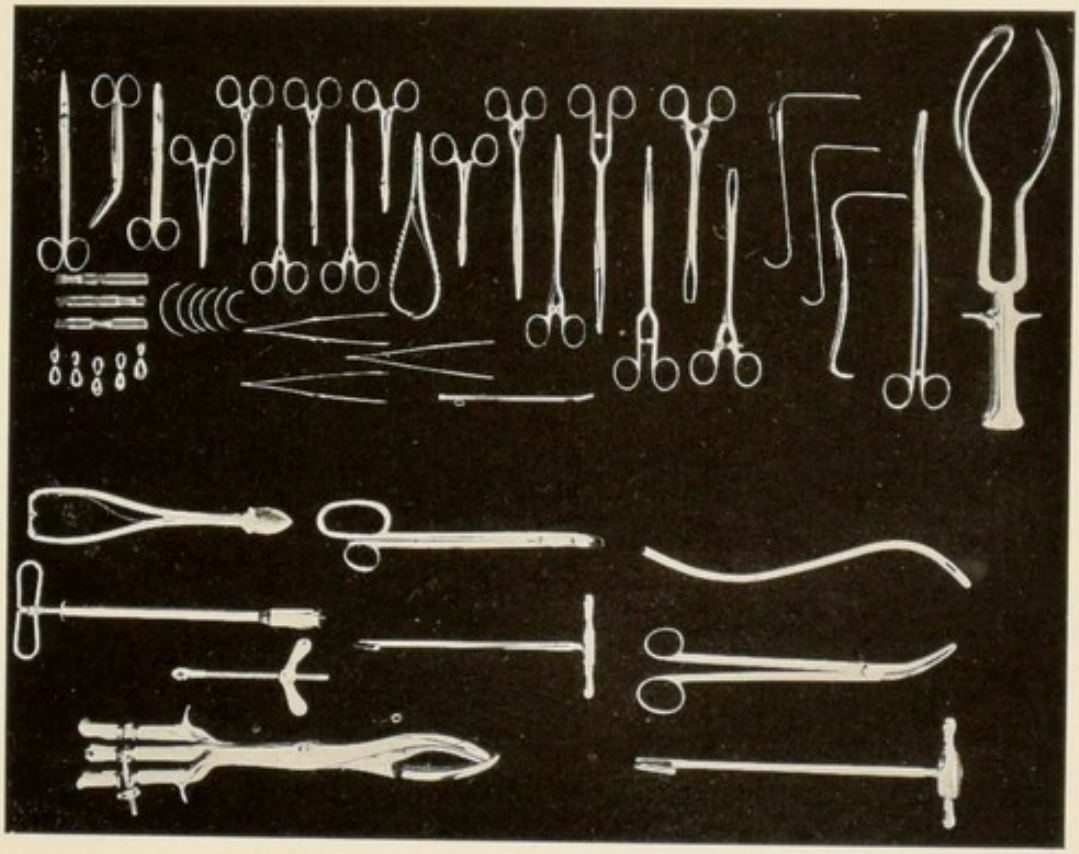


Fig. 101.—Instruments for embryotomy.

Cesarean Section.—This operation does not take its name from Cæsar, but from a Latin word, *cedere*, meaning to cut. There is no evidence that Cæsar was delivered by this means. The first authentic cesarean section on the living was performed about three hundred years ago by a swine-gelder on his own wife. Thirteen midwives and barbers had exhausted their skill on the poor woman. She recovered! The scene of a modern cesa-

rean section differs from that of one given by Mercurio in Italy in 1595 (Fig. 102).

Delivery by the abdominal route is performed when the maternal passages are so obstructed—as by con-



Fig. 102.—A cesarean section in Italy in the sixteenth century (Witkowski).

tracted pelvis or scars in the soft parts, or by tumors, such as fibroids, wedged in the pelvis—that the child has no room to pass. Sometimes there is room enough for a child that is reduced in size by mutilation to pass

through, but not for a living child. In these cases the physician may do the abdominal delivery to save the child.

The operation consists of seven steps: (1) Opening the abdomen; (2) incision in the uterus; (3) removal of the child; (4) removal of the placenta and secundines; (5) careful suture of the uterus; (6) peritoneal toilet; (7) suture of the abdominal wall. Sometimes the uterus is removed also. This is called a Porro operation.

Ordinarily, cesarean section is not a hard operation, and performed in a good hospital, at an early period of labor, it is not very dangerous, the mortality being about 3 per cent. in the most favorable cases and in skilful hands. Performed late, after many examinations have been made by questionable fingers or after operations have even been attempted, cesarean section has a very high mortality, and the children also often die, so that even if the mother lives the object for which she has been hazarded is lost in the end.

Preparation for Cesarean Section.—The preparations for this operation are mainly those for laparotomy in general. In addition, provision is made for the child.

A preparatory course of treatment extending over several days is desirable, but not absolutely necessary. Daily warm baths with brisk scrubbing of the trunk from the ensiform to the knees, a light laxative with enemata, plain nourishing food, plenty of rest in bed, and walks in the sunshine are all valuable in rendering the patient more resistant to the dangers besetting the operation. The urine is examined for evidences of nephritis, and the vaginal discharge, for gonorrheal infection.

The method of disinfection of the skin varies with different practitioners. One commonly used is as follows: (1) Shaving, from ribs to half-way to knees, and well down the flanks; (2) scrubbing with soft brush and

tincture of green soap for five minutes; (3) rinsing with plain water; (4) scrubbing with soft brush or coarse cloth and alcohol, 95 per cent., three minutes; (5) scrubbing with 1 : 1500 bichlorid for three minutes; or (6) scrubbing with lysol, 1 per cent., three minutes; (7)

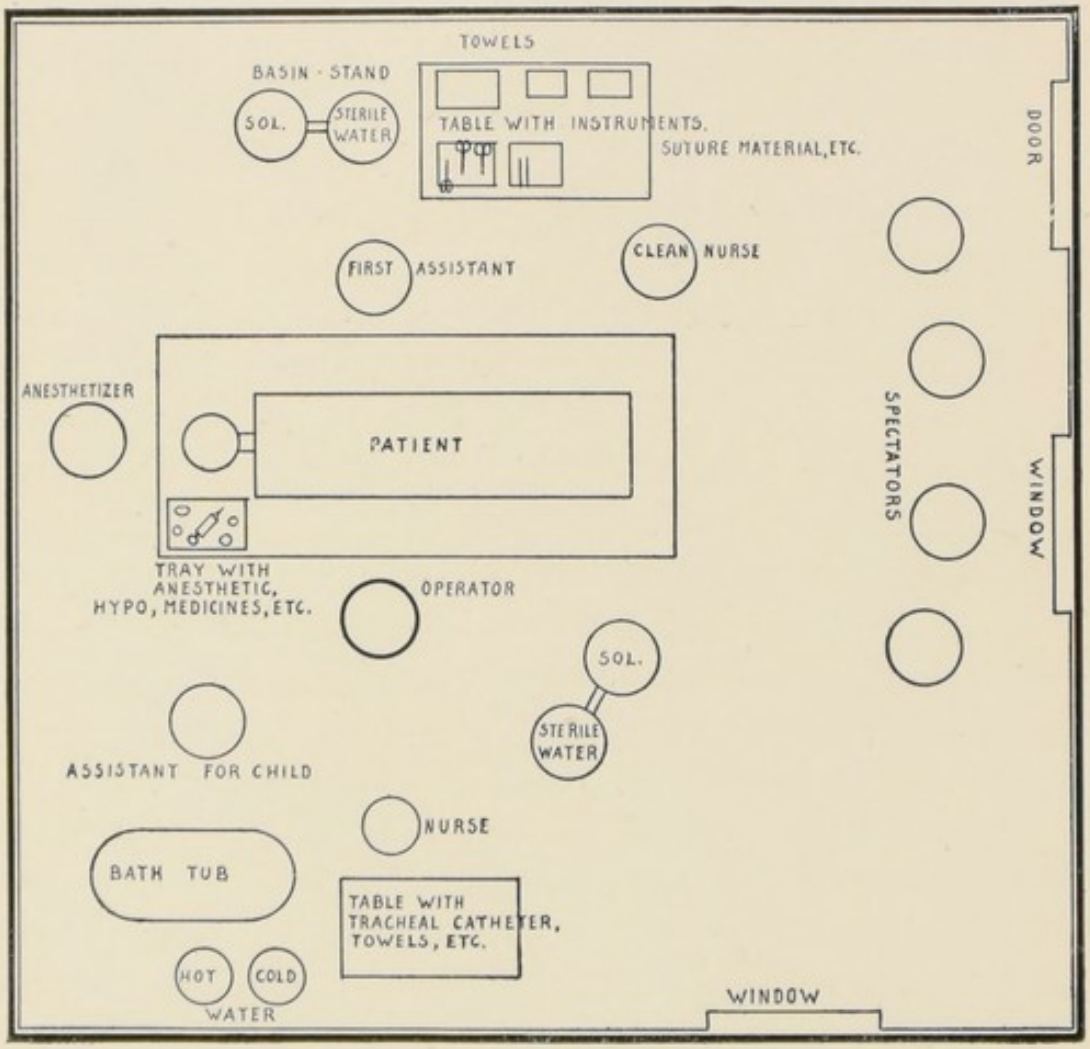


Fig. 103.—Diagram of a room arranged for cesarean section.

gauze saturated with 1 per cent. lysol is allowed to cover the abdomen until the operator is ready; then (8) the abdomen is washed with sterile water. The sterile laparotomy sheet is now adjusted. Some operators use alcohol entirely as a disinfectant, others rely on tincture of green soap. Before going on the table the patient is catheter-

ized. Tincture of iodin is not recommended. The vulva is also prepared, but no vaginal manipulations are made unless ordered.

For the operation five assistants are necessary: An anesthetizer, a first assistant, an assistant to hand instruments and sponges, one to receive and revive the child, and a nurse, not aseptic, to handle supplies and render general services about the patient. The less the number of hands in the case, the better. All assistants should wear sterile rubber gloves, and extra care is to be taken that there are no perforations in them. The arrangement of tables and assistants is shown in Fig. 103.

List of Supplies Needed for Cesarean Section

Twelve small laparotomy sponges. These are of four thicknesses of gauze, 6 inches square, sewed around the edges and carrying a piece of tape 10 inches long firmly fastened to one corner, with a ring or hard object attached to the end.

Six large laparotomy pads. These are of six thicknesses of gauze, 12 inches square, sewed and tacked, but without tapes.

One jar of small surgical gauze sponges or pledgets.

One sterile receiver for the baby.

One laparotomy sheet.

Two plain sterile sheets.

One dozen towels.

One pair leggings.

Six gowns and head-pieces (Fig. 104).

Four pairs rubber gloves.

Five basins.

One pitcher, besides hot- and cold-water supply pitchers.

These articles are sterilized according to the usual methods. The antiseptic solutions are prepared according to the physician's usual practice.



Fig. 104.—Head- and mouth-guard. Pattern of Mercy Hospital, Chicgao.

The Instruments for Cesarean Section

Two scalpels.
Three scissors, one angular.
Three tenaculum forceps.

Three sponge-carriers.
Twelve artery clamps.
Eight long pedicle clamps.
Two needle-holders.
Two broad retractors.
Two rat-toothed tissue forceps.
One long uterine packing forceps.
Eight full curved round needles, $1\frac{1}{2}$ inches, for uterus.
Six shorter, half-curved spear-pointed needles for fascia.
Two long straight needles for skin.
One glass hypodermic syringe.
One dozen large safety-pins.
Adrenalin, 1 : 10,000, and pituitrin in glass ampoules.
Suture material. The physician will order this. No. 6 silk for the uterus; No. 1 catgut for the peritoneum; No. 2 catgut for fascia; and medium silkworm-gut for the skin, are usually used. Some operators use catgut throughout.

Light, Heat, and Anesthetic.—Special arrangement must be made for light if the section is to be performed in a private home. The room must be quite warm—at least 80° F.—as the peritoneum is much exposed, and it is well that the air be damp, so that there is no dust. The operating table should be covered with an electric heating pad, or a few hot-water bottles laid alongside the patient. She must be guarded from chilling. The anesthetic usually given is ether. Just before the anesthetic is started a hypodermic of aseptic ergot or of pituitrin is administered. The nurse should provide a little tray with the anesthetic, a working and tested hypodermic syringe, strychnin tablets, camphorated oil, aromatic spirits of ammonia, and ether, ready for the anesthetist. Tongue forceps are not necessary; a skilful anesthetist

will hardly ever use them. Oxygen should be at hand.

The Operation.—The field having been prepared, the sterile sheet and towels being arranged and pinned, and the patient sound asleep, a long incision is made in the middle line, through which the uterus is delivered. It is at once covered with sterile towels wrung out of hot water. The operator rapidly cuts into the uterus, delivers the child by the feet, clamps the cord in two places, cuts between, and hands the infant at once to an assistant or a nurse who stands beside him holding a warm blanket for it. The operator pays no attention to the child, as he has to continue the operation, but the assistant's duty is to revive the infant. The child usually is slow in beginning to breathe, because the change from intra- to extra-uterine conditions came so quickly. Patience and the usual methods of resuscitation almost always succeed. (See page 360.)

The operator removes the placenta and membranes, and then covers the uterus with the large laparotomy pads or hot towels. The temperature of the water from which these towels are wrung should be 120° F. The uterus, if it is not removed by the Porro operation, is now carefully sewed up again, then the peritoneal toilet is performed, and the abdomen is closed. The nurse has carefully counted the laparotomy pads and sponges and notified the operator at once if any are missing. The dressing of the wound is made by laying a strip of gauze over it and covering both with collodion. An antiseptic powder may be used instead, and over this a large occlusive dressing.

Adhesive straps are now placed to support the abdominal wall, but care is to be taken not to make them too tight.

STEPS OF OPERATION

Operator.	Nurse.
1. Puts on gloves.	1. Adjusts sheets.
2. Incision in skin.	2. Hands knife to operator, artery clamps to assistant.
3. Incision of fascia.	3. Second knife to operator.
4. Incision of peritoneum.	4. Scissors to operator, tissue forceps to assistant.
5. Incision of uterus, and delivery of child.	5. Two artery clamps for cord. Sterile receiver for infant.
6. Hemorrhage.	6. Wet hot large pads, injection of 1:10,000 adrenalin into uterus, suture material.
7. Suture of uterus.	7. No. 2 catgut or No. 6 silk on round pointed needles.
8. Peritoneal toilet.	8. Small pads wet with sterile water, or stick sponge in secure holder.
9. Sewing peritoneum.	9. No. 1 catgut on same needles. Count pads.
10. Sewing fascia.	10. No. 2 catgut on sharp-pointed short needles.
11. Sewing skin.	11. Silk-gut or linen on long straight needle.

There are several varieties of cesarean section—the extraperitoneal, the transperitoneal, the flank operation—but the classic operation is the one here described.

The After-care.—This is identical with that of all laparotomies. The nurse watches for signs of internal hemorrhage, increasing pulse-rate, decreasing fulness of pulse, pallor, rapid respiration, yawning, sighing, etc. The reaction from shock should be noted, likewise its absence. Persistent vomiting is always suspicious. In addition to these the nurse must look for external bleeding from the genitals, as patients may have post-partum hemorrhage after cesarean section. The abdominal dressing occasionally requires some adjustment that it does not slip and expose the wound.

Should the patient vomit persistently; should hemorrhage appear externally; should the patient not rally quickly from the shock of the operation or should this

even deepen; or should internal hemorrhage be suspected, the physician must be notified without delay.

Hot water, 1 ounce at a time and freely, will assuage the extreme thirst, and salt solution per rectum, 1 pint every six hours, will help to do the same. Milk and lime-water are given for the first twelve hours, after which liquid diet is ordered.

The nurse must obtain written orders from the physician regarding all these details if she is not familiar with his practice. The instructions here given are to indicate the general course of treatment and for the general information of the nurse.

The bowels should move on the second or third day, but if the patient passes flatus no trouble need be anticipated in this direction. The physician usually orders a cathartic, to be followed by a colonic flushing, the composition of which the nurse should ascertain from him. Some physicians avoid cathartics.

Extreme tympany, persistent nausea and vomiting, obstinate constipation, severe pain, hiccup, fever occurring at any time after the operation, are to be noted on the history-sheet, and the doctor's attention drawn to them. Sometimes they indicate a beginning peritonitis.

The child does not require any other care than that given after normal labor. It is put to the breast twelve hours after the operation if everything goes well, and regularly, as per schedule given on page 160.

Convalescence.—The sutures are usually removed on the eleventh day. The physician may apply adhesive strips or a firm binder to support the wound. The patient sits up at the end of one or three weeks, depending on the practice of the operator.

Vaginal Cesarean Section.—When rapid delivery is indicated and the cervix uteri is tightly closed the quickest way to empty the uterus is by an operation

called vaginal cesarean section. The anterior wall of the vagina is incised and the bladder pushed forward, away from the uterus, and then the anterior wall of the uterus is divided with scissors, making an opening large enough for the extraction of the child. The perineum is also incised if necessary. After delivery is completed all the structures are reunited by suture.

The preparations by the nurse are the same as for forceps operation plus those for vaginal extirpation of the uterus (hysterectomy).

Symphysiotomy.—This is the section of the pubic joint which allows the innominate bones to separate, and thus the cavity of the pelvis is enlarged. The operation was invented by Sigault, a medical student, in 1773, but was discarded because of its dreadful mortality. Sigault's case, the wife of a gendarme, dragged out a miserable existence after its performance on her, but Sigault was given a medal for devising it. About 1892 there was a revival of the operation, because the blessings of asepsis rendered it quite safe. But now it is falling off in favor, pubiotomy and cesarean section taking its place.

Pubiotomy or **hebosteotomy** is a new operation, and at the present writing the enthusiasm with which it was received, like many innovations in medicine, has already become moderated by adverse experience. The operation resembles symphysiotomy with the exception that not the joint, but the bone near the joint is opened. A wire saw invented by Gigli is used, and the section is often done subcutaneously.

Symphysiotomy being almost completely displaced by pubiotomy, the latter operation will be described.

There are three stages in the procedure: (1) The sawing open of the pelvis; (2) the delivery of the child; (3) the repair of lacerations.

The Operation.—The patient is prepared as for any major obstetric operation, and lies on the table with the limbs partly extended. The Gigli or wire saw is carried

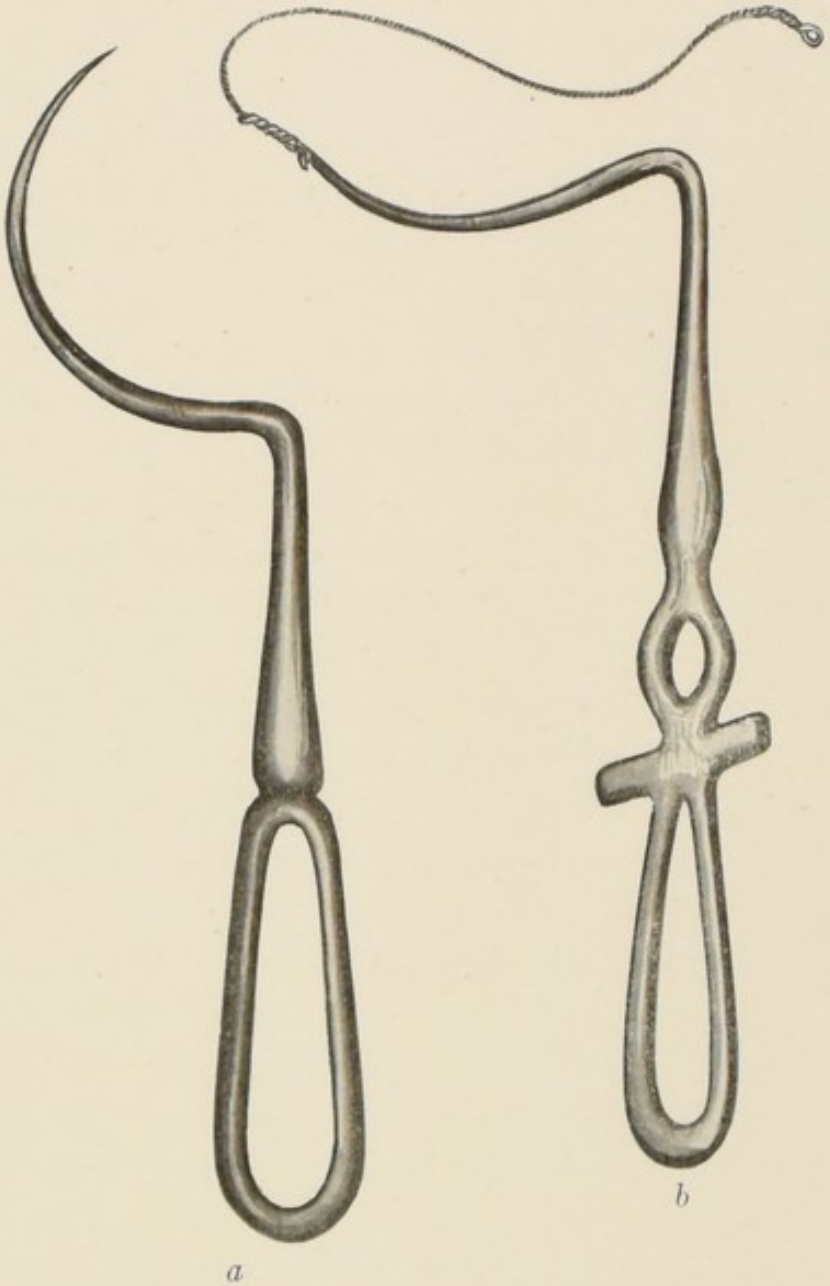


Fig. 105.—Pubiotomy needles: *a*, Bumm's; *b*, Döderlein's.

around the back of the pubic bone through either a small incision or a puncture. The introduction is effected by means of a large needle or a special carrier (Fig. 105). After the bone is severed the child is de-

livered by forceps or version, or the case left to nature. The ends of the bone separate 1 or 2 inches during the delivery and the sides of the pelvis are supported by the assistants.

The hemorrhage and lacerations, if present, are attended to, the bladder catheterized to see if it is injured, and the patient carefully carried to bed. Four assistants are needed besides the nurse.

List of Instruments

Two trays, to be kept separate.

First Tray:

One scalpel.
Two Gigli wire saws (Fig. 106).
One special carrier or large needle (Fig. 105).
Scissors.
One broad grooved director.
Four artery clamps.
Four 8-inch pedicle clamps.
Needle-holder.
Four full-curved, spear-pointed needles, $1\frac{1}{2}$ inches.
Two retractors.
Uterine sound or metal catheter.

Second Tray:

Forceps, axis-traction forceps, and all instruments given under Forceps Operation. (See p. 194.)

The operator is careful not to mix the instruments of the two trays. The first tray is used for the opening of the pelvis and closing the wounds afterward. The second tray is used for the second stage of the operation —the delivery part. The vagina is considered septic, and this is the reason for the two separate trays of instruments.

After delivering the child the operator resterilizes his hands, or draws on new sterile gloves before going again

to the pubic wound. This is one of the main dangers of the operation, that the pubic wound will become infected from the vagina, and the nurse has to do her share to prevent it in the puerperium.

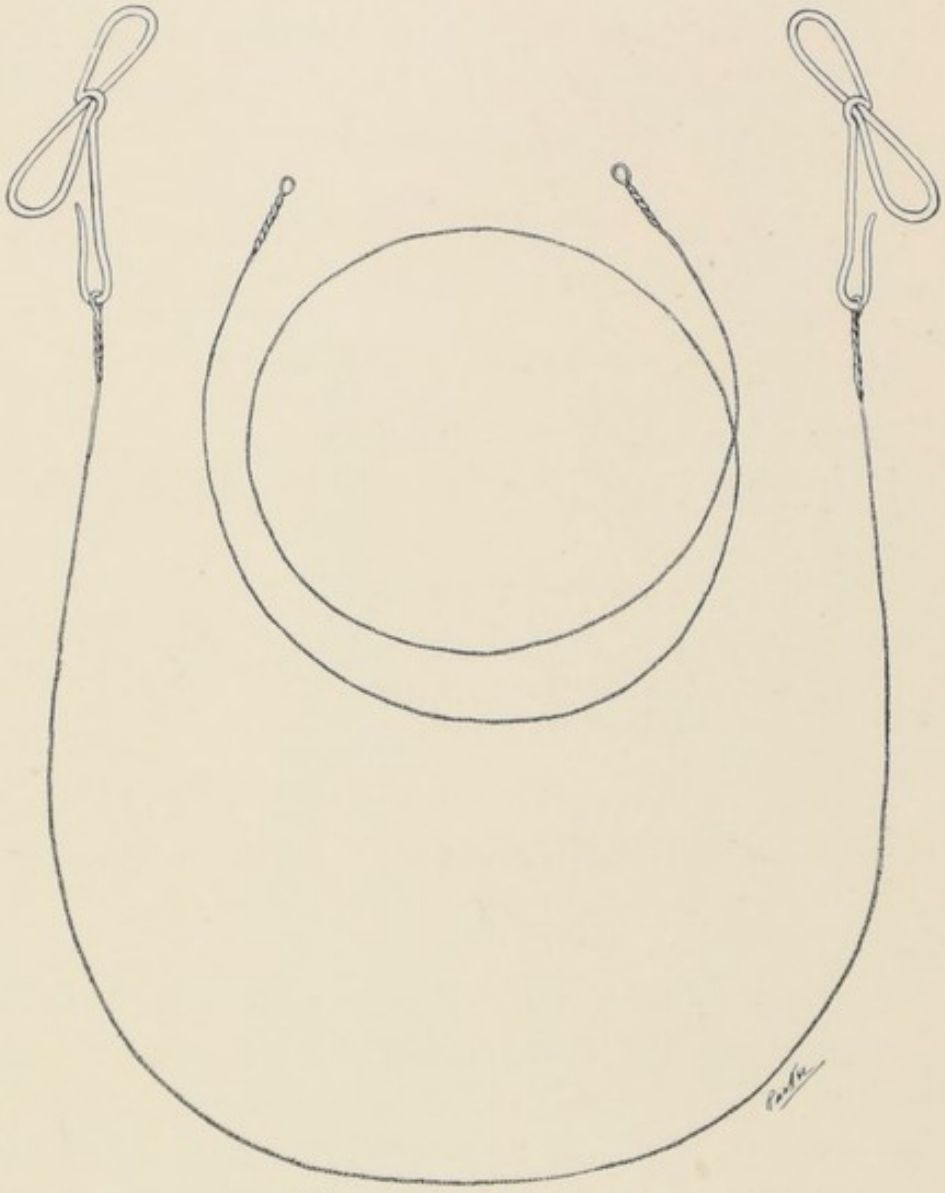


Fig. 106.—Gigli wire saws.

After-care of Symphysiotomy and Pubiotomy.—It is highly important that the patient be given intelligent nursing, as she is practically paraplegic after such operations. For the first few days she does not have the use of her limbs—she cannot raise the hips and should not

try to do so. The integrity of the pelvic girdle is temporarily destroyed.

The patient, after the operation, is dressed with adhesive strips about the pelvis to support the bones in apposition, or this is done by a tight binder strapped on. She is placed on a special symphysiotomy bed, if one is obtainable, though this is not absolutely necessary; any nurse can improvise such an apparatus, the idea being to have the bed arranged so that the patient may be raised up for the use of the bed-pan and for dressings. The plumber may make a frame of $\frac{1}{2}$-inch iron gas-pipe,

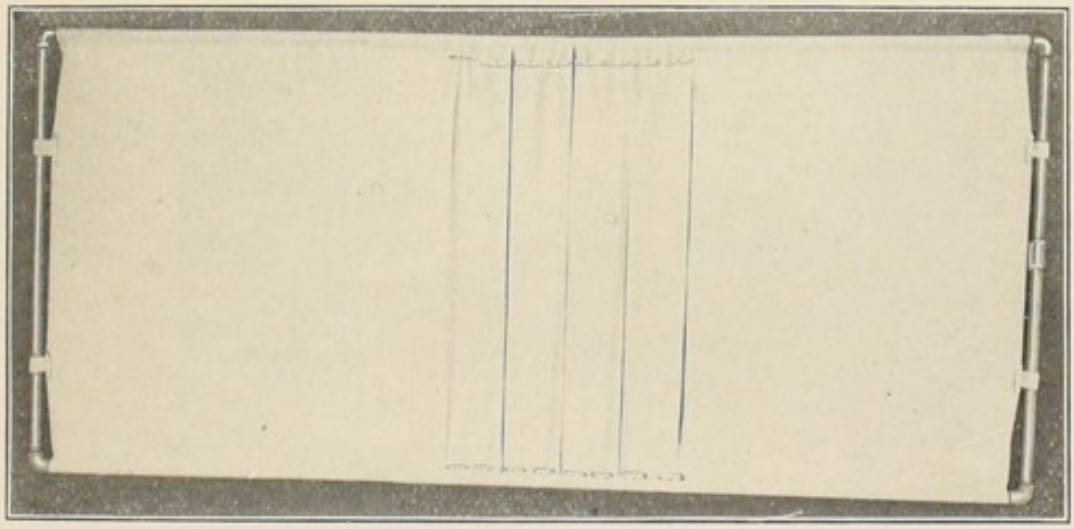


Fig. 107.—The symphysiotomy bed-frame.

32 by 66 inches, or long enough to fit inside the bed. The nurse then covers this frame with strong muslin, as shown in Fig. 107. At the middle, where the buttocks will lie, the strips of muslin are to be pinned at the side with strong safety-pins. When the patient is raised off the bed these strips are unpinned and access to the genitals is thus obtained.

This frame may be raised by means of four ropes attached to the corners and running through pulleys in the ceiling, or it may be lifted onto four hooks hanging on the head and foot of the bed, as shown in Fig. 108.

The bed is dressed as usual, the frame is laid on it, and the patient lies on the muslin strips. When necessary to make a dressing or give the patient the usual attentions, the frame is raised about 12 inches. The

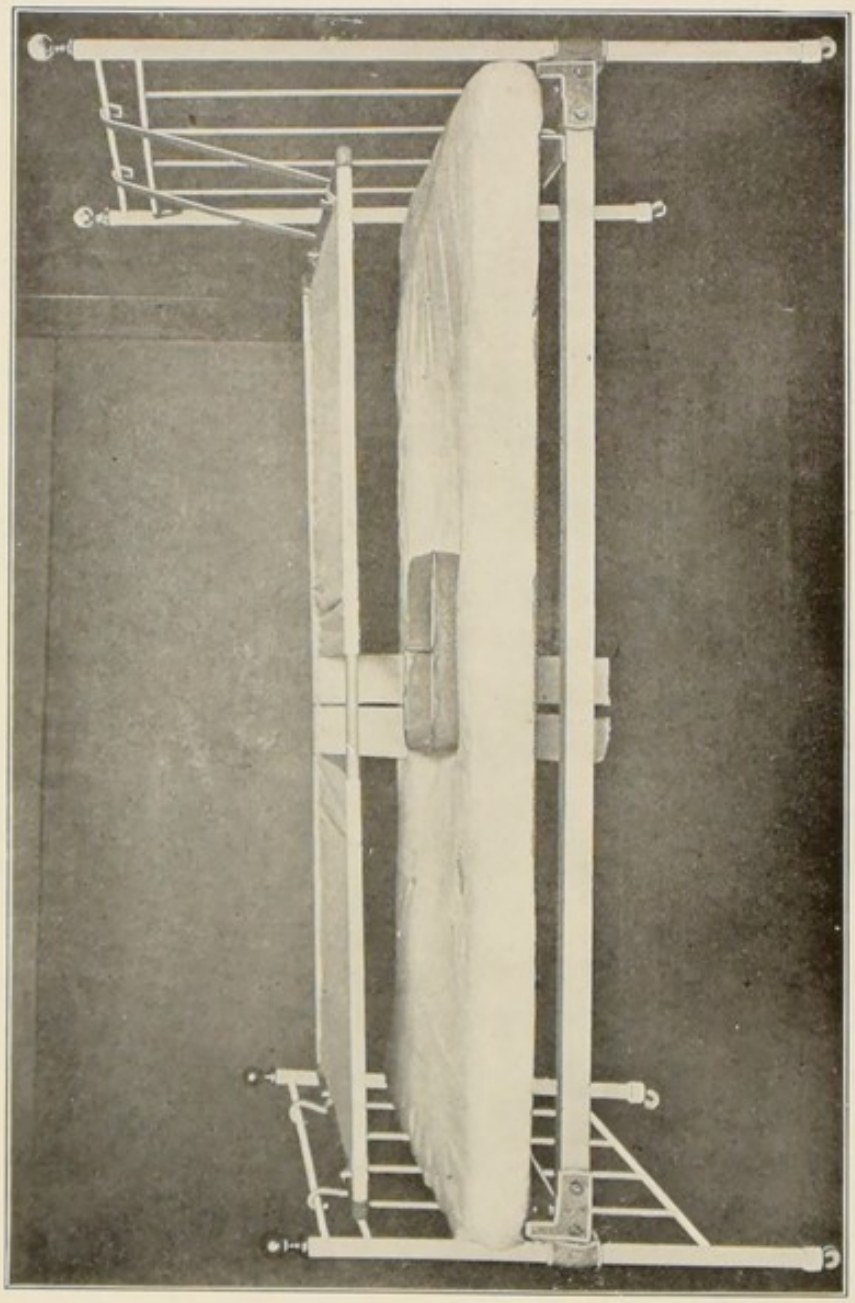


Fig. 108.—The symphysiotomy bed, with frame elevated.

strips beneath the vulva are loosened and drawn aside. This arrangement simplifies extraordinarily the after-care of these cases, which at best is trying and tedious. The nurse should watch for a hematoma, a blood-clot

around the pubic joint, which is not infrequent after hebosteotomy, and for signs of injury to the bladder. If a retention catheter has been inserted the nurse must be sure that it is draining without interruption. (See Fig. 155.)

Particular care is necessary to prevent the lochia from gaining access to the wound in the mons pubis. To avoid this the nurse adjusts the vulvar pad firmly above, loosely below, so that the lochia will have free flow downward, and arranges the wound dressing so as to keep the wound covered.

Catheterization is particularly difficult because the patient is not allowed to separate the limbs more than a few inches. By turning the toes inward the nurse may part the knees without causing much pain.

After two weeks the frame may usually be dispensed with. Several weeks may pass before the patient is able to resume her household duties.

MINOR OPERATIONS

Minor operations are as important as any, and should be prepared for with the usual aseptic care.

Preparation for Obstetric Examination.—The nurse is expected to arrange a patient for the digital obstetric or gynecologic examination quickly and neatly. A basin of 1 per cent. lysol solution, a supply of pledgets, and a sheet are necessary. If the physician desires the patient across the bed she is placed as in Fig. 51. The sheet is laid on the bias over the trunk, the opposite corners are wrapped around the legs, while the two remaining corners are draped one over the body, and the other to form a flap which hangs between the thighs till the examination is about to be made. The nurse will sponge the parts carefully herself before the physician inspects them, and will report to him the presence of

bloody, purulent, or odorous discharge. The patient's limbs, as shown in Fig. 51, are supported by the nurse. They may be allowed to rest on two chairs or on the knees of the physician.

Occasionally the nurse is requested to arrange the patient obliquely on the bed with one foot resting on a chair (Fig. 109).

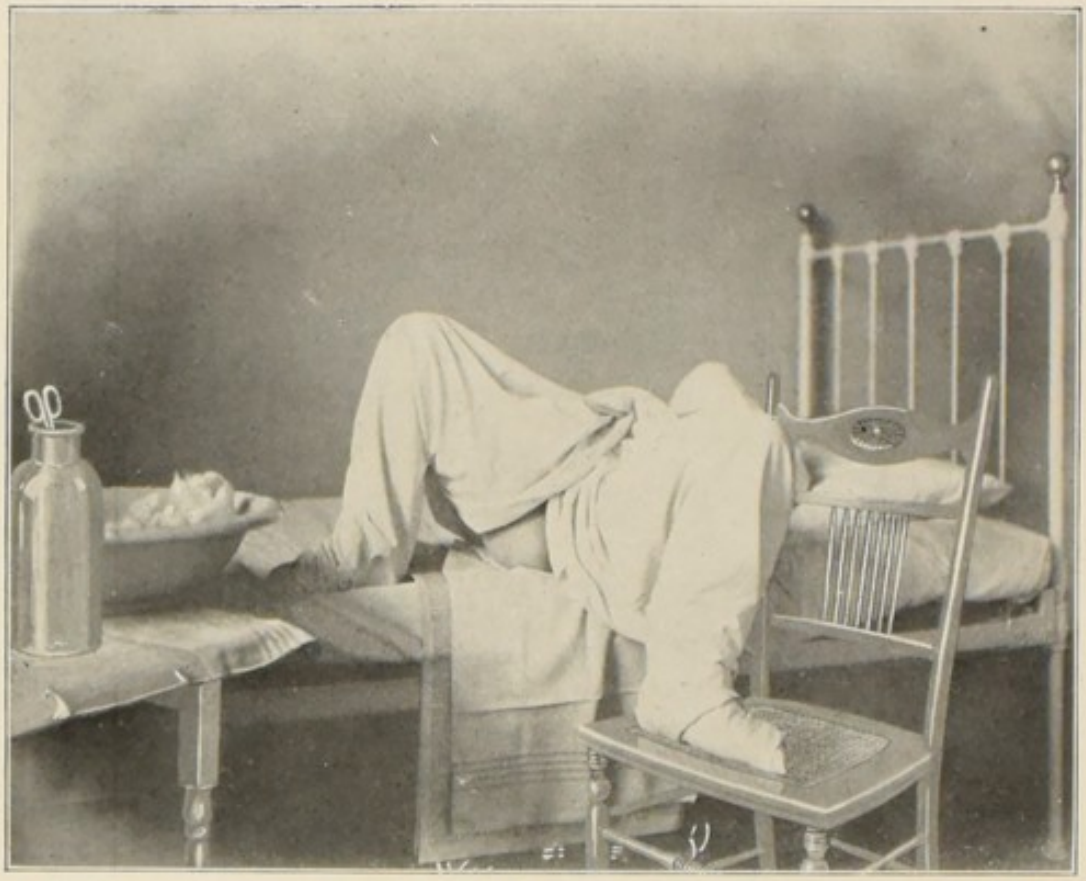


Fig. 109.—Patient obliquely in bed, draped with a sheet, prepared for internal examination. One limb rests on a chair, the other on the edge of the bed. The buttocks are near the edge of the bed, which is protected by a newspaper covered with a towel.

Perineorrhaphy.—The most common of minor operations is perineorrhaphy, or the repair of lacerations of the pelvic floor. Most physicians repair these tears immediately after labor. Others leave them for two weeks, and a very few defer operation to a period of several months afterward.

For a perineorrhaphy after labor the patient is usually put across the bed in the lithotomy position (Fig. 90). If the laceration is more than small, it is wiser to use the table, as much better work can be done. The operation has already been described on p. 129.

The after-treatment of stitches does not differ much from the usual. Extra care must be taken not to pull

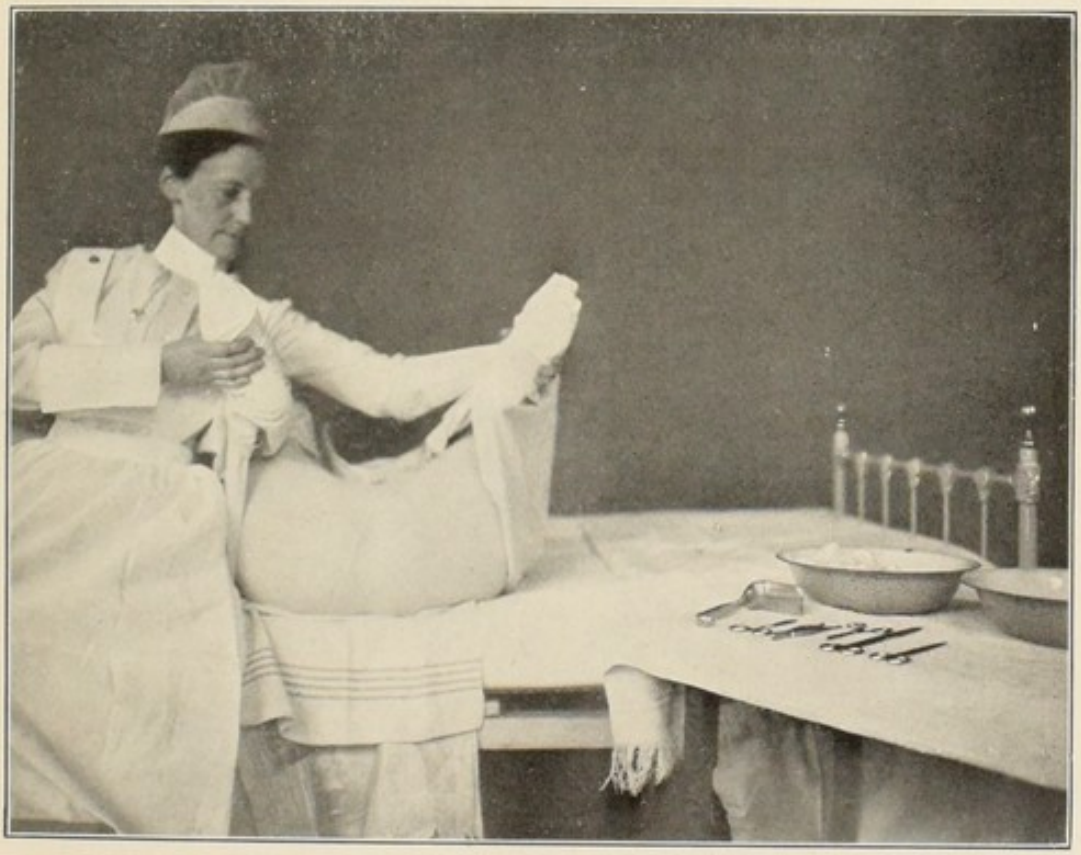


Fig. 110.—Patient across the bed, draped with a sheet, for removal of sutures. The instruments lie in the basin in which they were boiled or upon a sterile towel: Speculum, 2 artery forceps, 1 tissue forceps, 2 scissors.

on the knots when a dressing is made or a bed-pan is used; also that the suture ends do not catch in the dressing and drag on the wound Should the patient complain of the ends of the sutures pricking her, the nurse may wrap them in sterile gauze or let them lie between two layers of gauze. At each dressing notice is taken of any signs of irritation, swelling, special tender-

ness, or pus-formation, or of cutting around the stitches or line of union, and a note is made of same on the record-sheet.

The parts around the wound should occasionally be washed with soap and water to remove dried secretions and macerated epithelium.

Removal of Sutures.—Catgut does not need to be removed; silk and silkworm-gut do. This is done on about the tenth day.

The nurse sterilizes two sharp-pointed scissors, one long, one short, artery forceps, one tissue forceps, and a short, narrow, highly polished speculum (Fig. 110). The physician requires excellent light. The provisions



Fig. 111.—Author's long uterine packing forceps.

for asepsis are as usual (sterile gloves, etc.), and the arrangement of the patient, tables, and basins is similar to that used when the perineorrhaphy was done. As there is often a shortage of assistants, the nurse should arrange everything in readiness for the physician to wait on himself. Then she holds the legs as in Fig. 110.

The sheet-sling may be used or each foot placed on a chair. The patient should rest quietly for several hours after the sutures are removed.

Uterine Tamponade.—The tamponade or packing of the uterus with gauze is done to control postpartum hemorrhage, and also by some accoucheurs in the treatment of puerperal sepsis. The physician needs specula, vulsellum forceps, long uterine packing forceps (Fig. 111),

and a jar of sterilized or antiseptic gauze. This gauze should be ½ yard wide and 12 yards long, and packed

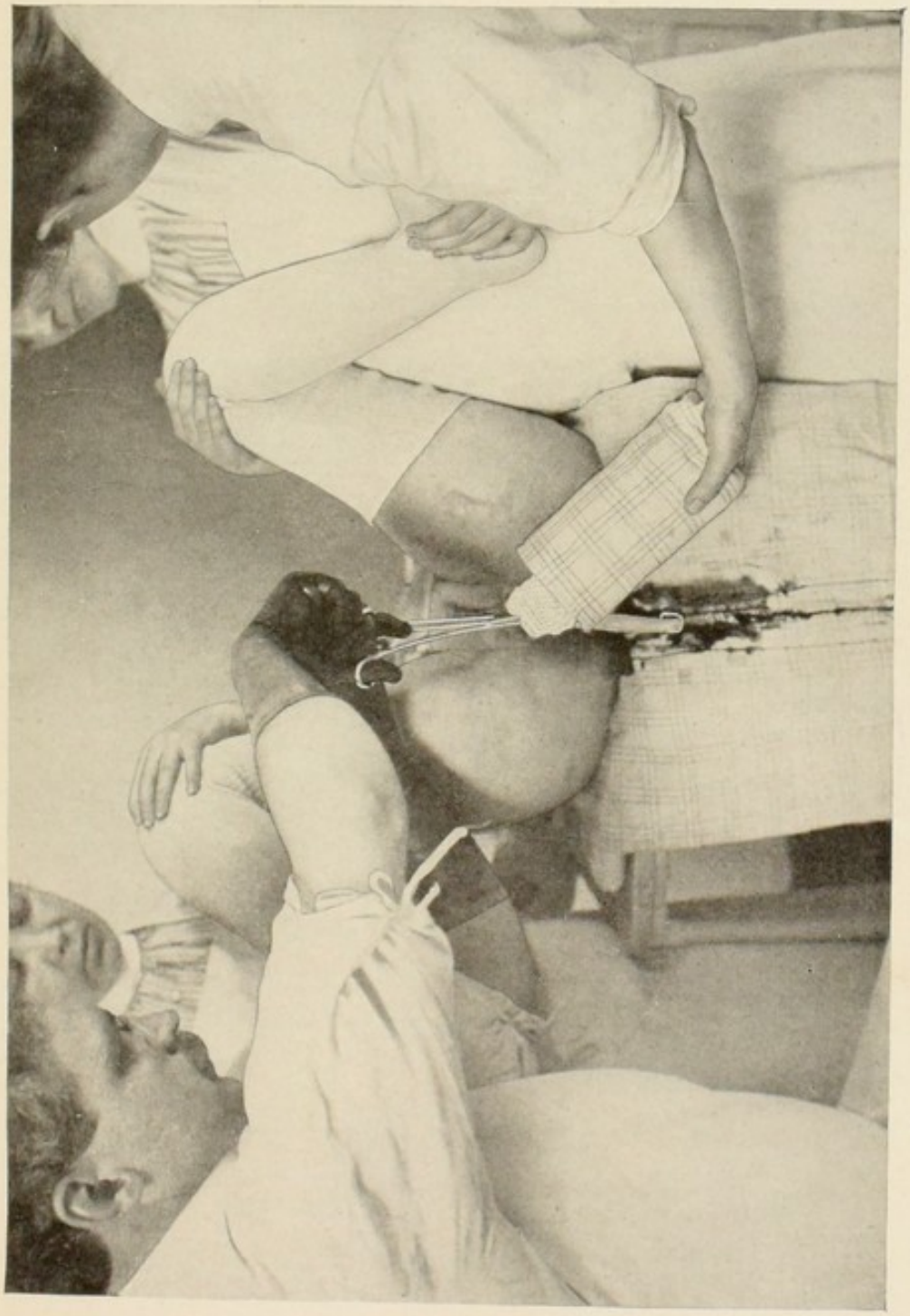


Fig. 112.—The operation of packing the uterus, showing how the nurse holds the gauze near the vulva.

in jars from below upward, so that when needed it may be served right out of the jar (Fig. 112). If the avail-

able gauze is rolled, the roll may be served out of a sterile basin, or from two forceps attached to the center, as in Fig. 113.

The patient is arranged across the bed or on a table in the lithotomy position. For this operation the limbs may be supported on chairs. The nurse wraps the jar in a sterile towel and holds it against the buttock, about 2 inches below and to the side of the vulva. The physician picks up the end of the gauze with long forceps and carries it into the uterus, which he has

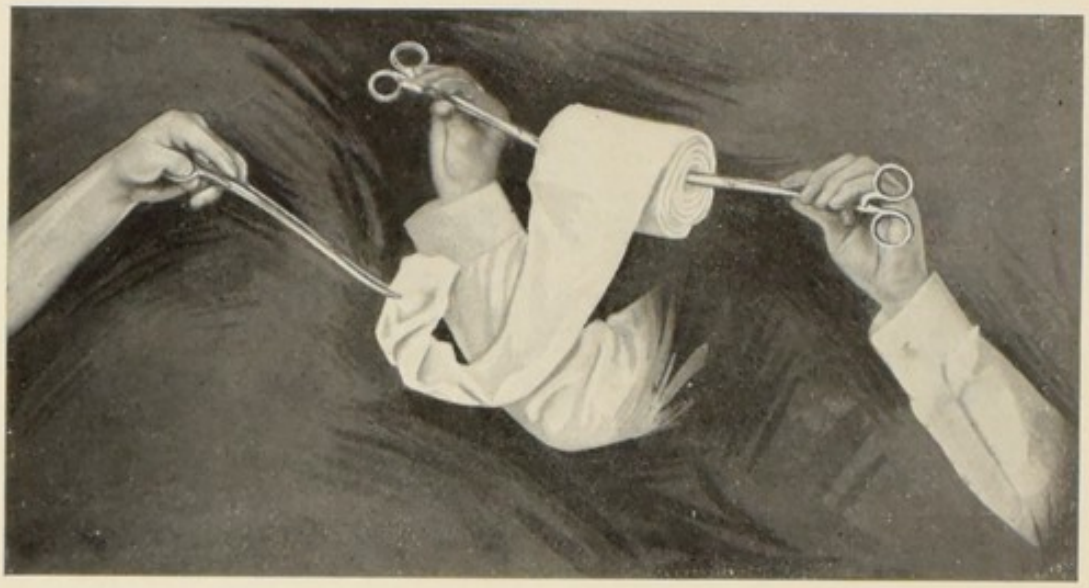


Fig. 113.—Showing how nurse unrolls gauze by means of two forceps as the doctor packs it into the uterus. Rubber gloves, etc., are, of course, used in actual practice.

drawn down with vulsella, or steadies with two fingers of the other hand (Fig. 112).

After the uterus is packed a pad is applied, and then the binder. Special care must be taken in moving patients that are tamponed, as the uterus may stretch dangerously tight over the packing or even rupture if the patient is tossed about.

The Douche.—The practice of vaginal and uterine douching after labor has undergone nearly a complete reversal in the last fifteen years. Whereas formerly it

was thought that douching aided recovery and prevented puerperal infection, accumulated experience has proved that the irrigations in normal cases are at least superfluous, and indicated only in pathologic cases. Even here medical opinions differ as to their value.

The vaginal douche is a much simpler procedure than the uterine douche, and the latter the nurse ought not be called upon to give, although with a little special instruction she can learn to practice it. The dignity nowadays accorded the uterine douche places the responsibility on the physician.

The Vaginal Douche.—The arrangement for giving the douche is pictured in Fig. 151. The aseptic preparations are as usual. For vaginal douching the patient lies on her back in bed on a douche-pan, which should be sterile. The douche-bag and nozzle should be freshly sterilized, and sterilized water, saline solution, lysol used, according to special order. For the vaginal douche the point is inserted $2\frac{1}{2}$ inches downward and backward, avoiding the perineum. The bag should be no more than 2 feet above the patient, and the return flow from the vagina must be free, which is accomplished by pressing the tube slightly against the side of the vulva. The nurse must have sterile hands or wear rubber gloves. One quart is usually sufficient. The patient is asked to bear down a little to express any liquid remaining in the vagina, the parts are gently dried, and the douche pan is removed. The nurse observes and notes any clots or shreds that have come away, and also the odor of the discharge. If bichlorid or carbolic acid is ordered as a douche, it should be followed by sterile water, and care taken that the proportion is right and the mixture perfect. Cases of fatal poisoning are recorded due to neglect of these precautions, which are as necessary in private homes as in hospitals.

The Uterine Douche.—For this the patient is usually placed across the bed or on a table, as often it is combined with a digital palpation of the interior of the womb. A broad speculum, two vulsellum forceps, a long uterine applicator, and a uterine douche point should be boiled. Sterile tubes for cultures should be provided.

Plenty of sterile water is needed, as these douches are often copious The patient is placed on a Kelly pad or on a rubber sheet draped over a roll of newspapers. The floor is properly protected and a drainage pail provided.

The patient must be kept quiet after this operation. Not seldom it is followed by a chill and rise of temperature.

Uterine Curettage.—This operation is done in the treatment of puerperal infection, and its object is to remove pieces of decidua or placenta that are retained and decomposing in the uterus. Physicians differ as to the advisability of the practice. It is also performed in cases of abortion.

The preparations are the same as for a major operation—table, anesthetic, hot and cold sterile water, sterile gloves, etc. The instruments required are specula, curets, as the physician selects, uterine packing forceps, cervix forceps, vulsella, uterine douche tube, scissors, sterile glass for specimen, test-tubes for cultures. A basin of sterile water in which the operator may rinse the curet of adherent particles of tissue should be placed at his side. Gauze—iodoform, lysol, or plain sterilized—for packing the uterus may be needed.

Since these operations are done for septic cases the nurse should be careful of her hands, not to prick her fingers on the instruments, and not to carry infection to the mother's breasts or the child's eyes or navel.

The Administration of Saline Solution.—One of the most precious additions to our means for saving life is the use of saline solution transfusion. In the olden time blood from another person was transfused in cases of severe hemorrhage, and many cases are on record of such heroic sacrifice, but only recently has the direct transfusion of human blood been practicable and safe. In 1881 Schwartz showed that salt solution could be used for supplying loss of blood in animals, and von Ott and Bischoff were the first to employ the measure in the treatment of anemic patients.

There is but little doubt in the minds of surgeons and accoucheurs that the use of salt solution for their various purposes saves lives.

An expensive apparatus, though more convenient, is not necessary except in hospitals, where the operation is frequently done.

The saline solution may be injected under the skin (hypodermoclysis) or by intravenous administration.

List of Instruments for Hypodermoclysis

One 2-quart douche-bag or can with tube 6 feet long.
One 1-quart measure.

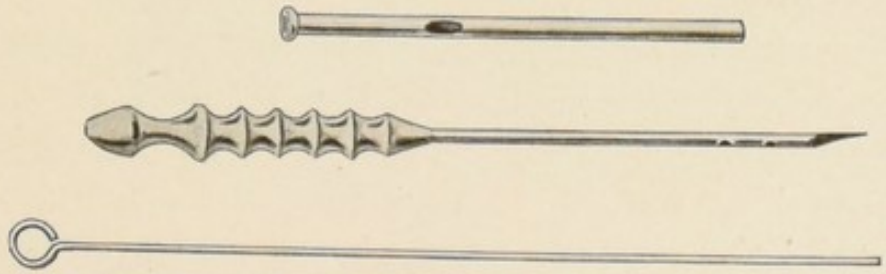


Fig. 114.—Author's needle used for hypodermoclysis, with stem and protecting cover.

One bath-thermometer, registering over 212° F. This is removed from its wooden case.

One salt solution needle (Fig. 114).

For intravenous transfusion add:

One small sharp scalpel.

Two small curved needles.

One sharp-pointed scissors.

Two fine rat-toothed dissecting forceps.

Three artery forceps.

One fine-pointed medicine-dropper or special transfusion cannula (Fig. 115).

Several strands of silk.

One tourniquet for the arm. Do not forget to remove it before the fluid is injected.

In a private house the nurse will proceed as follows: The 2-quart douche-bag or can and tube, the 1-quart measure, and the bath-thermometer are put on to boil in 1 per cent. soda solution. The rubber goods must be

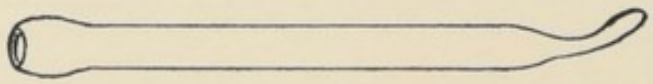


Fig. 115.—Glass cannula for intravenous transfusion.

wrapped in several layers of towel. They are boiled vigorously, tightly covered for fifteen minutes, and are rinsed, inside and out, with hot sterile water. The instruments are sterilized separately and served out of the pan in which they were boiled.

Salt solution, 0.7 per cent., is that most generally employed, though sometimes other chemicals are added. It is made by dissolving 2 drams of common table salt in 1 quart of water. In practice 2 teaspoonfuls to 1 quart will give accurate enough dosage. Unless the salt has been previously sterilized, the solution when made up must be boiled vigorously for fifteen minutes, in a tightly covered vessel.

Distilled water should not be used, the small amount of calcium in hydrant water being needed by the

blood. This fact is supported by physiologic experiment.

After boiling the required time the solution is poured into the douche-bag, the mouth of same stoppered with a large pledget of sterile cotton, and the side of the bag held under the cold-water tap. The thermometer is

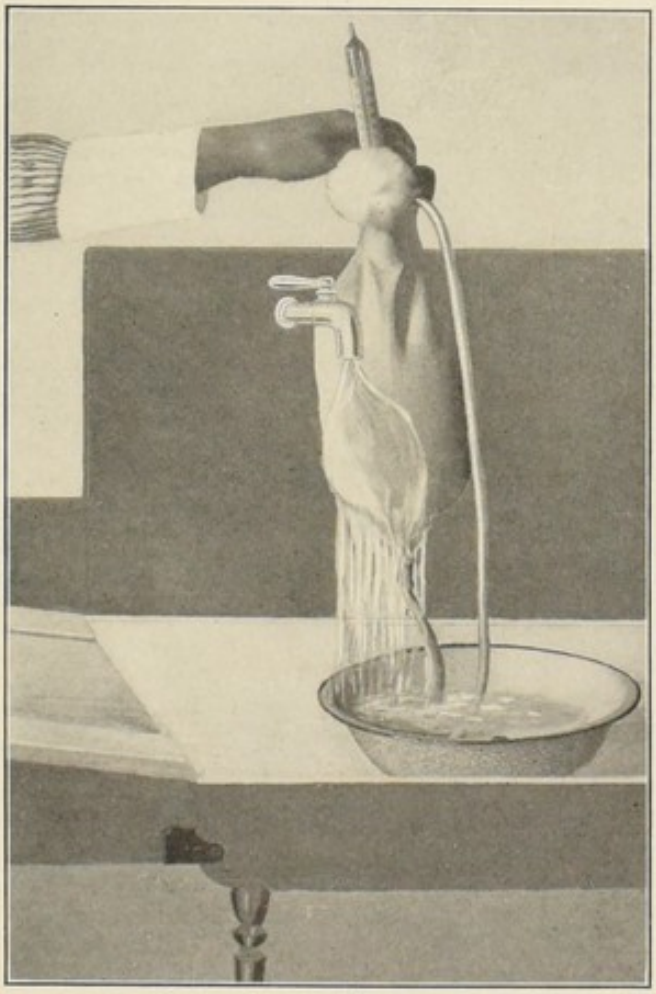


Fig. 116.—Cooling the prepared saline solution under the cold-water tap.

inserted alongside the cotton (Fig. 116). In this way the solution is quickly brought to the right temperature—110° to 120° F.—as ordered. By the time the fluid reaches the patient, passage through the long tube will have cooled it off several degrees.

The skin is prepared by scrubbing with water and soap,

with lysol and alcohol, or by painting heavily with tincture of iodin.

For subcutaneous transfusion (Fig. 117) the area under the breasts is often selected; for intravenous (Fig. 118),

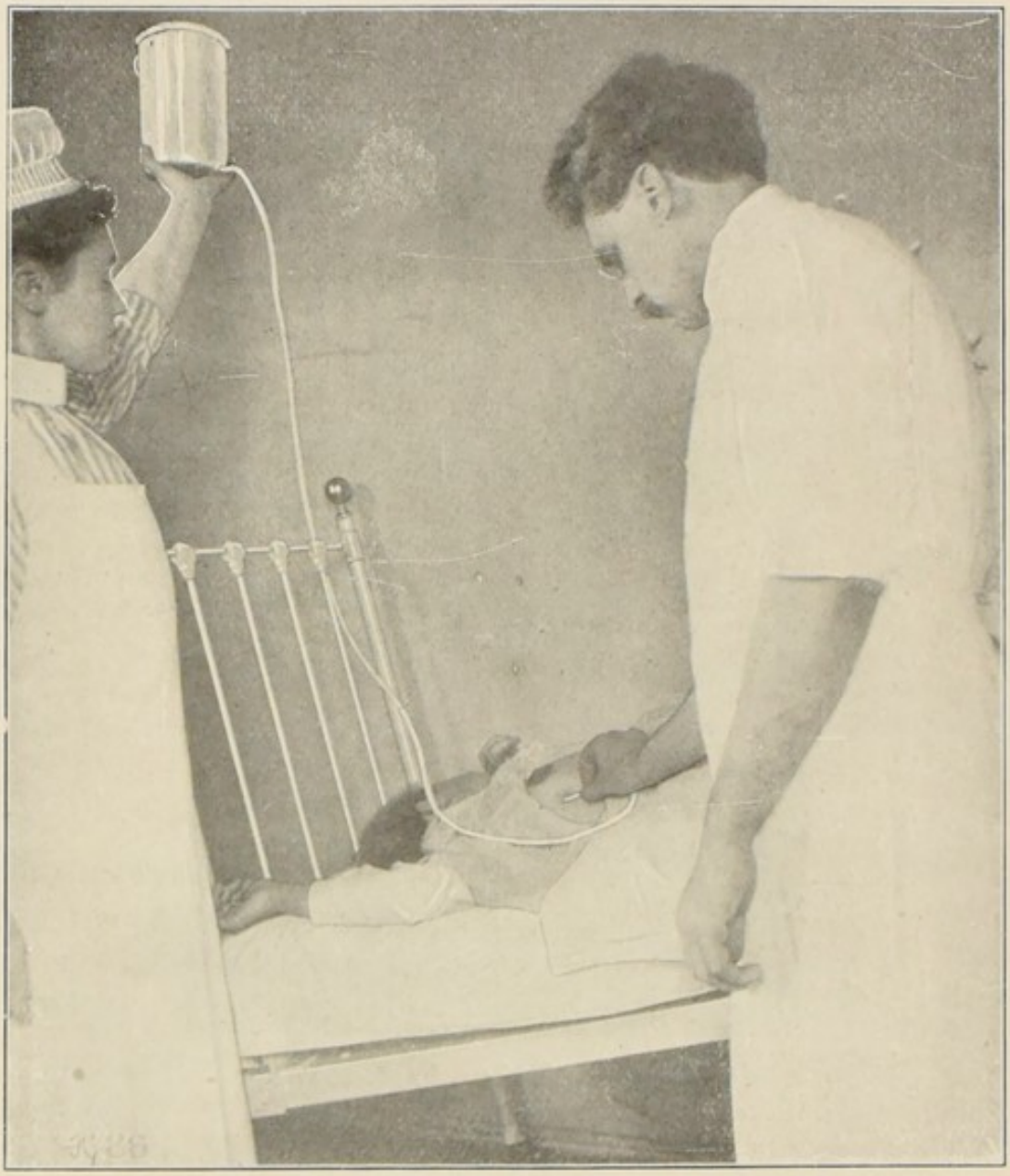


Fig. 117.—The subcutaneous administration of saline solution.

the large vein in the bend of the elbow. With the subcutaneous method the bag is raised 5 feet above the patient to obtain sufficient pressure; for the intravenous method a height of 18 inches gives sufficient force.

A shorter tube is used. The puncture under the breast may be sealed with collodion, with adhesive plaster, or

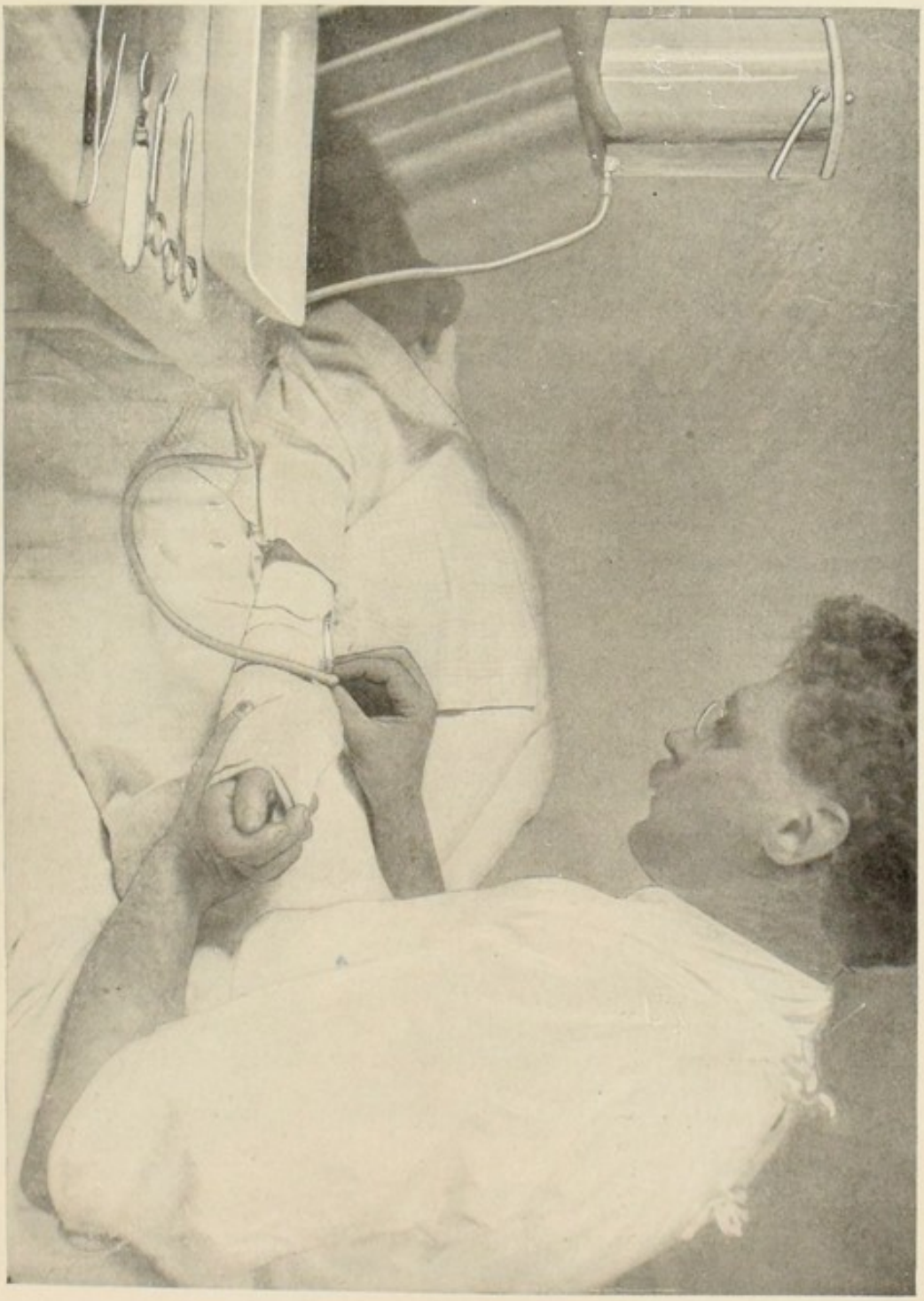


Fig. 118.—The intravenous administration of saline solution.

closed with a Michel clip. In the absence of either, the solution may be prevented from escaping from the needle

puncture by holding a pledget soaked in alcohol over it for a few minutes. The wound in the bend of the elbow is dressed aseptically under firm compression.

The Induction of Premature Labor.—This operation is quite often done, the reasons being: contracted pelvis in the mother (a small, premature child may pass); threatened convulsions (eclampsia); placenta prævia, and many others.

There are several methods, the most reliable ones being the insertion of rubber catheters into the uterus (Krause); of long strips of gauze, and of rubber bags filled with water after being laid inside the cervix. With extreme asepsis the induction of labor has, of itself, no mortality, and the women do not sicken. If antiseptic precautions are neglected the operation is dangerous.

Preparations are the same as for any major obstetric operation.

Instruments Needed

For the rubber-bag method, a colpeurynter or Barnes' bag (Figs. 119, 120).

A long uterine dressing forceps.

Two specula.

Two vulsella.

Scissors.

Two short artery forceps.

One bulb or piston syringe, *in working order.*

One strand linen bobbin, 20 inches long.

For Krause's method, add two soft-rubber solid bougies (size 16, American).

For the gauze method, add a tubular packer (Fig. 121) and a supply of sterile gauze to fit the instrument.

The catheters and all soft-rubber goods are sterilized by boiling in pure water for thirty minutes in a tightly closed vessel. They must be wrapped in at least four

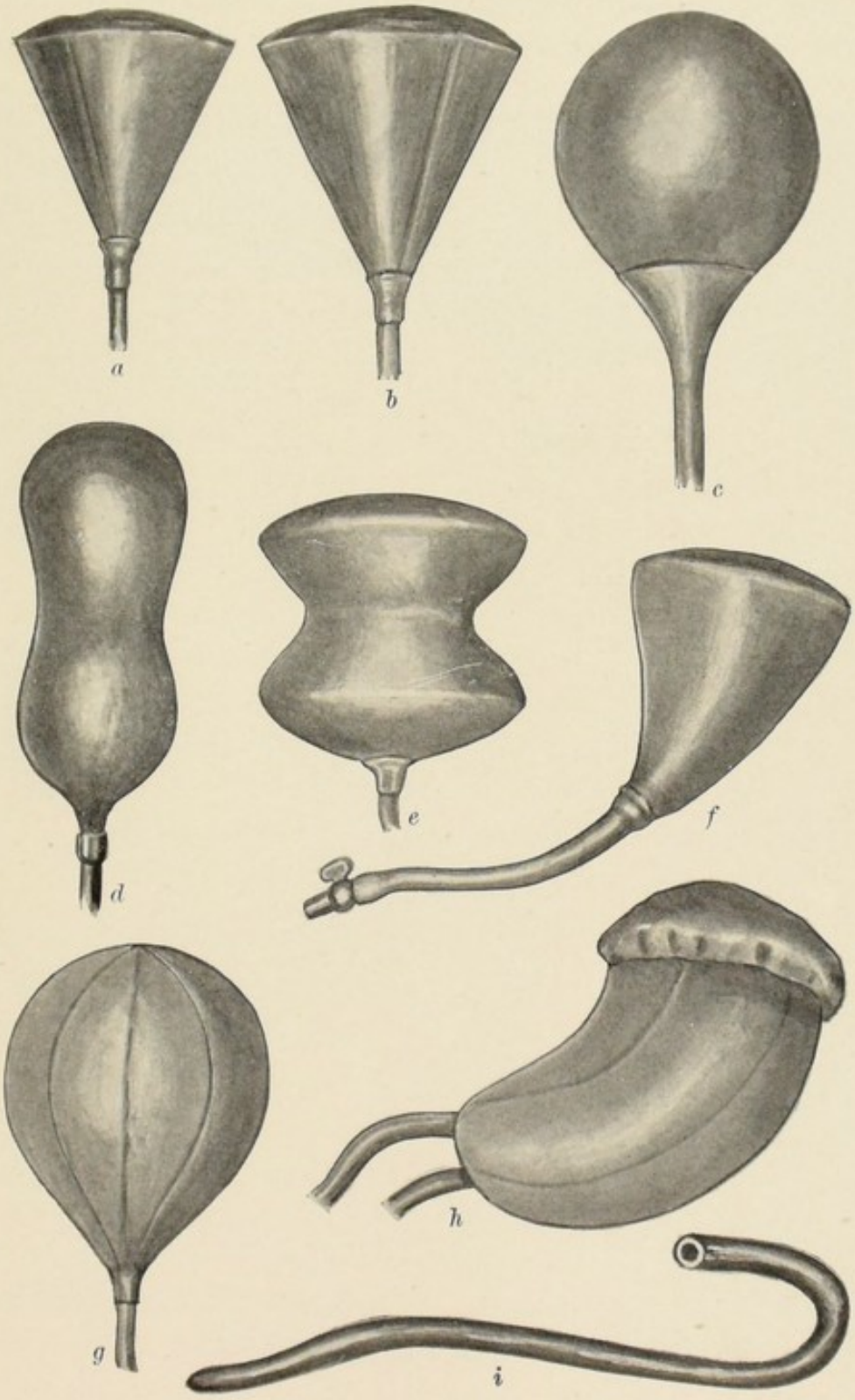


Fig. 119.—Various types of balloon dilators: *a*, *b*, Voorhees'; *c*, Carl Braun's colpeurynter; *d*, Barnes'; *e*, Hirst's; *f*, Champetier de Ribes'; *g*, air pessary; *h*, Pomeroy's; *i*, bougie.

layers of a thick towel to insure them against being burnt by lying against the hot metal. Hard-rubber

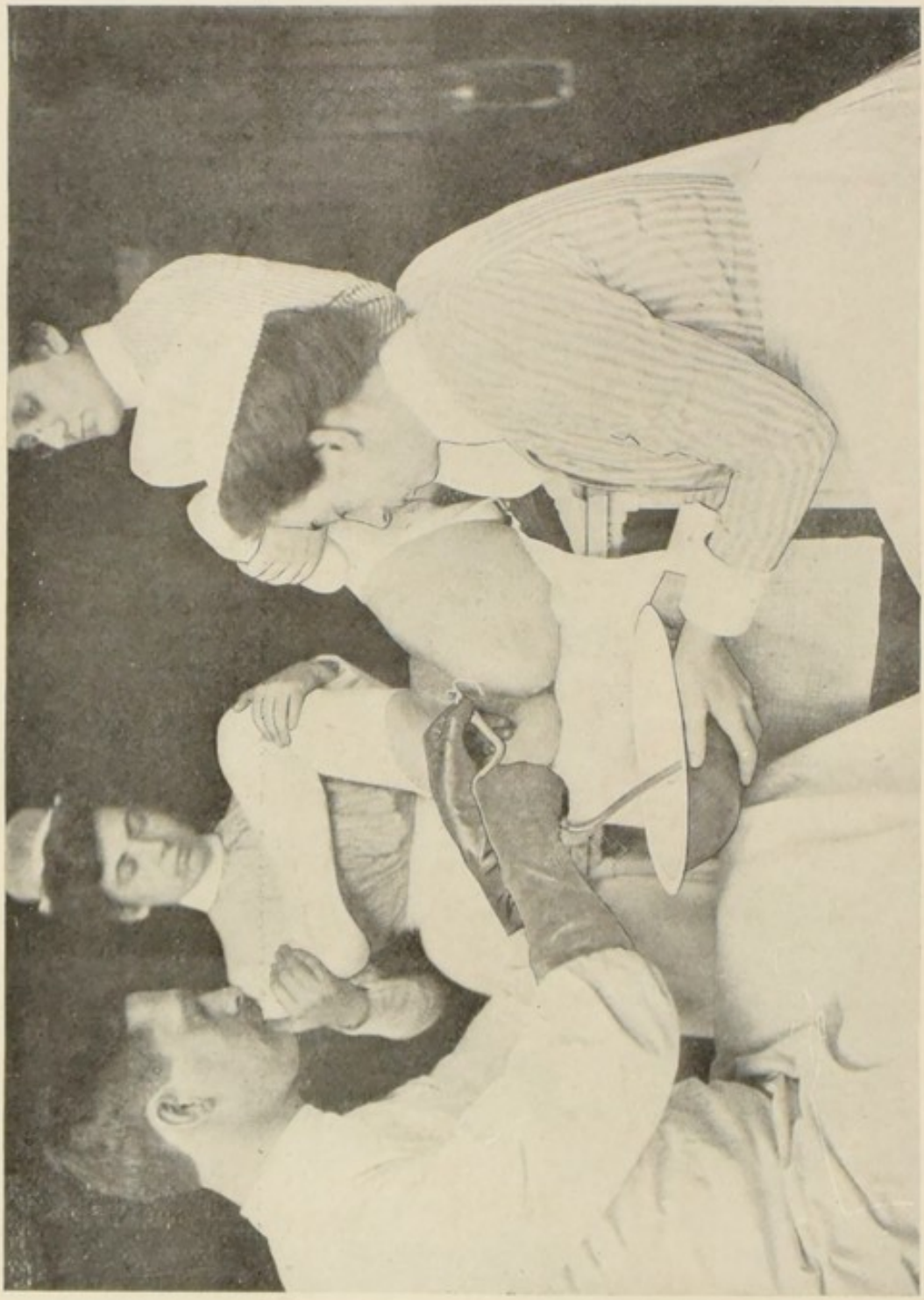


Fig. 120.—Filling the colpeurynter.

syringes are sterilized by formalin or prolonged immersion in 1 : 500 bichlorid.

A vaginal douche is usually given, and the patient is placed across the bed or on a table, as for any obstetric operation.

The object of the operation is to induce labor-pains, to inaugurate labor, after which the case is left to nature or treated as any labor coming on spontaneously at the same period of pregnancy.

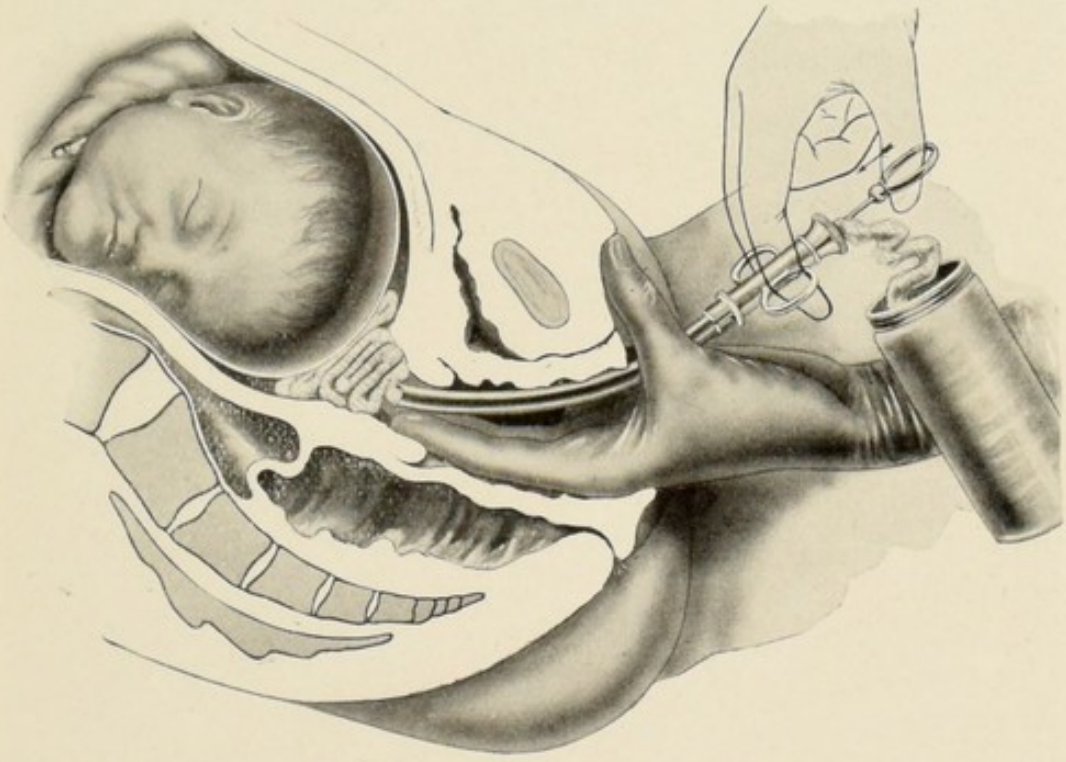


Fig. 121.—Tubular gauze packer.

The bougies lying in the uterus irritate it to contraction, as does also the rubber bag. The latter, in addition to being an irritant, mechanically dilates the cervix. Pains come on in a few minutes or hours, or perhaps not for days, although it is not usual for the doctor to leave the instrument in the uterus for this length of time. The procedure is sometimes very tedious. If the labor is induced before term, the nurse should have the incubator ready. (See pages 368–374.) She should enter the advent of the labor-pains on the history-sheet,

and record the time of each pain until they are well established.

Therapeutic Abortion.—This term is used to distinguish the operation of ending the pregnancy before the child is viable from the criminal operations performed by midwives and professional abortionists.

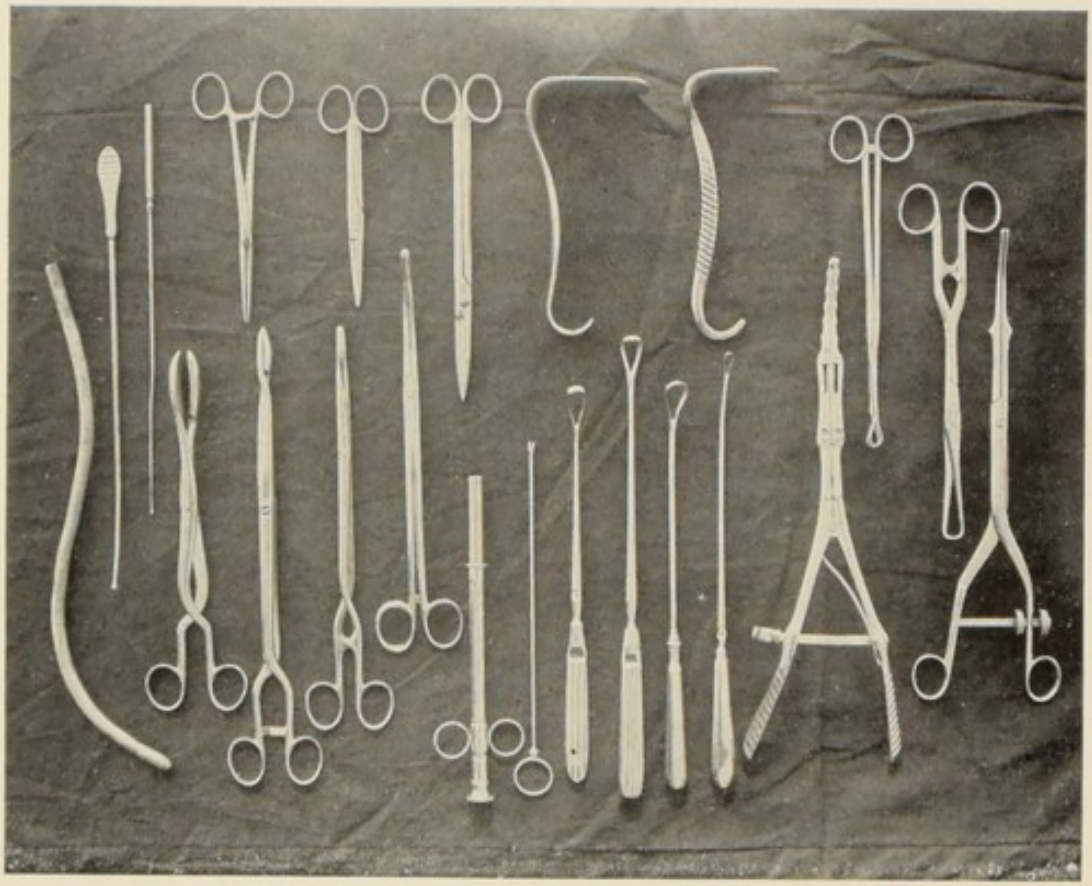


Fig. 122.—The instruments for the treatment of abortion and the operation of curettage: Lower row: uterine douche nozzle; 3 placenta forceps; uterine packing forceps; tubular uterine packer with pronged plunger; curets, four sizes; uterine dilators, two sizes. The upper row: 2 sounds; 1 artery clamp; 2 scissors; 2 retractors; 2 vulsellum forceps. Some operators prefer Hegar's graduated bougie dilators (Fig. 123).

Perhaps the saddest commentary on our "modern civilization," on our "higher thought," on our "ethical movement," is the increase of the practice of criminal abortion. Nurses are not long in training before they see how alarmingly this crime has spread, and they see,

too, the lives lost and the homes wrecked by it. A nurse should never be party to such a procedure. It is murder and often suicide, and by gentle counsel she should dissuade the woman from entertaining the thought of its commission.

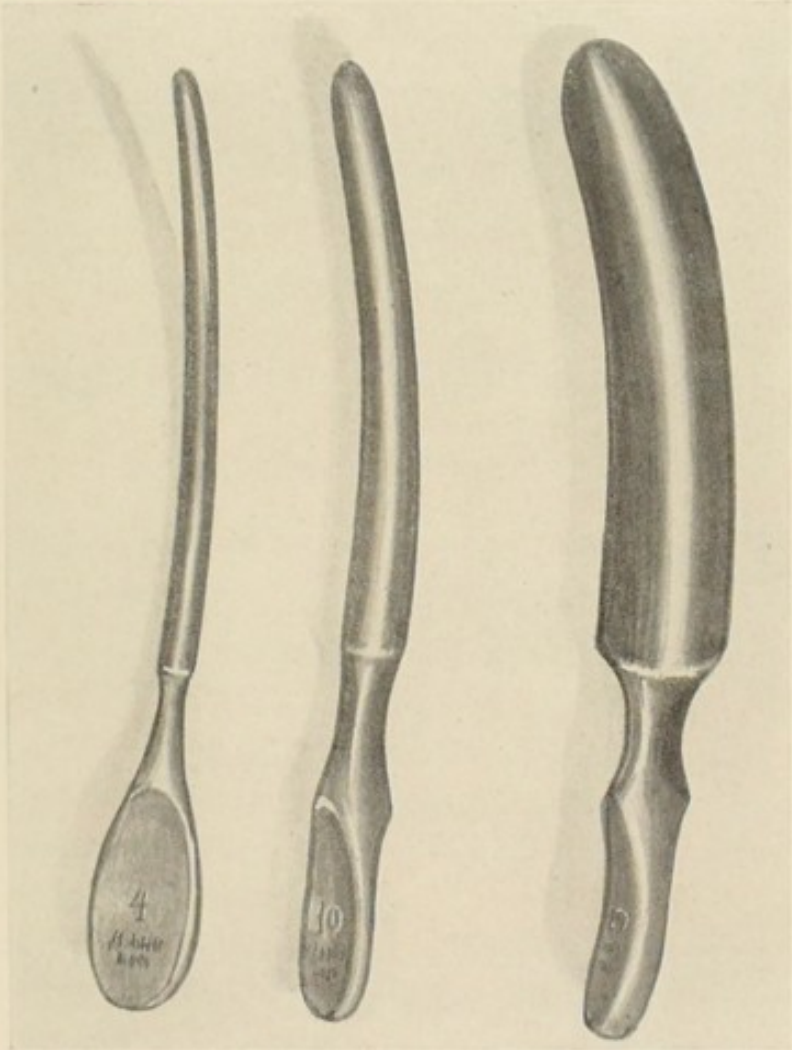


Fig. 123.—Three sizes of Hegar's dilators. There are twenty-four sizes.

Very rarely the conscientious physician is compelled to sacrifice a tender life in the mother's womb. Such occasions are: Uncontrollable vomiting, Bright's disease, and a few others. The accoucheur feels here, as he did while doing a craniotomy on the living child, that the best interests of the mother, the family, and the community are served by this sacrifice. The operation, how-

ever, awakens feelings of greatest delicacy; it involves heavy and painful responsibilities, and no physician will perform it without the counsel and moral support of at least one of his confrères.

The preparations are the same as for the induction of labor, the instruments are the same, with the addition of uterine dilators and curets (Fig. 122).

A basin with sterile water is to be provided in which the operator may float particles cureted out for inspection. The parts of the fetus removed piecemeal, arms, legs, etc., should be fitted together to make sure that the whole body has been extracted.

The after-care is identical with that of the normal puerperium.

PART III

THE PATHOLOGY OF PREGNANCY, LABOR, AND THE PUERPERIUM

CHAPTER I

OBSTETRIC COMPLICATIONS

DISORDERS OF PREGNANCY

ORDINARILY pregnancy and parturition are considered normal processes, but they are attended with many discomforts, so that the patient is often rendered miserable, and these conditions run so close to the pathologic that the dividing line is very narrow. Mauriceau, a famous French obstetrician, said pregnancy is a disease of nine months' duration. Some women feel better while pregnant than at any other time.

Nausea and Vomiting.—About one-third of pregnant women have this symptom. It varies much in different women and in succeeding pregnancies. If the patient retains most of her food, if the general health is not concerned, the physician usually is not alarmed, but prescribes only mild palliative measures. Such are: (1) Waking the patient at about 6 A. M. and giving her a cup of coffee with a bit of toast, the patient resting an hour or two afterward; (2) counterirritation over the stomach; (3) the knee-chest position (see Fig. 124); (4) mild medicines, as oxalate of cerium and bismuth; (5) laxatives.

Hyperemesis Gravidarum.—If the woman vomits continually, if her health begins to suffer, the case is

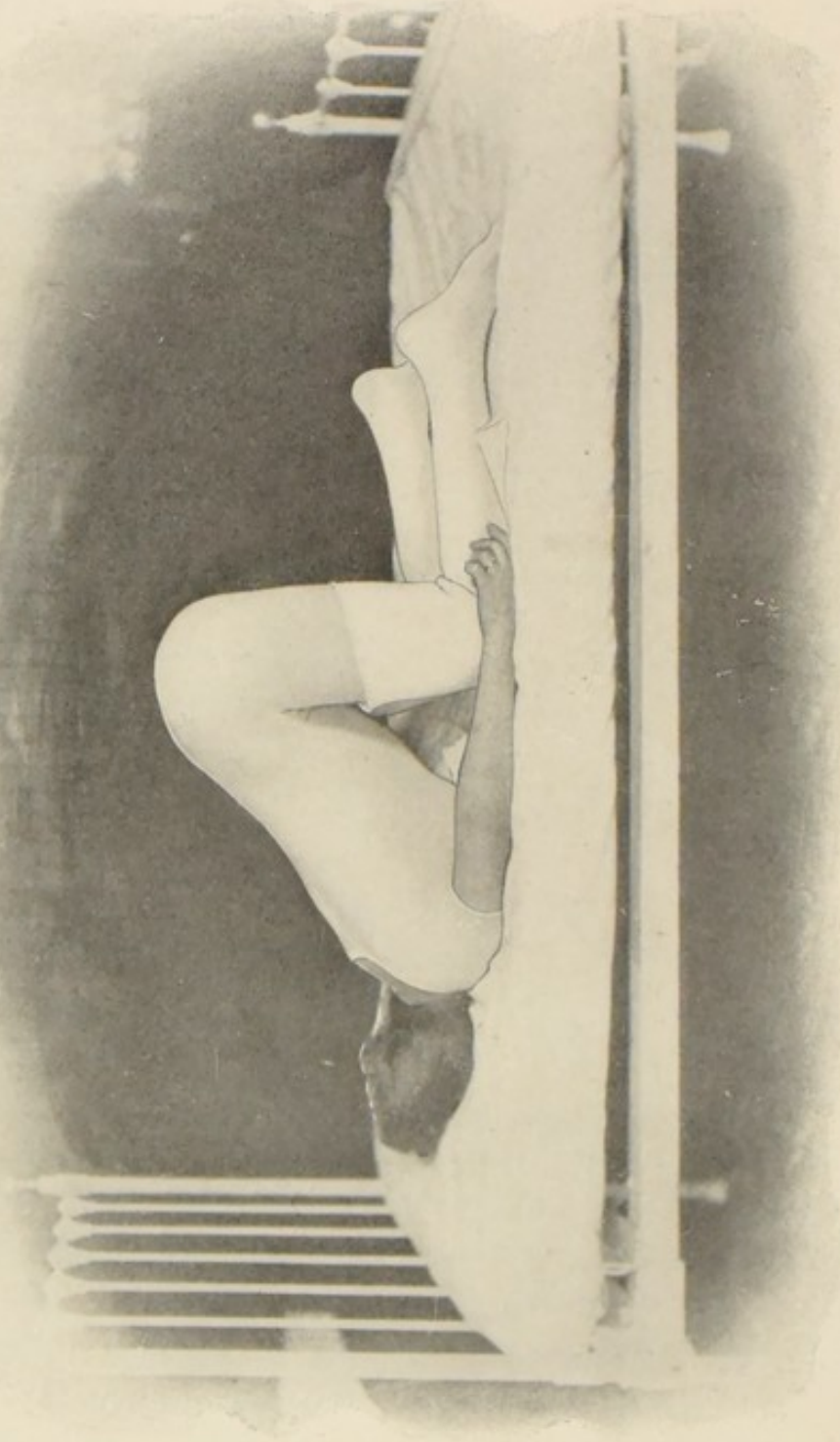


Fig. 124.—The knee-chest position.

serious and must be handled firmly. Symptoms of the ordinary nausea becoming "uncontrollable" or "per-

nicious" are: Constancy of nausea and great frequency of vomiting; exhaustion; loss of weight and of sleep; salivation; hematemesis; fever, and rapid pulse. The last three show that the disease is far advanced.

The nursing of a case of hyperemesis gravidarum requires the highest kind of nursing skill and culinary ability.

Besides the administration of the prescribed medicines the nurse may have to assist at washing out of the stomach, the application of electricity, hypodermic injection of saline solution, gynecologic treatment of the patient, such as raising the uterus with tampons or the colpeurynter, even the operation of therapeutic abortion. The actual nursing and feeding contribute immensely to the success of the physician's remedies.

The pleasantest and airiest room in the house should be selected for the patient. It should be darkened. She should be left alone with her nurse, all friends and nearly all relatives being excluded. It is sometimes beneficial to exclude every one—the husband also—for a week or more. The nurse should distract the patient's mind from herself and from the idea of vomiting; therefore the emesis basin should be hidden until actually required.

A soap-and-water bath is given daily, followed by a rub with eau de Cologne or Florida water. The appetite is tempted with light foods served in the daintiest possible manner, using the whitest linen and the prettiest dishes. Occasionally a few sips of champagne may settle the stomach, so that food can be retained, or a hypodermic of heroin is given just before the food is taken, or bromide given per rectum.

At the beginning the following may be the dietary:

Milk and lime-water or seltzer, ice cold.

A strong beef-broth served in a cup, with salted wafers.

Cold custard.
Rice and milk, with cinnamon.
A sliver of white meat of chicken, with buttered toast.
Strong oyster broth.
Strained oyster-stew.
Toast and hot milk, with sugar.
Ice-cream and ices.
Cream soups, with wafers.

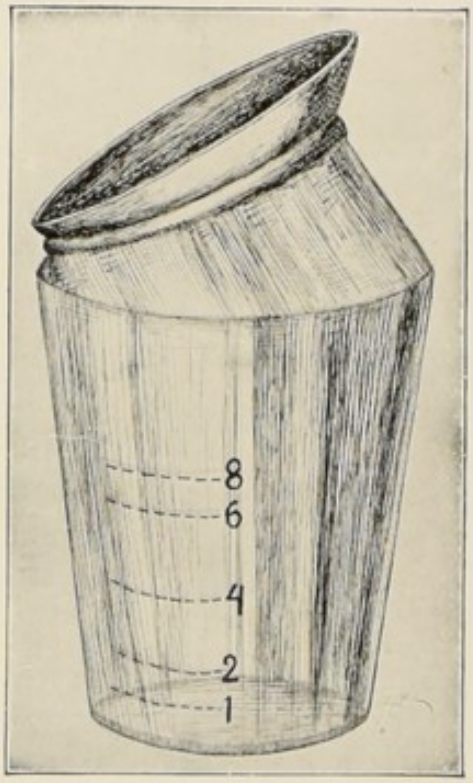


Fig. 125.—The "Ideal" drinking glass.

The food should be given while the patient is in the horizontal position, and she should lie perfectly quiet for a few minutes afterward. The "Ideal" drinking glass (Fig. 125) is very convenient for drinking in this position.

Should these measures fail, liquid diet will have to be ordered. This consists of milk, milk and seltzer or lime-water, peptonized milk, plenty of water, beef, mutton, and chicken broths, albumin-water, sugar-water, barley-

water, and beef-juice.[1] Some patients do better on solid food, toast, crackers, and meat, the liquids being supplied by rectum.

If the patient vomits in spite of all this, the physician will usually order everything by mouth stopped and rectal feeding instituted.

Physicians seldom allow patients to continue long in this condition, as a turn for the worse may come on suddenly, and the patient be lost before measures for saving her can be instituted. Occasionally, even when conditions appear quite serious, the woman suddenly ceases to vomit, demands food, and retains it. Sometimes a psychic shock, or mental influence, or the phenomenon of "quickening" must be accepted as the cause, and not the doctor's medicines.

Should a consultation of physicians decide to terminate the pregnancy as the only hope of saving the patient, the nurse will set about preparing as for a major operation. (See Therapeutic Abortion, pp. 234, 235.)

Shock is marked in these cases, and ample provision ought to be made to combat it. After the operation the vomiting nearly always ceases or becomes less. Was the operation performed too late, acute exhaustion supervenes and the patient sleeps away. Careful nursing after the operation is needed, and all the intricate arts of the cook will be useful. Nourishment should be given as previously indicated. If the rectum tolerates it, rectal feeding is practised in addition, and inunctions of benzoinated lard are made. Some of the lard is absorbed as a food. To supply liquids to the body, salt solution may be given by the drop method per rectum or by hypodermoclysis, and everything done to bring the patient quickly back to a normal state of nutrition.

[1] Formulas for the preparation of these foods will be found under Dietary, p. 452.

Prevention of Decubitus.—The sacrum and bony prominences must be inspected several times daily and an incipient bed-sore treated at once. Frequent change of position, the use of air-cushions, an invalid bed, and absolute cleanliness will prevent decubitus. Daily washings with 25 per cent. alcohol, followed by a gentle rubbing with sterile olive oil, will aid in prevention.

The mouth in cases of hyperemesis becomes reddened, tender, often bleeding, and teeth and lips accumulate sordes. If the patient becomes delirious, the resemblance to a typhoid case is striking. The nurse cleans the tongue and gums carefully (as the mucous membrane is easily scratched) with boric acid solution containing 3 per cent. lemon-juice. No brush may be used on the teeth. The finger is covered with a napkin or pledget and is gently rubbed over them. Care is to be taken to prevent the patient from gagging. Throughout such a case the nurse should see that the patient gets sleep, here, without doubt, nature's sweetest restorer.

Toxemia in Pregnancy.—Closely allied to hyperemesis gravidarum is the toxemia of pregnancy. By this is meant that poisonous products (toxins) have accumulated in the blood. During pregnancy the general chemic changes going on in the woman's body are more active, and, in addition, there is an increase of waste matter—that produced by the child. Should the mother's liver or her kidneys, or both, be unable to handle and excrete these waste-products, they accumulate as toxins in the blood, producing toxemia. This is a dangerous condition and requires active treatment by the physician.

The symptoms are headache, dizziness, cloudiness of mind and of vision, dry, muddy skin, deficient urination (the urine is high colored and strong), constipation, brown, furred tongue, etc.

The physician treats these cases by restricting the patient to a milk diet for a while, and then, as improvement appears, cereals are given, and then a vegetarian diet. At the same time saline cathartics are administered and warm baths—in urgent cases, the hot pack. Unless successfully treated, toxemia may result in eclampsia.

Edema of the Extremities.—Frequently, late in pregnancy the feet swell up, becoming dropsical. The

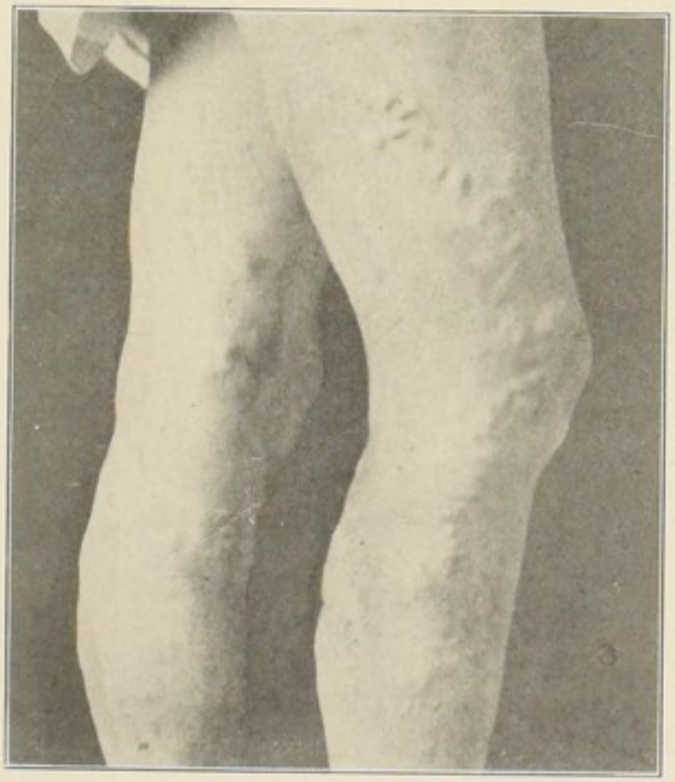


Fig. 126.—Varicose veins of the lower extremity in a pregnant woman at term (Hirst).

symptom is usually unimportant, but it should be reported to the physician. The edema is due to mechanical obstruction to the return flow of the blood, but it may indicate disease of the kidneys, Bright's disease, or heart disease, and will be the cause of earnest solicitude to the doctor.

Varicose Veins.—Varicosities of the veins in the legs and around the vulva are quite common in advanced

pregnancy in multiparæ. Primiparæ and women who take good care of themselves are less troubled with



Fig. 127.—The treatment of varicose veins by means of strips of adhesive plaster. Seldom necessary to cover the whole limb.

them. In some cases the enlargement of the veins is so great as to cause real distress, as burning, itching, and pain in the legs and lower pelvis (Fig. 126).

The treatment consists in the institution of a hygienic mode of life, as given under Hygiene of Pregnancy (p. 75). There should be no circular constriction at any part of the body, especially no round garters, corsets, or tight waistbands. The return of blood to the heart must be unhindered.

The feet must be kept off the floor as much as possible, and rubber stockings or a flannel bandage worn during the day. A flannel bandage does not do any good unless well applied and kept in place. Adhesive plasters give considerable relief in these cases. Strips are cut 1 inch wide and 7 inches long These are placed in a spiral direction partly around the leg below and over the largest varicosities (Fig. 127). These strips support the column of blood in the veins. They are applied while the patient is recumbent. The woman should be cautioned against injuring the enlarged vessels by scratching or striking against objects, as dangerous and even fatal hemorrhage has resulted. The patient is instructed that should such a hemorrhage occur, she should apply firm pressure to the bleeding point and notify her physician without a moment's delay.

Leukorrhea.—During the first months of pregnancy there is a slight increase in the vaginal discharge, and toward the end also. No treatment is required. If the discharge is profuse, especially if yellow or greenish, the physician ought to be consulted, as an infection of the genitals may exist which may endanger the patient's health and the baby's eyes. Douches should not be given without the physician's order. Leukorrhea may be caused by pelvic congestion, evidenced by large varicosities.

Pruritus, or itching of the pudenda, is sometimes a very trying symptom. Without visible lesion of the parts the patient is annoyed by a more or less intense

itching of the vulva. This may be general over all the body. It may be so intense that the woman loses sleep, and it becomes, in very rare instances, unless relieved, a condition dangerous to life. In these cases a nervous element is present. The physician will lay out a course of treatment, but the nurse may use household remedies,

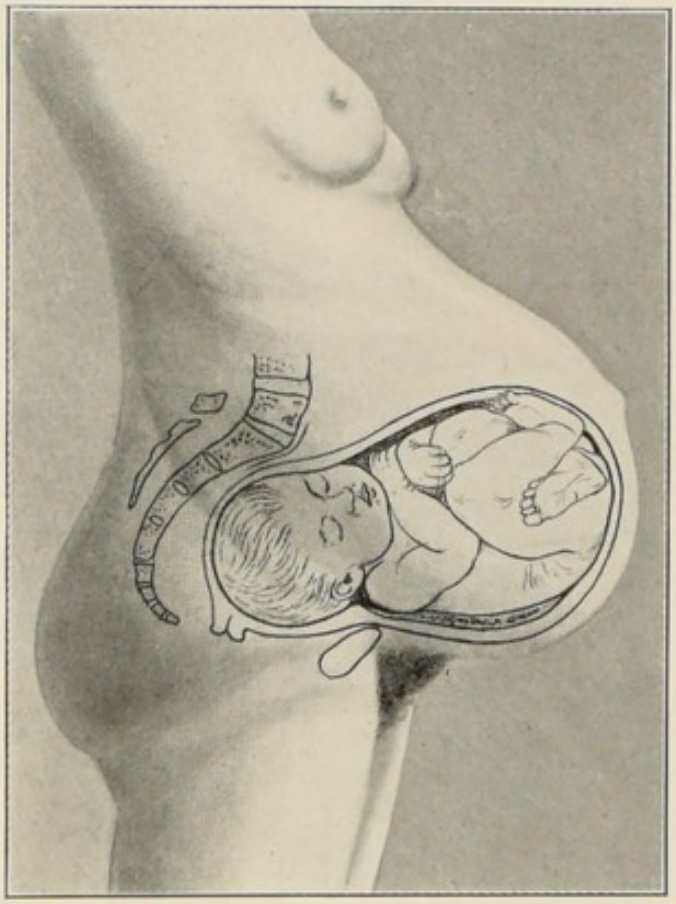


Fig. 128.—Position of the child and the uterus in a case of pendulous abdomen (Dickinson).

such as bathing with washing-soda solution, weak carbolic solution, peppermint-water, etc.

If dependent on an irritating vaginal discharge or on "thrush," which sometimes occurs, appropriate treatment is instituted.

Pendulous Abdomen.—This condition, called "rupture" by the laity, is produced by a weakening of the abdominal wall or even a separation of the muscles,

allowing the uterus to fall far forward (Fig. 128) or even hang down between the knees. It causes drawing sensations in the abdomen, pain in the back, frequent urination, and discomfort in walking Relief may be obtained by supporting the uterine tumor with an abdominal binder (Figs. 37, 38) or sling hanging from the shoulder. The knee-chest position aids a little too in relieving the symptoms. Pendulous abdomen in a primipara indicates that something is wrong. It may render labor difficult. To a certain extent it is preventable. (See p. 78.) The jockey strap or combination binder shown in Fig. 129 aids in its prevention. It is worn for a month or more after getting up from the puerperium.

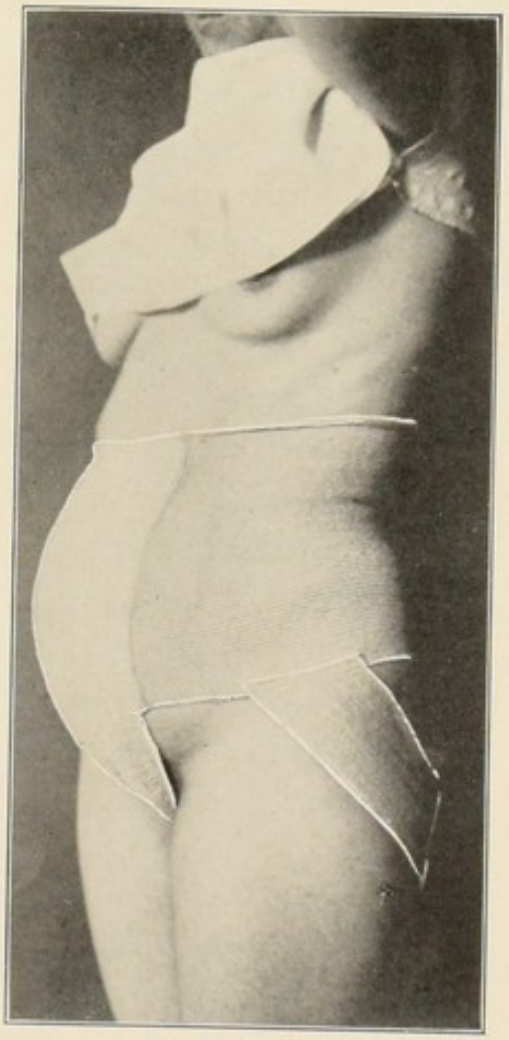


Fig. 129.—Combination binder or jockey strap applied.

Pains in the Abdomen.—Many women complain of pains in various parts of the abdomen. These are due to intestinal colic, impaction of feces, appendicitis, traction on adhesions, stretching of the abdominal wall, wearing of corsets or tight waistbands, carrying infants on the uterine prominence, and varicose veins in the pelvis. With the cause, the nurse will find the remedy. The knee-chest posture will relieve pressure symptoms; laxatives are exhibited, and hot camphorated oil, chloroform, or other liniment applied to the skin. If

marked and constant, the physician ought to be informed of it.

Heart-burn.—Indigestion and heart-burn are frequent and annoying symptoms in pregnancy. The physician will prescribe the usual remedies. Home remedies that give relief are: soda-mint tablets, 1 to 3 dissolved in the mouth, salted nuts chewed fine, and milk of magnesia, 1 to 3 dessertspoonfuls, as needed. Sometimes the stomach must be washed to afford relief.

The **teeth** in some patients show a tendency to decay. Cavities should be filled and bad teeth extracted as in the non-pregnant state, but long, tiring gold fillings and bridge work should be postponed. Milk of magnesia held in the mouth for three minutes three times a day will relieve the acidity of the saliva and help preserve the teeth.

Frequent Urination.—In the first few months this is a common symptom. It passes away, to return again when the head sinks in the pelvis at the time of lightening. If the condition is aggravated, destroying the patient's peace by day and her rest by night, the physician should be consulted. It is sometimes due to the uterus being turned back and imprisoned in the pelvis, the malposition distorting and compressing the urethra. The bladder fills almost to bursting and then overflows (ischuria paradoxa). The catheter should always be used to aid the diagnosis, but extreme care should be taken not to injure the urethra by making a false passage. Cystitis and ureteritis may occur. If there is no pathologic basis for the frequent urination, the knee-chest posture will relieve the discomfort somewhat.

Fainting.—Some women are much annoyed by this condition. Without apparent cause, or on the occasion of a little excitement, or by being in a close room, the

gravida feels faint, and may even fall to the ground. In a few moments the attack has passed.

The writer has observed this condition. It is not a real faint, as the pulse is good, and the face only slightly paled, though in some instances it may be an actual fainting. Consciousness is not lost. One must be sure that there is no real heart disease present.

This symptom may be present from the fourth month; it does not influence the pregnancy, though most distressing to the patient. The diet should be regulated—non-nitrogenous; the excretions should be stimulated; the patient should avoid crowds, excitement, and irrational dress. The harmlessness of the condition should be explained to her to allay the alarm it naturally causes. The physician occasionally prescribes a tonic.

Melancholia.—Some women, especially if from a neurotic family and of neurotic tendency, anticipate their coming confinement with increasing dread. While most women at some time or other during pregnancy imagine they are going to die before they are through with it, these patients develop an actual idea, a fixed fear, of death, and thus the border-line of insanity is reached. The general symptoms of melancholia may appear. The writer has noticed an apparent relation between this nervous condition and the toxemia described in this chapter. The nurse may do much by a cheerful bearing and reassurances to allay unnatural alarms in the patient, but the physician should be consulted if the condition is at all pronounced.

Hemorrhages During Pregnancy.—The whole reproductive cycle is attended with the possibility of hemorrhage from the genitals. In the early months abortion may be the cause of the hemorrhage.

Abortion.—This means the interruption of pregnancy before the seventh month. The child is not viable before

the twenty-eighth week. The symptoms of abortion are bleeding from the uterus and pains—miniature labor pains.

The nurse, finding the woman with threatened abortion, should put her to bed and send for her physician. If the woman is bleeding too profusely, she should, while waiting for him, pack the vagina as tightly as she can with sterile cotton, under the usual asepsis, or send for the nearest doctor. Then she should prepare everything for operation, so as to avoid delays when the physician arrives.

Placenta Prævia.—This is the development of the placenta, in part or *in toto*, in the lower uterine segment. Thus a portion of the placenta comes to lie over the internal os, in the way of the child, and thus the name "prævia" (Fig. 130).

The placenta is usually located near the top of the uterus, out of the way of harm, but when it is placed near the cervix—that is, in placenta prævia—it is loosened from its attachment when the os begins to dilate, thus causing hemorrhage. The condition is serious, published statistics giving a maternal death-rate of from 10 to 38 per cent., and a fetal death-rate of 50 per cent.

If a woman has one, and especially if she has more than one, uterine hemorrhage in the latter half of the pregnancy, it is usually due to placenta prævia. Of course, if a woman bleeds from hemorrhoids, it is not in this category. A painless, causeless uterine hemorrhage in the last three months of pregnancy means almost always placenta prævia.

The nurse must notify the physician at once if there is, during pregnancy, the slightest show of blood. If she is the only one present during a severe bleeding, to tampon the vagina and to elevate the foot of the bed would be her only recourse.

Premature Detachment of the Placenta.—This means the dislocation of the placenta from its normal site. It is sometimes called abruptio placentæ, meaning that the placenta is torn from its bed. It is a very rare and very fatal accident, 50 per cent. of the mothers and nearly all

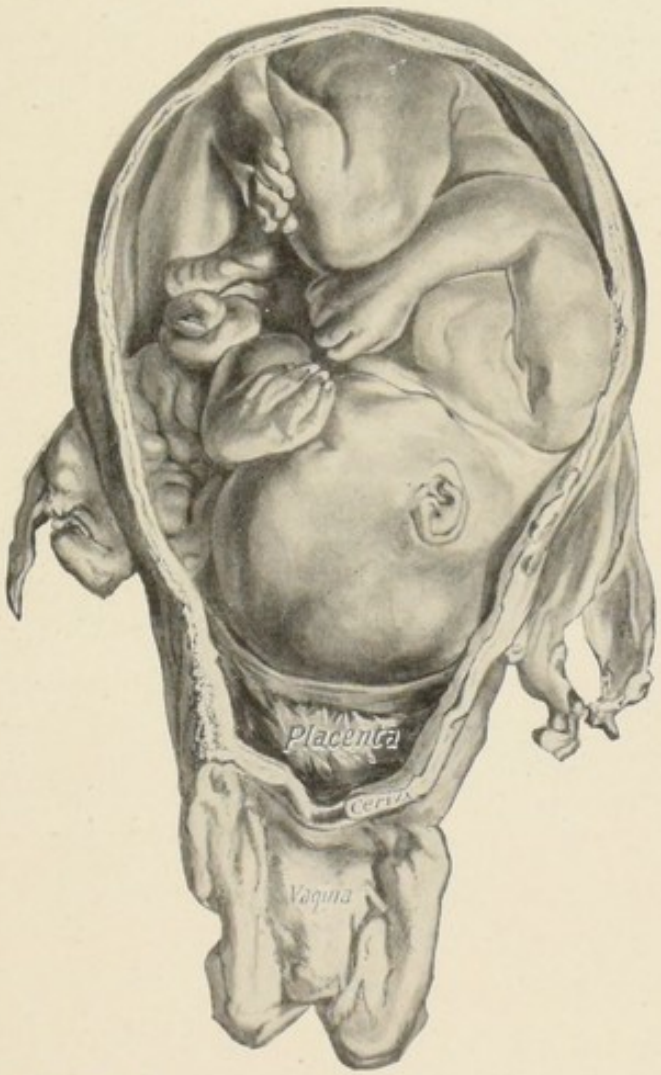


Fig. 130.—Central placenta prævia, the os partly dilated (Hunter).

the children being lost. It is usually due to injury, the patient hitting against the corner of a table or being struck on the abdomen. The symptoms are those of internal hemorrhage—pallor, fainting, weak pulse, etc. The hemorrhage may be external too.

The nurse's duties in the last two complications will

be to prepare for delivery, for the application of a colpeurynter, tamponade, or even cesarean section.

Extra-uterine Pregnancy.—Extra-uterine pregnancy, or ectopic gestation, is a rare condition, though, since its recognition has become easier, it is found more frequently than in the olden time. It is the development of the pregnancy outside the uterine cavity. Normally the ovum passes down the fallopian tube into the cavity of the uterus, pursuing its further development there. If, however, it is arrested in the tube and grows here,

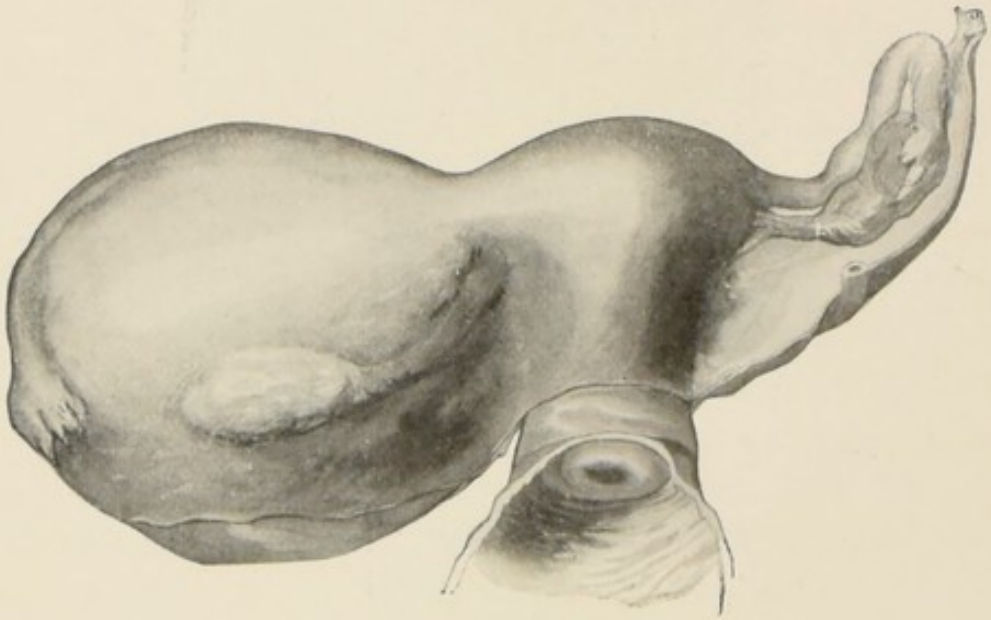


Fig. 131.—Extra-uterine (tubal) pregnancy, before rupture of the sac.

an ectopic gestation of the tubal variety results. The tubal is the common form of the anomaly, but the child may develop in the ovary or even in the abdomen.

Extra-uterine pregnancy is a serious condition, though in a few cases a spontaneous cure results. The accoucheur does not wait for this, but considers almost every case an indication for immediate operation.

In those cases where spontaneous cure occurs, the ovum is either discharged from its bed and absorbed, or, if the child has attained considerable size, labor comes on,

without, of course, the delivery of the fetus. The child dies and either is changed into a hard, chalky mass, called a lithopedion, or stone-child, in which condition it may remain for years; or the whole ovum becomes infected and breaks down into pus and necrotic débris. The sac may ulcerate through the neighboring structures—the bladder, vagina, rectum, or abdominal wall—and the bones of the infant are discharged thus, one at a time. If the patient survives this long suppuration, after many

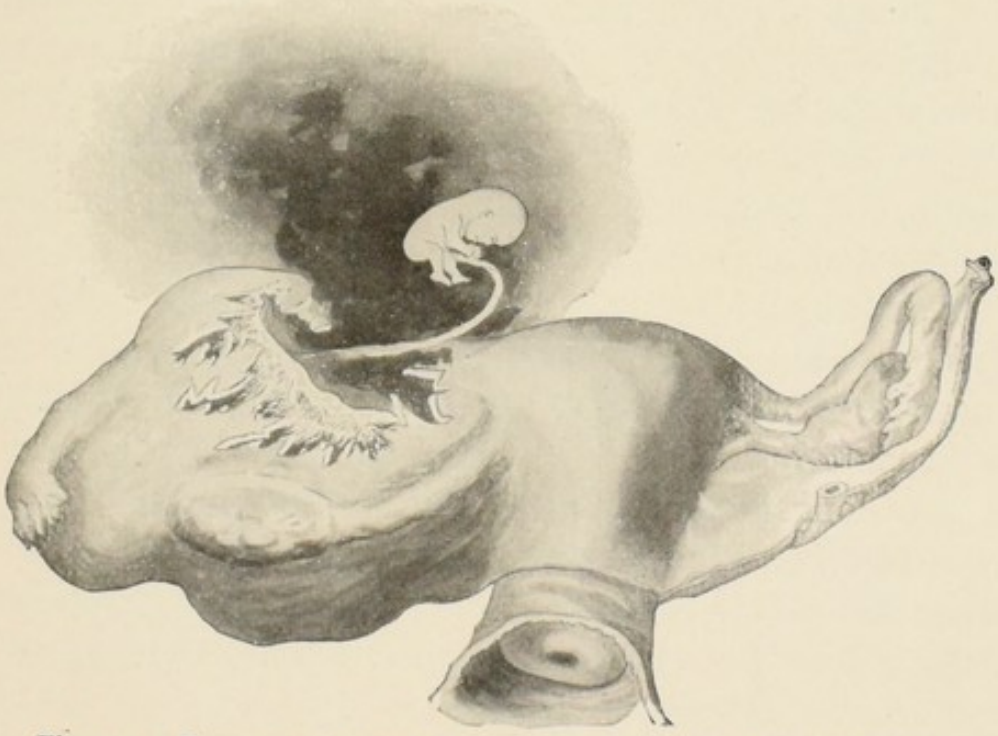


Fig. 132.—Extra-uterine (tubal) pregnancy, after rupture of the sac.

months the whole mass is thus gotten rid of. Most cases of ectopic gestation present alarming symptoms between the second and fourth months, due to rupture of the tube and intraperitoneal hemorrhage, which necessitates the accoucheur's interference.

As the ovum grows it distends the tube (Fig. 131). The fallopian tube has a thin wall, and, unlike the uterus, does not hypertrophy to accommodate the growing

ovum. The tube, as the result of the distention, on the occasion of a sudden jar to the abdomen, a blow, straining at stool, etc., bursts (Fig. 132). The ovum is wholly or partly expelled into the free peritoneal cavity, and more or less profuse hemorrhage takes place from the walls of the tube. This hemorrhage may be mild and the patient may then recover without treatment (rare), or the hemorrhage may be severe, and the most heroic measures must be instituted to save the woman's life.

The cause of ectopic gestation is usually found in disease of the appendages or congenital anomaly. Chronic tubal inflammation or pelvic peritonitis is usually causative. The condition may occur twice.

Symptoms.—The patient has the symptoms of pregnancy, but menses, in small amount, may appear, and pieces of membrane may be discharged. In addition, there are usually pain and a sensation of fulness on the affected side. Should such symptoms come to the knowledge of the nurse, she should advise the patient to consult her doctor. The physician may discover a tumor alongside the uterus, which, taken in conjunction with the suspicion of pregnancy, usually leads to the diagnosis. The symptoms of rupture are very prominent, though not always easy to differentiate from those due to other conditions.

The patient complains of an agonizing pain low down in the side, and this may last for an hour or more. Then the symptoms of internal hemorrhage and shock supervene—nausea, vomiting, anxiety, prostration, precordial oppression, pallor, pearly conjunctivæ, rapid pulse, rapid breathing, and, if aid is not given, death in collapse.

If the first hemorrhage is not fatal, the patient may have another, or several. These are cases that require heroic treatment.

Duties of the Nurse.—If a nurse is placed in charge of a case of extra-uterine pregnancy before the rupture of the sac, her main solicitude will be to prevent the rupture. To accomplish this, she will not allow the patient to turn in bed without aid; will not permit straining during urination or defecation; and, in general, will keep the patient as free as possible from the slightest exertion. If the case is chronic and the fetus gone on to lithopedion formation, these rigorous rules need not be enforced, although the patient should observe more than ordinary care.

In preparing such a patient for operation, only the gentlest manipulation of the abdomen is permissible. Rough scrubbing might rupture the sac and precipitate a fatal hemorrhage. The nurse should acquaint herself with the symptoms of rupture, so as to be able to inform the accoucheur at the earliest moment. She should also obtain from him concise instructions regarding what he wishes her to do in the emergency. As soon as the nurse takes charge of such a case, she should begin to prepare for the operation, which usually is not long delayed. In a quiet, unostentatious manner, the nurse may provide and sterilize all the utensils, linen, gauze, etc., necessary for abdominal section. Each night 10 gallons of water should be boiled and set away to cool. If not used, it is thrown away. Thus the nurse is prepared for all emergencies. Half the battle is already won by efficient preparation.

Should the nurse diagnose the bursting of the sac and the occurrence of intra-abdominal hemorrhage, she should elevate the foot of the bed, apply a tight abdominal binder, and put an ice-bag on the abdomen. The physician should at once be notified; if he is not within call, one of his close associates; or, failing these, the nearest doctor. While waiting for aid, the nurse

prepares the room for operation (see p. 183), provides an abundance of sterile water, salt solution (0.7 per cent.), sterile sheets, towels, pitchers, basins, etc. Laparotomy will usually have to be done, and a good nurse will have saved much time in getting ready for it beforehand. The preparations and instruments are the same as for cesarean section.

The after-care is that usual for laparotomies (see p. 209) plus extra effort to replace the blood the patient has lost. To accomplish this, saline solution is given by hypodermoclysis and by rectum. Nourishing foods and tonics are administered, general massage, fresh air, and the best hygienic measures are practised. (See Treatment of Hemorrhage, p. 277.)

Eclampsia.—The word "eclampsia" means to flash out, and has reference to the suddenness of the onset of the disease. Eclampsia is the occurrence of convulsions followed by coma during pregnancy, labor, or the puerperium. The acting causes of eclampsia are unknown. It is supposed that the convulsions and coma are due to a poisoning of the blood—a toxemia. This toxemia may be caused by inefficient action of the liver, insufficient elimination by the kidneys, improper processes going on in the placenta, imperfect chemic changes in the intestines, etc. There may be truth in all these theories. It is certain that there are many varieties of toxemia, and not all produce convulsions. No matter what the primary cause, the kidneys are usually involved. There are almost always evidences of a more or less acute nephritis.

Symptoms.—Usually there are prodromal or premonitory signs of the trouble for a few days. The patient has headache, ocular disturbance, spots before the eyes, twitching of the muscles of the calves or of the face, a boring pain in the epigastrium, vomiting, ringing in the

ears, etc. Sometimes there is a tendency to coma, and these are the worst cases. At times there is extensive edema of the feet.

Suddenly the patient falls down unconscious and in a convulsion. The mouth is drawn to the side, the facial muscles twitch, then the arm, next the leg, then the whole body is shaken violently by strong muscular spasms. The patient may bite the tongue severely and bloody foam appears on the lips. This part of the spasm is succeeded by a period of rigidity. The patient is stiff, the respiration ceases, and the body becomes cyanotic. The heart beats violently and then weakens, and the patient may die in such a convulsion. Though it seems much longer, the spasm seldom lasts more than sixty seconds, and at the end the patient takes a long inspiration. The breathing now becomes stertorous or snoring, the cyanosis mostly disappears, and the patient lies in deep coma. This coma may last an hour or longer. Another convulsion may occur in twenty minutes to a few hours, or there may be only one, or the seizures may recur the next day. The greater the number of convulsions, the greater is the danger. Deep coma and great cyanosis likewise give a gloomy outlook.

If the patient has a strong regular pulse, running not over 110, with red face (not cyanosis), the promise is good for recovery. If she develops edema of the lungs, death almost always results.

Treatment.—The nurse must report to the physician at once if she finds albumin in the urine at any of her analyses or if the patient presents any of the prodromal symptoms mentioned. Taken in time, one can usually prevent the convulsions, which is a great feat, since the mortality of eclampsia is about 25 per cent. The patient is put at once on an absolute milk and water diet, and may be given sedatives by the physician. The bowels,

kidneys, and skin are stimulated to action, Unless the symptoms disappear rapidly, labor is brought on.

If the convulsions have set in or are imminent, the nurse should prevent the patient from injuring herself. She must be placed in bed, with many soft pillows, and her dress removed. The patient must not be left alone one minute. The room must be darkened, and *all noises shut out. No talking, jarring the bed, or slamming of the doors may be permitted.* Only the nurse and the physician should be with the patient. Great care must be taken that the patient does not bite her tongue; this is a real danger. If the patient has false teeth, they should be removed; if bridge work or crowns, the nurse takes care that they are not broken. The best method of preventing injury to the teeth is by means of an ordinary wooden clothes-pin (Fig. 133). This is covered with a piece of gauze sewed on tightly, a string is tied to it, and it is hung near the head of the bed, *within easy reach all the time.* When the patient opens her mouth, as is usual at the beginning of the convulsion, the clothes-pin is placed between the jaws, so that when the muscles contract they bring the teeth together on the prongs of the pin, the elasticity of the prongs preventing injury to the teeth, jaws, and tongue. The nurse now prepares everything for the doctor's coming and for operation.

During the progress of the case the patient may have had cathartics, and, being comatose, the movements occur in the bed. When changing the patient, great care must be taken to prevent infection of the vulva, and also to avoid jarring her too much, because it sometimes brings on convulsions.

Sometimes the patient is given hot packs to promote diaphoresis, and thus excretion of toxins by the skin. The nurse must not allow a hot pack to last over twenty minutes; she must keep an ice-bag on the head or a cold

wet towel around the neck, and she must watch the patient continually, because sometimes death occurs during the sweating process. If bricks or hot irons are used for the hot pack, the nurse must see that they do not burn the patient. In her tossing about and in the convulsions the patient displaces the blankets; severe burns have thus been caused. When the pack is removed, great care is to be taken to avoid chilling.



Fig. 133.—Prevention of tongue injuries by means of the clothes-pin. The covered clothes-pin is the one used. Photograph of eclampsia case taken during the stage of stertorous breathing. Note swollen tongue.

Oxygen may be given, and salt solution by hypodermoclysis. When narcotics—morphin, chloral, etc.—are given, the nurse must watch the effect of these drugs, because they may act with unusual strength. All these medicines and all the treatments, the number of convulsions, and condition of the patient should be recorded carefully on the history-sheet. Altogether, nursing an

eclampsia case requires the highest kind of obstetric nursing skill.

No nourishment is given until the patient can swallow, unless by stomach-tube, and throughout the nurse must exercise great vigilance to prevent water, medicine,



Fig. 134.—Treatment of edema of the lungs. Head is supported, and the nurse raises the shoulder so as to allow free expansion of the chest.

mucus, and blood from the mouth and throat being drawn into the lungs. This is a serious affair, causing bronchopneumonia and often death. If the patient develops edema of the lungs, the nurse turns her on the side with the head hanging over the edge of the bed, so as to allow the frothy mucus to run out of the mouth

(Fig. 134). The shoulder must be supported or the patient's breathing will be interfered with. If the tongue of a comatose patient falls back into the throat, asphyctic conditions may arise. The jaw should then be held forward to free the respiration. Eclampsia is an awe-inspiring condition, and the patient's life, as well as that of her child, often depends on the coolness and judgment of their attendants.

Recovery from eclampsia takes place slowly. The coma disappears in from one to four days.

The child is not to be allowed to nurse till consciousness has been clear for several days. The mother may repudiate her own child, which should give rise to the suspicion that insanity is threatening. Mental aberration is a not uncommon sequel of eclampsia.

CHAPTER II

COMPLICATIONS DURING LABOR

THE most common complication which the nurse will meet is delivery of the child before the doctor comes. The physician is usually quite chagrined if the baby arrives before he does. How much the nurse may retard the delivery so as to await the doctor is an important question. If the patient is having strong pains, the nurse should keep her on her side and not allow her to bear down. The nurse should know the doctor's practice, what physicians usually assist him, and, if the accoucheur is not obtainable, should send for one of the men known to him, unless the family expresses other preference. It is not advisable for the nurse to assume the responsibility of the case alone. While generally there is no danger, it may be her lot to lose an infant, and thus she may be unfairly censured. It is not justifiable for the nurse to hold the head back forcibly until the doctor comes. She may hold it back so as to allow time for the perineum to stretch, as she has seen the doctor do, but more than this may injure the child or the mother. If she has to conduct the labor, let her observe the same rules regarding protection of the perineum as those practised by the physician:

1. Allow the head to come through slowly.
2. Keep the head well flexed and against the pubic arch.
3. Deliver the patient on the side.
4. Deliver the head between pains.

When the nurse finds she is alone with the case, she should allay the fears of the family by telling them that the fact that the child is coming so quickly is proof that everything is right and the labor is normal.

She places the patient on the left side and toward the light, and, after sterilizing her hands, puts on her sterilized gloves, assumes the position the doctor would, with one hand between the limbs of the patient, whose knees are separated by a pillow. (See Fig. 61.) A basin of solution with pledgets is nearby, and the nurse carefully catches any discharges from the rectum without soiling her fingers. She also swabs the parts generously with the antiseptic solution. Lysol, 1 per cent., is good, or 1 : 1500 bichlorid. As the perineum bulges and the scalp shows she gently restrains the head by pressure on it with the fingers, not by pressure on the perineum. With each pain she allows the head to come down a little more. The patient should be admonished not to bear down too hard, and thus the nurse will allow the head to come through very slowly. After the perineum is stretched so that it seems as if the head may come through, in the interval between pains the patient is asked to bear down a little and the head will come. After a few moments the pains force the shoulders out and then the trunk follows. (See Figs. 135–141.)

When the head is born, the nurse wipes mucus from the head and eyes and from the nose and mouth, so that when the child gasps, nothing can be drawn into the lungs. After the child is born, the nurse places it a short distance from the mother, so that she cannot press it or the cord, and both patients are covered warmly. (See Fig. 62.) The woman is slowly turned on her back, keeping the legs tight together. The nurse sits beside the patient, holding the uterus with her hand, but not massaging it unless there is hemorrhage or the uterus balloons out

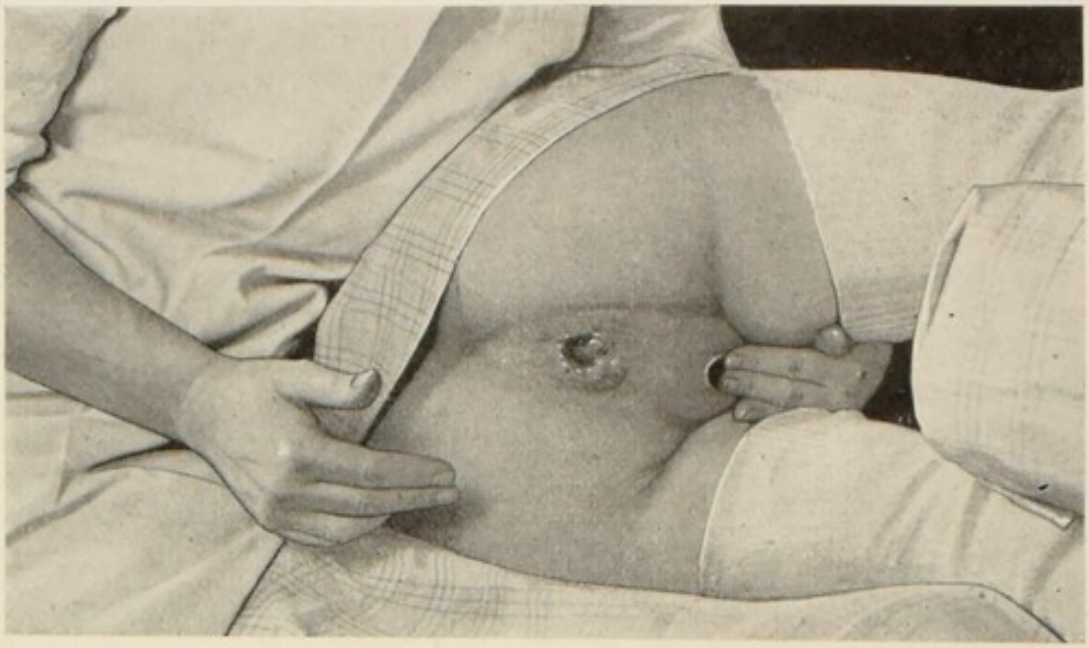


Fig. 135.—Delivery of patient on the side. Nurse, with one hand between thighs, gently represses the head during the pains. The right hand is nearby to help hold the head back if the pain is too strong. The hands should not be soiled with rectal discharges.

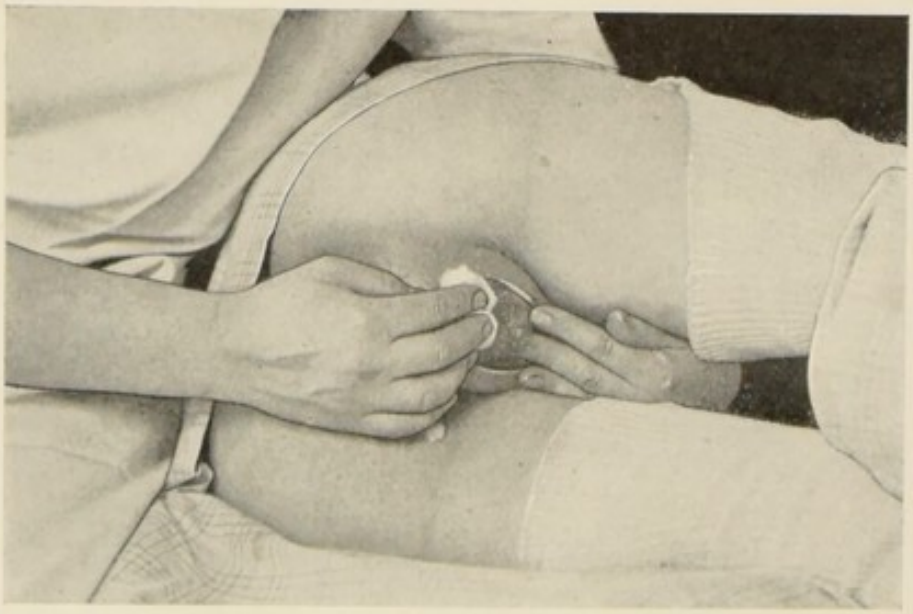


Fig. 136.—The two hands placed on the head (not on the perineum), with gentle force, evenly distributed, hold the head back, allowing it to advance only a very little with each pain. The right hand holds a sponge with which the nurse bathes the vulva as the head recedes.

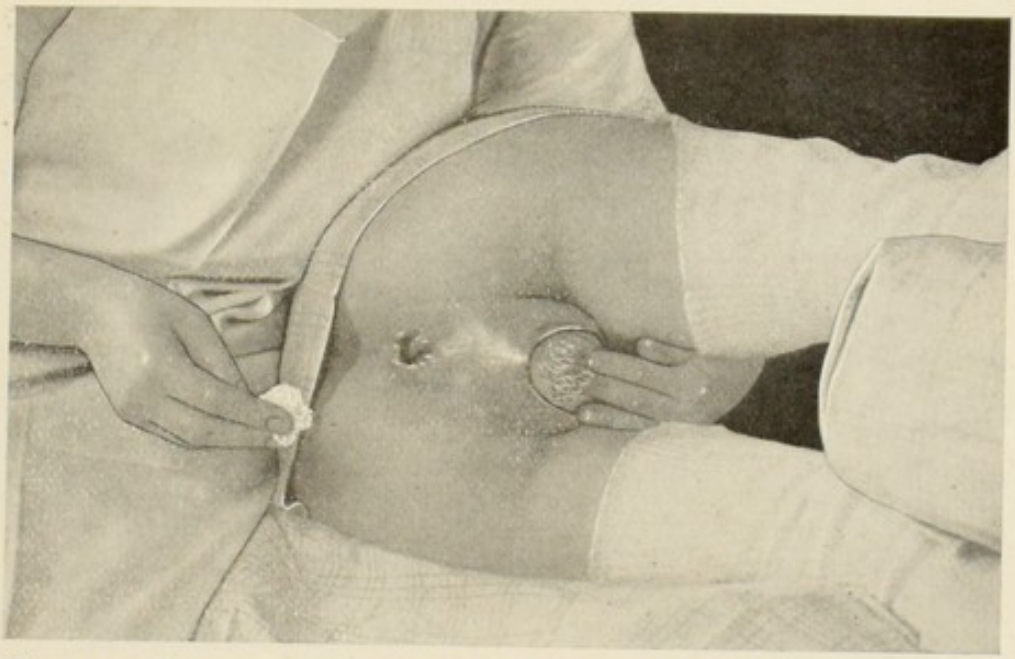


Fig. 137.—The nurse allows the head to come down during a pain, controlling its descent with the left hand. The right hand is about to be placed on the head as the perineum is getting quite distended, which is shown by the shiny appearance of the skin. The sponge is used to wipe a little mucus from the anus which is being forced open by the advancing head.

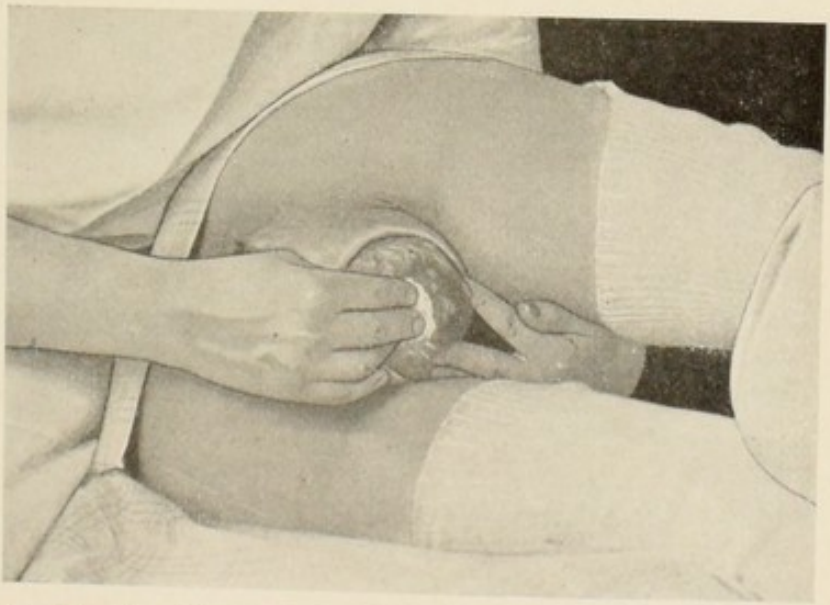


Fig. 138.—The head is about to escape from the vulva. The nurse pushes it upward against the pubic arch with the right hand, while the fingers of the left hand try to strip the anterior edges of the vulva back behind the occiput. The head is then allowed to roll up over the pubis, the perineum slipping over the child's face and under its chin.

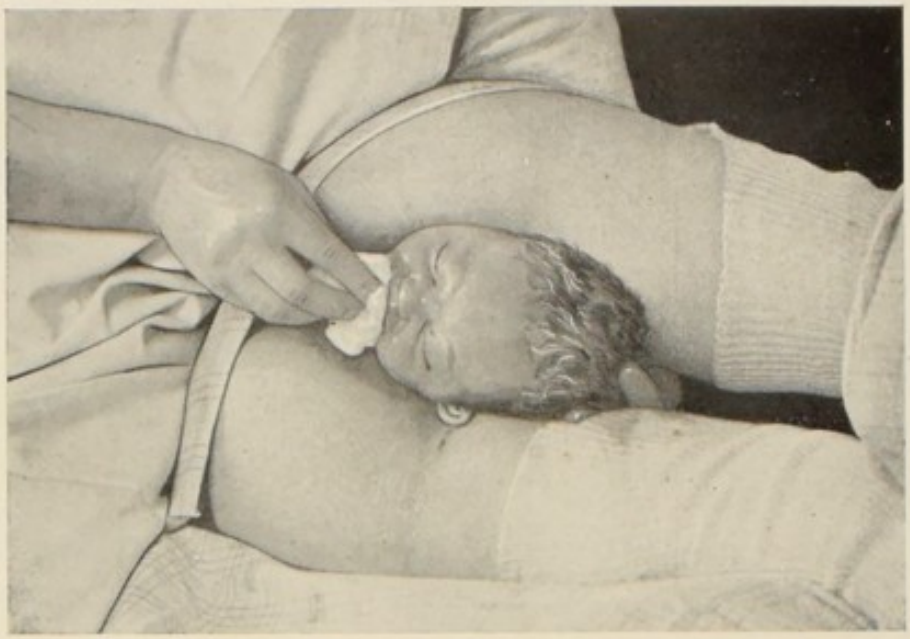


Fig. 139.—The head is delivered. The nurse steadies it with the left hand, and wipes eyes, nostrils, and mouth with a sponge squeezed dry from an antiseptic solution.

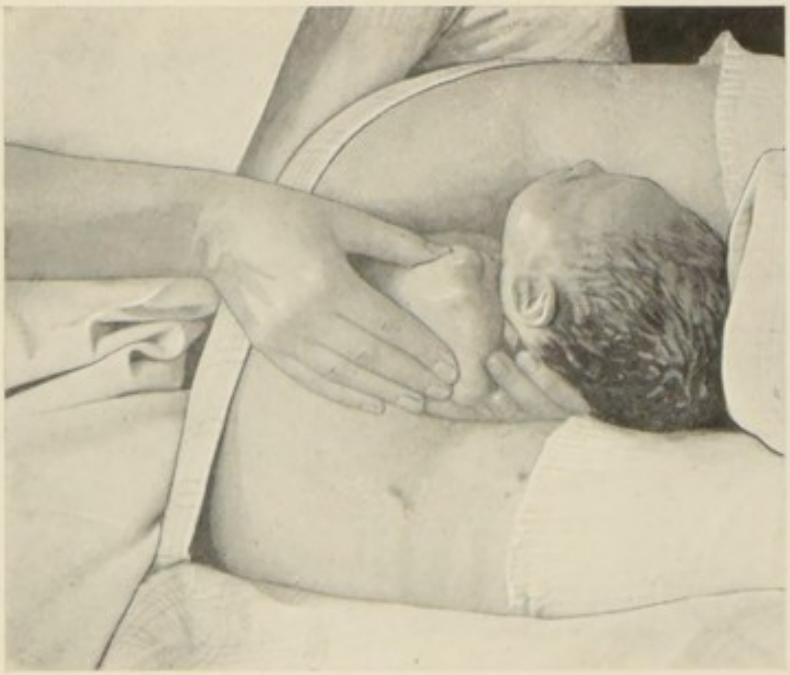


Fig. 140.—The shoulders are being delivered. The nurse holds the head with the left hand, and with the right she crowds the shoulder upward toward the pubis so as to avoid too much distention of the perineum by the trunk. Note how the occiput has rotated to the side, as it lay in the uterus.

under the hand. In this position she should wait for the arrival of the doctor. She must not tie and cut the cord unless the mother bleeds or unless the placenta comes. She may wait, in the absence of hemorrhage, as above indicated, an hour or more, without endangering the patient or the infant.

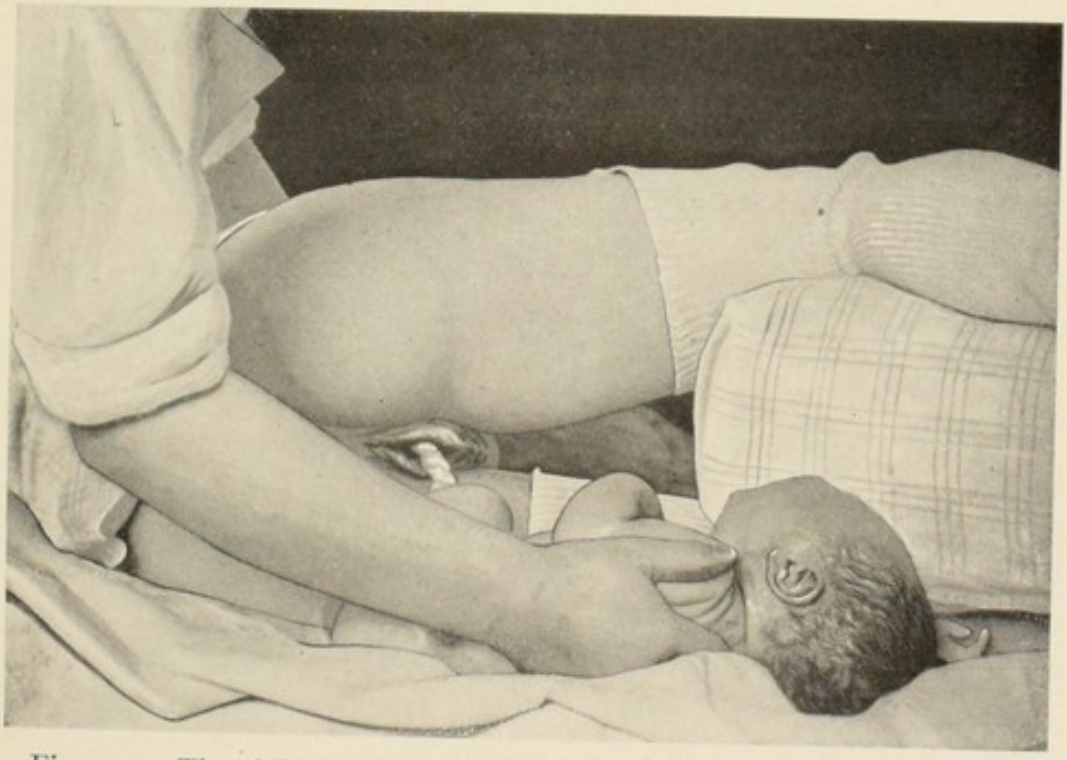


Fig. 141.—The child is delivered. With the left hand the nurse grasps the uterus. With the right she lays the child alongside the lower thigh of the mother, and steadies it while the mother is being turned on her back. This is done as follows: the right foot of the mother, the upper one, is removed from the pillow and placed on the edge of the bed just outside the baby's head. Then the left knee is grasped and raised in the air so that the patient's hips are brought to the middle of the bed, after which the foot is placed on the bed. The patient is now in position for the conduct of the third stage. (See Fig. 62.) When these photographs were taken gloves were omitted for artistic reasons.

Should it be desirable to separate the child, the nurse ties and cuts the cord as shown in Figs. 142 and 143, tying tightly and using sterile tape; then, after removing the infant, she folds a clean sheet under the patient and brings the limbs closely together. Then the nurse lays

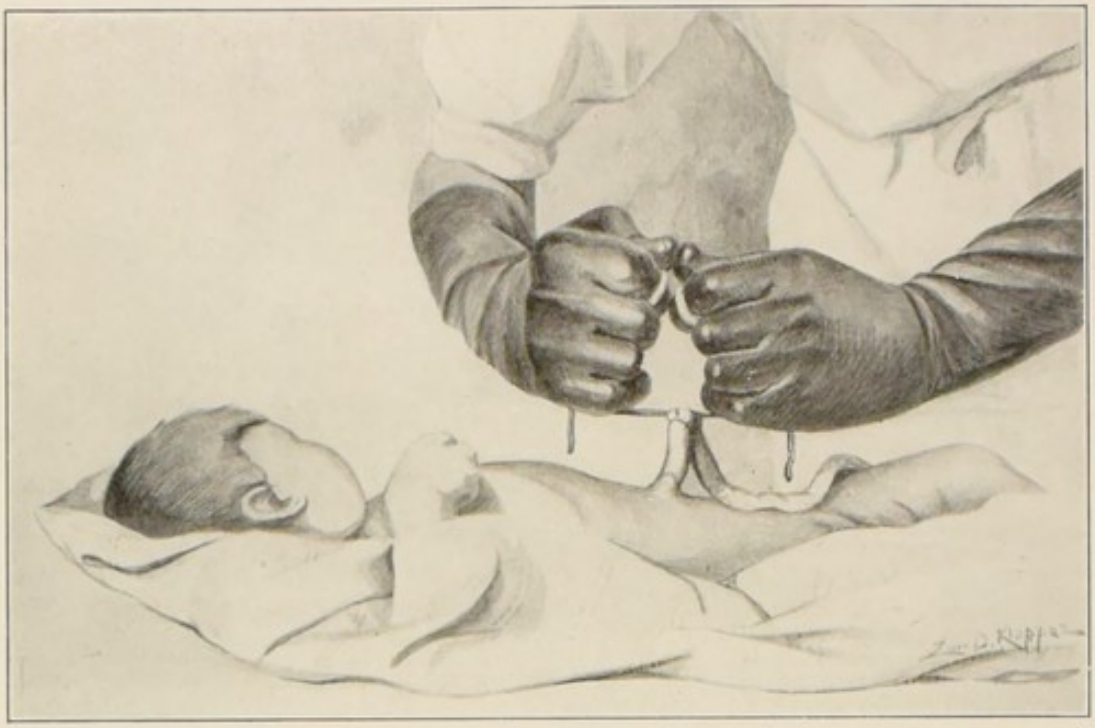


Fig. 142.—Tying the umbilical cord. The cord is tied ½ inch from the skin margin.

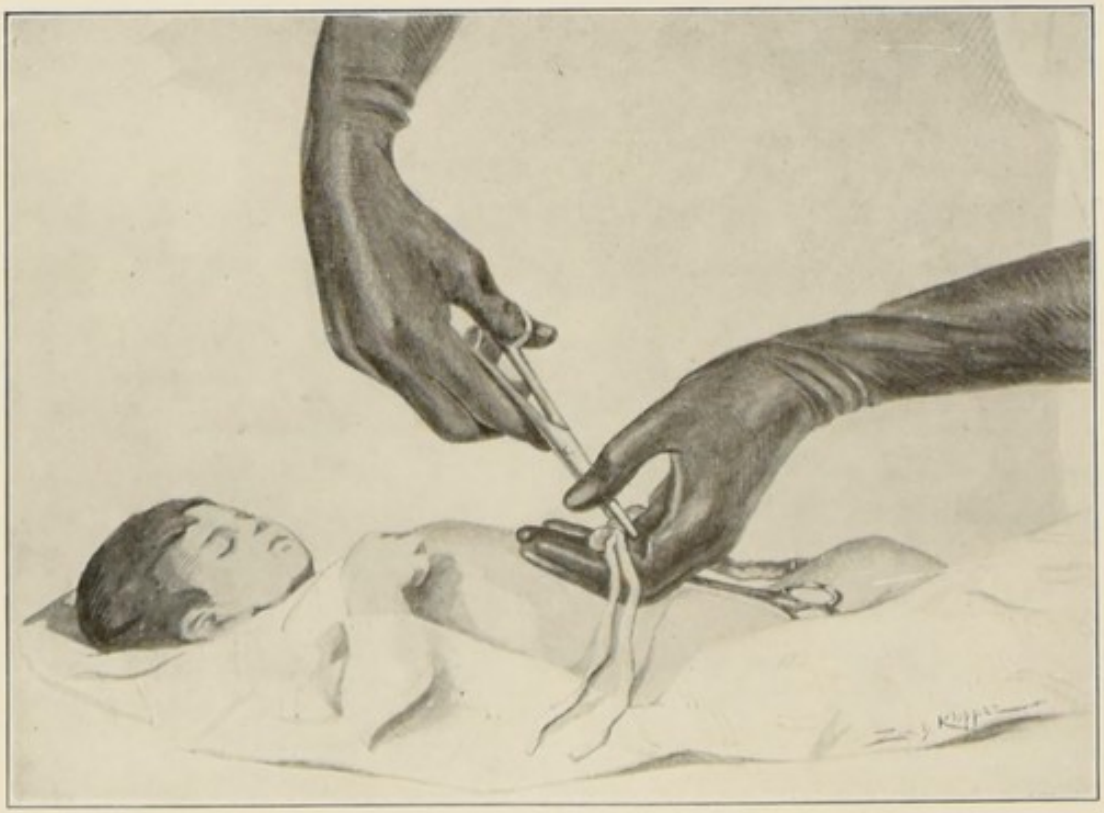


Fig. 143.—Cutting the umbilical cord. The cord is severed ¼ inch from the ligature.

her hand lightly on the uterus and awaits the spontaneous termination of the third stage.

Almost always the physician arrives at this time, and if he does not, the nurse pursues the safer course by insisting that another be called.

Should she be compelled by hemorrhage, either internal or external, to end the labor herself, she expresses the placenta by gently squeezing the uterus at the height of an after-pain and pressing the placenta out at the same time. As the placenta appears she grasps it in the full hand, and with light, even traction draws the membranes after it. Neither haste nor excitement is necessary.

The placenta must be saved for the doctor's inspection, and he should also be requested to examine the perineum for lacerations The nurse should guard the uterus for thirty minutes after delivery of the placenta, and if it shows a tendency to relax, may administer a dram of ergot.

BREECH PRESENTATION

If the infant should come by the breech, the nurse's duties are more onerous. Fortunately, this accident is quite rare. As soon as the breech of the infant appears at the vulva, the nurse brings the woman across the bed with her hips a little over the edge, and the feet supported on chairs. As the child emerges she receives it in a warm towel with sterile hands. When the shoulders are to come through, the patient is exhorted to bear down, and the husband or a neighbor makes downward pressure on the uterus. When the arms are delivered the nurse inserts two fingers in the child's mouth, and, with the other hand placed over the lower abdomen, makes gentle traction downward and out with the one, and pressure with the other, so that the head comes upward and out. In this gentle

fashion the head is delivered (Fig. 86). Care is now taken to clear the throat of mucus and revive the child from the mild asphyxia which is not unusual. (See Asphyxia, pp. 360–364.) The rest of the labor is as above described.

Should the case be a twin labor, the nurse will wait for nature to bring the second child. Assistance here is urgently indicated.

PROLAPSE OF THE CORD

Once in about 400 cases the umbilical cord prolapses and appears at the vulva. This is a very serious accident for the child, since many times the infant is thus lost by compression of the cord and the resulting asphyxia. For the mother, it is not dangerous unless operations are undertaken to save the child.



Fig. 144.—The elevated Sims position.

The nurse will easily recognize the cord when it appears at the vulva, and must send for the physician without an instant's delay. While waiting for him, she places the patient in the knee-chest position (Fig. 124), and, with sterile fingers, pushes the cord back into the vagina after washing it with warm antiseptic solution. The cord is retained in the vagina by a pledget of cotton,

or the nurse holds the vulva together; under no condition should the cord be allowed to lie outside exposed.



Fig. 145.—The Trendelenburg posture in bed, using a chair to elevate the pelvis.

The patient quickly tires of the knee-chest position, and the nurse then allows her to fall slowly onto two pillows on her side, in the elevated Sims position (Fig. 144).

Preparations for operation should now be made, as the physician, when he comes, will wish to make an attempt to save the child's life. He may order the Trendelenburg posture for the patient, which the nurse obtains by putting a chair, inverted, in the bed, padding it with thin pillows, and arranging the person on it as shown in Fig. 145. Usually patients complain of dyspnea and distress when kept in the knee-chest and Trendelenburg postures for any length of time, so that in such cases the elevated Sims position is preferable, as it is more comfortable.

Various complications, described under those of pregnancy, may first appear during labor; such are eclampsia, placenta prævia, and detachment of the placenta.

HEMORRHAGE DURING LABOR

A woman may have an unusually bloody "show"; she may have a little hemorrhage when the cervix is dilating, toward the completion of the dilatation, due to slight tearing of the cervix As the head is being delivered, there is not seldom bleeding from the tearing perineum or clitoris. Placenta prævia and detachment of the placenta occur sometimes during labor, and give rise to profuse and often dangerous bleeding. After the baby is born the patient may bleed more or less profusely. This last form of hemorrhage we term

Postpartum Hemorrhage.—We designate all bleeding after the child is born postpartum hemorrhage, although, strictly speaking, the term should apply only after the placenta is delivered. The laity call such loss of blood a "flooding," and truly the appellation is sometimes deserved.

Postpartum hemorrhage is caused either by a laceration of some part of the genital tract or from atony of the uterus. The laceration is usually made by an

operative labor, as forceps or breech extraction, but it may occur, although rarely, in spontaneous delivery. Atony of the uterus is rare, and may be caused by general weakness of the mother, retention in the uterus of a piece of placenta or of clots, after overdistention of the uterus, disease of its structure, etc.

The symptoms of postpartum hemorrhage are those of external bleeding and the effects of the loss of blood on the patient—pale face and lips, cold sweat on the forehead, rapid running pulse, rapid breathing, yawning; the patient complains of being dizzy, faint, "clutching at the heart" (precordial anxiety), has ringing in the ears, and is sometimes blind. If the bleeding is not soon controlled, the symptoms aggravate, the woman is restless, has cramps in the muscles, becomes unconscious, and dies. Happily, such extreme cases are rare, and with the exception of a woman whose blood is pathologically altered so that it will not clot, nearly all patients can be saved by the means we now have at our command. If the hemorrhage comes on before the placenta is out, the doctor usually removes the latter; if the hemorrhage should come on after the placenta is out, the physician massages the uterus, gives ergot, a hot uterine douche, swabs the uterus with vinegar, packs it full of gauze, or adopts other means of controlling the loss of blood. The bleeding that occurs after the physician has left the house is what concerns the nurse in actual practice.

A woman in the first two hours after the placenta is delivered may lose 3 ounces of blood without there being any danger. If the uterus is hard and not too large, this is all right. If more than this amount oozes away; if there are clots; and if the loss keeps up, the physician should be notified. Should the patient be suddenly taken with a profuse hemorrhage, her life may depend upon rapid action of the nurse, and it is, therefore,

highly essential that the latter retains her presence of mind.

The first thing to do is to grasp the uterus and massage it vigorously. The uterus may not be easily outlined, being only a big boggy mass in the lower abdomen. The nurse kneads this until it contracts. The physician must be notified, and if he is too far away, the nearest one obtainable should be sent for. But the nurse cannot always wait for the doctor. She may administer a dram of ergot. If her massage has the desired effect, the hemorrhage ceasing and the uterus remaining hard, this is all that is necessary; the nurse may wait, guarding the uterus. If not, the flow continuing, she at once gives a hot vaginal douche (120° F.), inserting the tube about 7 inches and giving the tube the upward and forward direction of the parturient canal. If this does not stop the hemorrhage, the nurse should pack the vagina as tightly as possible with gauze, cotton, handkerchiefs, or anything at hand that is sterile. After the vagina is tightly packed the nurse places her fist against the packing at the vulva, and with the other hand presses the uterus down against the pelvis (Fig. 146).

If her arm is not strong enough to keep up firm pressure, the husband will have to help. In this way the hemorrhage can be controlled, or at least mitigated, until the doctor comes. Throughout the nurse must keep her presence of mind, must act coolly and confidently, and not neglect her antiseptic precautions.

While doing these things, the nurse has the foot of the bed raised three feet from the floor by means of a table; she gives the patient some strong hot coffee, a hypodermic of strychnin, $\frac{1}{40}$ grain, or camphorated oil, if necessary.

While the doctor is coming she has the husband, under her direction, provide towels, hot water, etc., for

eventual operation. Fortunately, the nurse is rarely called on to assume such grave responsibilities. The

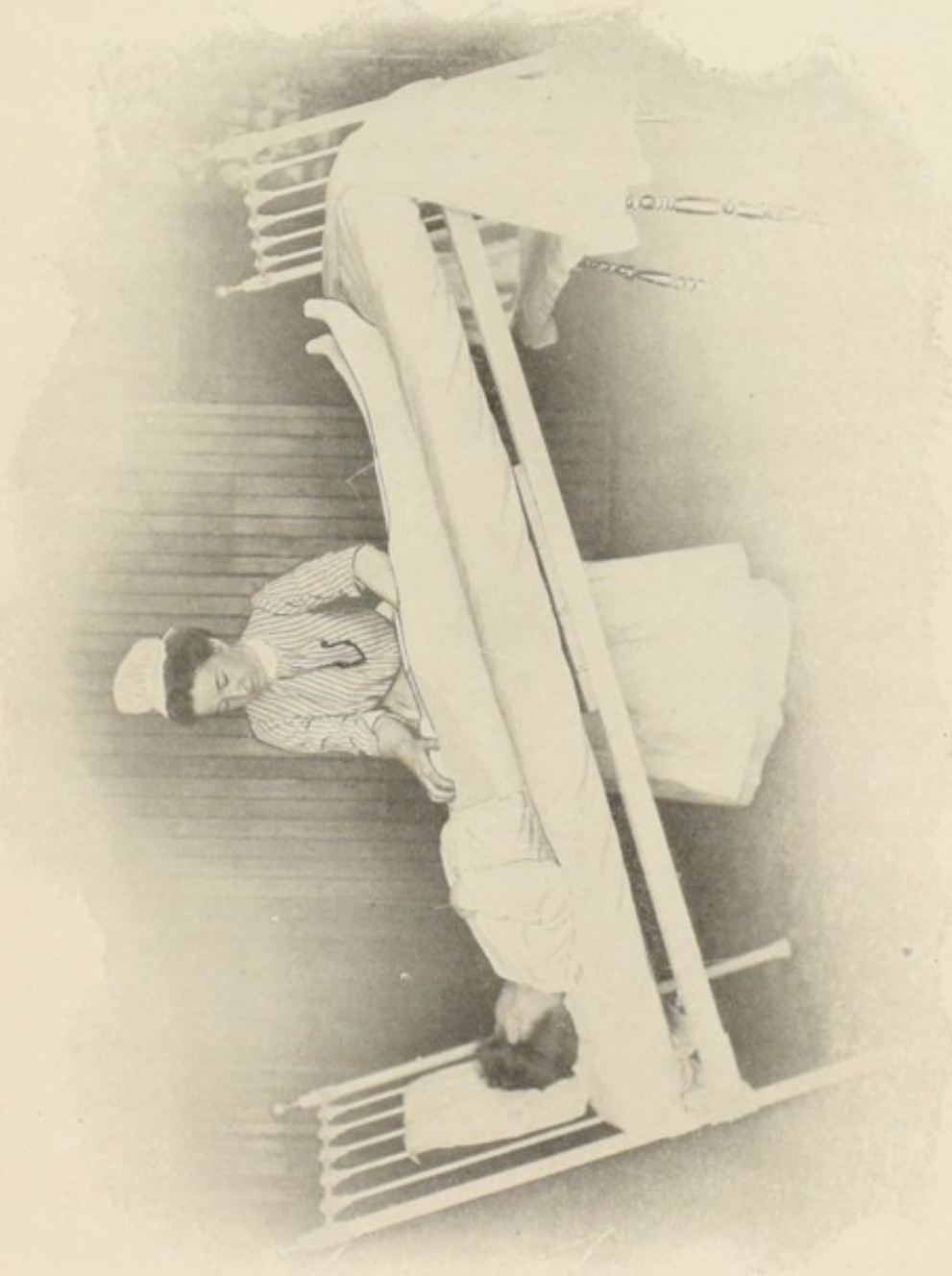


Fig. 146.—Treatment of postpartum hemorrhage, with bed elevated.

writer knows of only two instances, and here massage with a dose of ergot accomplished all that was necessary.

The nurse's duties while assisting the physician at a case of postpartum hemorrhage are many. She must

see that the patient is not exposed to chilling, that she is kept warm by hot-water bottles, that there is an abundance of hot and cold sterile water for douches, hypodermoclysis, and hand solutions. The physician may wish to tampon the uterus, and for this will need a jar of sterile or antiseptic gauze. (See p. 435 for description

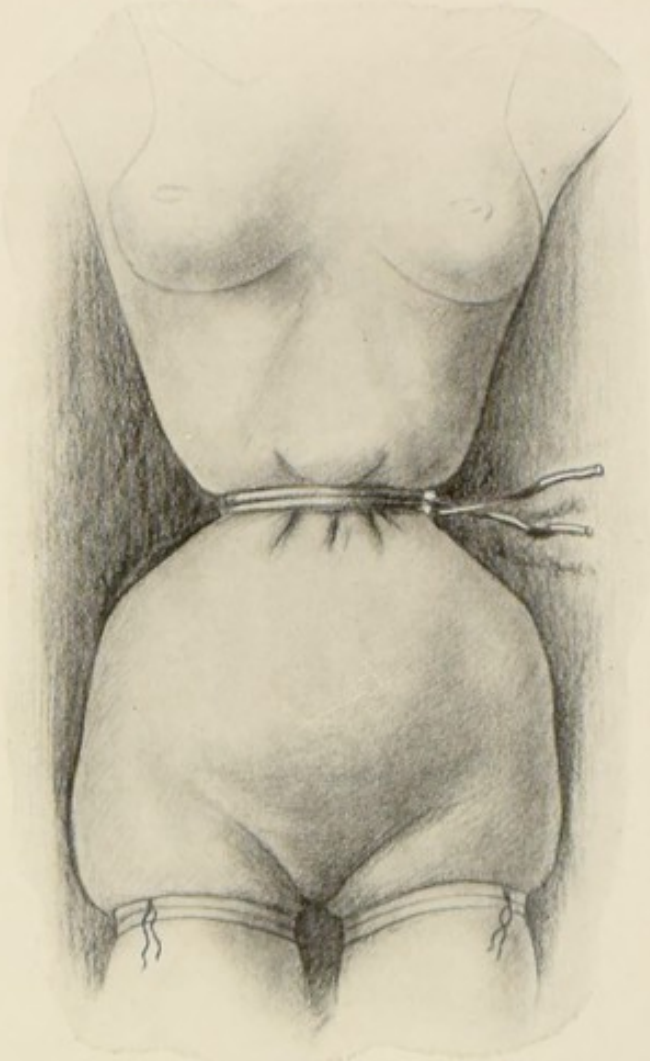


Fig. 147.—Momburg's belt.

of method of preparing the gauze and p. 220 for description of operation.)

When a hot douche is ordered, the nurse should ask the degree wanted, and often the fluid has a temperature of 115° to 120° F Sterile water or 1 per cent. lysol solution is usually ordered. The nurse should be skilful

in giving hypodermic injections, and should never be found with a defective syringe.

When the bed is ordered elevated, a table at least 30 inches high is to be placed under the foot; a box on the table adds to the elevation (Fig. 146). A new method of treating hemorrhage is the Momburg belt (Fig. 147). The aorta is compressed by a rubber constrictor in a manner similar to that used in amputations of the extremities. A piece of drainage-tube 1 yard long and 1 inch in diameter is used.

If the case is so serious as to demand salt solution transfusion, the nurse prepares for same. (See p. 225 for details.) Should the patient faint or feel like it, smelling salts may be applied to the nostrils and a stimulant hypodermic injection be given The physician may order ether, whisky, camphorated oil, or aromatic spirits of ammonia to be given hypodermically. Cases like this impress upon the laity the importance of skilful and sufficient attendants, even for a normal labor.

After-care.—This is highly important. It requires much care to nurse the exsanguinated woman back to health. The bed should be left raised until the physician orders it lowered, which may be in from one to four days. When lowering is ordered, the nurse lets it down a foot every hour until it is horizontal. Fainting may result if it is lowered suddenly.

The diet is carefully regulated. Liquids in abundance, short of causing emesis, are given. Rectal injections of saline solution may be ordered. (See p. 289.) When food is acceptable, milk, eggs, meat-juice, and, later, broiled steak, the marrow of bone, and vegetables rich in blood salts (as spinach and lettuce) are given. The physician may order a blood tonic and a trip to the seashore to complete the recovery. While the patient is in bed she must not raise her head until the nurse deems it

safe. This is to prevent fainting. She may move in bed during the first few days only with great deliberation, this precaution being intended to prevent heart embolism. When the nurse gives such a patient a bath she should not rub the limbs too vigorously, as clots sometimes form in the large veins and hard friction might loosen them. They would then float in the blood-stream to the heart or lungs, perhaps causing fatal embolism.

CHAPTER III

COMPLICATIONS OF THE PUERPERIUM

NOTHING gratifies the physician more than to have the patient and her babe make a rapid and uncomplicated recovery from the confinement. If a puerperal woman takes ill, the whole house is thrown into gloom, and if the child should sicken, the mother becomes at once nervous and restless, fearing her new joy is to be taken away. A death during confinement or after seems much worse than at any other time, and, truly, no woman ought to lose her life under these painful, interesting, and sympathetic circumstances. The greatest danger to the puerperal woman is

PUERPERAL INFECTION

Puerperal infection may be defined as a disease, febrile in nature, but sometimes non-febrile, resulting from infection of the genital tract at any point of its extent. A woman after labor can have fever from many causes, as sore throat, typhoid, intestinal and urinary disease, but when the symptoms point to an infection of the parturient canal in any portion of its length, she is suffering from puerperal infection. In olden time there was very prevalent an acute febrile disease afflicting puerperæ, and more or less epidemic, which was called puerperal fever. This was often fatal, and usually very severe, and with definite characteristics, so that it came to be considered a specific fever which affected only lying-in women, and was to be classed by itself, like typhus and

other special diseases. Now it is generally recognized that puerperal fever is nothing more nor less than septicemia, similar to sepsis after surgical operations. The term "puerperal fever" is now occasionally applied to the severer forms of puerperal infection, but it is best to drop the term entirely, or make it synonymous with puerperal infection.

Puerperal infection (or fever), then, is nothing more nor less than infection of the genital tract, and, like all infections, may be mild or severe, local or general, and of many varieties; like other infections, too, it may be prevented.

The history of puerperal fever is interesting. It was known and written of a thousand years before Christ. In the *Ayur Veda* of Susruta it is mentioned, and the father of medicine, Hippocrates, who lived 400 B. C., writes of it, saying there was an epidemic and "the daughter of Telebulos died of it on the sixth day." It prevailed all through the ages, and when hospitals were started it broke out with greater fury. In the Paris Hôtel Dieu in 1664 it killed 10 per cent. of the women confined. In 1823 it carried off 19 per cent.—nearly 1 in 5—of the women confined in the Vienna Maternity.

The cause of the disease was unknown. It was ascribed to a stoppage of the lochial flow, to a turning inward of the milk, to catching cold, to atmospheric conditions, etc. In the early part of the last century Denman, of England, taught that it could be carried from one patient to another by the doctor or midwife, and that the doctor could carry it from his erysipelas and suppurating cases.

The credit for having recognized the cause of puerperal infection and forcing the knowledge of it on the medical profession belongs to Semmelweis (Fig. 148), of Budapesth, Hungary. Semmelweis, then a young intern

in the Obstetric Clinic of the General Hospital of Vienna, in 1846 noticed that the midwives' clinic adjoining had a low mortality—about 1.5 per cent.—while the clinics where students were taught and he practised had 15 per cent. This galled him, as his was a conscientious nature. The difference between the clinics was so marked that the servants had quarrels over the conditions, and the

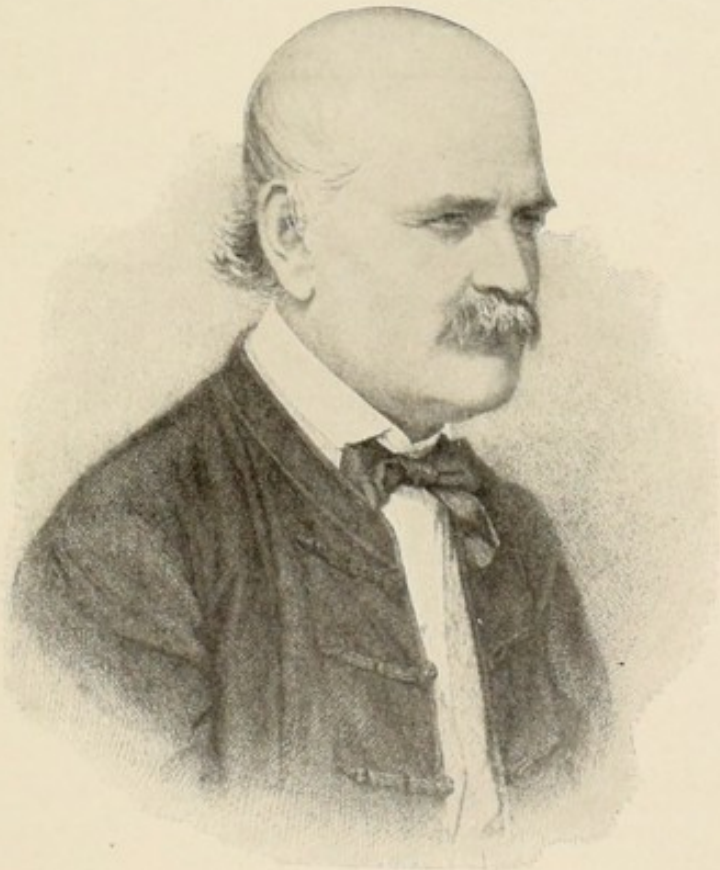


Fig. 148.—Ignatz Semmelweis, the discoverer of the cause, and the inventor of the means for the prevention, of childbed fever, or puerperal infection.

midwives did not fail to taunt the medical assistants with the facts.

Semmelweis worked hard and long to find the solution of the trouble, and did not succeed until a sad accident showed it to him. His friend, Kolletschka, infected his finger at a postmortem and died of sepsis. Semmelweis saw the autopsy of his friend, and was struck with the

similarity of the postmortem findings to his own findings in the puerperal fever cases. Eureka!

Semmelweis now argued that the cadaveric poisons were carried on the hands of the students and physicians to the lying-in women. It was a fact. The students would go directly from the morgue to the confinement room. It was a wonder that any women escaped.

Semmelweis immediately ordered the students and assistants to clean their finger-nails (a novel procedure in those days) and to wash their hands with chlorin water —the best deodorant they possessed at that time—and the results were striking. The mortality in his clinic sank below that of the midwives' clinic. Soon Semmelweis learned that there were other causes of puerperal fever.

In the confinement room were 13 beds. A woman in bed No. 1 had a gangrenous cancer of the cervix; 12 other patients (parturient women) in the confinement room were examined by the doctors who had examined the first. Eleven of the 12 women died of childbed fever.

Thus he developed his theory as it is held and accepted to-day, that puerperal fever is caused by the introduction into the genitals, from without, of septic material.

Oliver Wendell Holmes, of Boston, had tried before this to prove to the medical profession that puerperal fever was a "private pestilence," and that the doctor could and did carry it about, but his teaching was not fully accepted, nor was that of Semmelweis, either here or abroad, until Pasteur, Koch, and others developed the science of bacteriology.

To Semmelweis, however, belongs the undying credit of having proved the cause of this fearsome scourge and having pointed out the manner of its prevention, and his name must be mentioned with that of Jenner and

other great savers of human life. The slowness of the medical world in accepting his theory and his constant effort to force it to do so drove him crazy He died in an insane hospital, fatefully enough, just as did his friend Kolletschka, from an infected wound acquired at an autopsy.

Frequency and Source.—It is sad to have to say that thousands of women are sacrificed every year to this dread disease. That 6000 women die from it in the United States every year is a very conservative estimate. In the maternities a case of sepsis is rare, and a fatality from infection is almost unknown, but in private practice the disease is still frequently met with, although in a milder form than in the olden time. The number of women dating permanent invalidism from a mild infection during childbirth is legion. More women die and are wounded in confinement every year than men die and are wounded on the field of battle. It has been well said that the confinement room is the woman's battlefield.

Where does the infection come from? From a case of puerperal infection; infected abortions; from the lochia of puerperal women (not necessarily with fever); from a menstruating woman; from *any suppurating surface*—for example, ulcers, abscesses, phlegmon, running ear, ozena; from erysipelas, scarlet fever, and diphtheria cases; from the dirt under the finger-nails—in short, anything that is not absolutely sterile will, if introduced into the genital tract, cause infection.

It is certain that the vagina of even a normal, healthy pregnant woman contains bacteria, and these are sometimes virulent; and it is true that under certain circumstances these germs may enter the system and cause disease. We call this auto-infection. Nature protects the woman from infection by the following means: First, the

patient has a natural immunity against infection; she can overcome a certain amount, and this varies much in different women and in the same woman at different times. The writer believes that the woman brought up and living in squalor can stand infection better than the delicately bred woman. What the nature of this immunity is we do not know. We, therefore, do not trust to such uncertain protection in treating our obstetric cases. Second, the vagina has bactericidal power. Third, the germs are not carried upward in a normal labor, but down and out, the liquor amnii and the blood helping to wash them out. The great danger is in the doctor or the nurse carrying them up into the uterus.

The Prevention of Puerperal Infection.—Never was the saying truer than here that an ounce of prevention is worth a pound of cure. As yet we know no certain cure for infection that has once obtained a foothold in the genitals, but we can almost absolutely prevent the introduction of alien bacteria. In the rarest instances the patient herself is responsible for her illness, but the rule is that the patient, should she present any form of sepsis, has been infected from the outside.

The carrier of this infection to the genital tract may be the doctor, the nurse, the patient herself, the husband, or some one else, and these facts indicate how extensive must be our efforts to preserve the parturient from danger.

For the doctor, there are two grand principles for the prevention of infection: first, to reduce to a minimum the necessary injuries (tears, bruises, etc.) of labor; second, to see that nothing infected comes in contact with the genital tract. The doctor, therefore, will not interfere unnecessarily in the conduct of the labor, will not examine too much, but, in short, will allow as natural a course of labor as possible.

The Asepsis of the Nurse.—A nurse will not go from an infected case to a labor. A full week should elapse, during which time she should bathe and shampoo her hair frequently. She should take care of her person, have her teeth sound, and attend to any possible catarrh.

The hands require special care. The arts of the manicure are not to be despised, which advice may well apply to physicians. Constant scrubbing and the use of strong antiseptics ruin the skin, therefore rubber gloves should be used wherever possible. A smooth skin is easily cleansed; a rough one, not. Rings are never to be worn while in attendance on a confinement case.

The nurse wears a freshly laundered uniform in the confinement room, and does not go on the street with it. This is neither asepsis nor good taste.

A needed warning to the nurse is never to relax the stringency of her aseptic precautions. It is so easy to grow careless and desultory. But a day of reckoning will surely come, and if a nurse feels she is responsible for some dear mother's death her remorse will be unassuageable.

The nurse's duties during the labor are to provide the sterile basins, solutions, pledgets, towels, etc., *just the same as for a laparotomy*. Her hands should be as sterile as possible throughout the labor, but she may not touch aseptic things or the patient until she has taken time thoroughly to sterilize her hands. She must not insert her fingers in the patient's genitals without express orders from the physician. A long forceps with which to hand things to the doctor is very convenient. When not in use, these forceps may be kept in a tall jar (an olive bottle, for example) of 1 per cent. lysol solution. These forceps are a necessary part of the nurse's outfit.

During the puerperium the hands must be sterilized each time the genitals are dressed. The nurse should

arrange everything needed near the bed, and then sterilize her hands for the dressing. Gloves are used by many nurses with much satisfaction. Others use the sterile dressing forceps. The vigilance against infection should last throughout the puerperium.

The same care must be exercised in the dressing of the umbilicus of the infant. Many children die every year from infection of the navel, and this is preventable. The eyes of the infant, too, may be infected by the fingers of the nurse.

Of great importance is the asepsis of the breasts. The nurse may carry infection to them from the lochia or other source, and cause mastitis and abscess. As it is impracticable, though desirable, to sterilize the hands each time the baby is put to the breast, the nurse must take care that the fingers do not come in contact with the nipple. If this is necessary, the hands must be clean. These aseptic precautions must be doubled if there is a crack, fissure, or blister on the nipple. The use of sterilized cotton applicators for washing the nipple is to be highly recommended. Altogether, the contact of the fingers with the parturient is to be systematically avoided and sterile things substituted, as gloves, applicators, etc.

A woman who escapes a mastitis for two months will almost surely be able to finish nursing without trouble. Thus the chief duty of the nurse during the puerperium is to fight germs at all the points where they attack the mother and babe, and success will attend only conscientious and continuous efforts.

Symptoms.—The symptoms of puerperal infection are very varied. Usually a severe attack is evidenced by malaise, a chill, fever, rapid pulse, and all the symptoms that accompany a febrile attack. Locally there are usually pain around the uterus, altered, not necessarily foul-smelling, lochia, sometimes cessation of the

same; the little wounds around the vulva take on an unhealthy aspect, and in some cases signs of peritonitis develop, while in others abscesses form.

The cases are of all degrees of severity, and their courses are irregular, except when the infection is severe. Here a peritonitis almost always carries the patient off in a few days. It is impossible to go further into this subject here, because it is a very large one.

Every puerperal woman that has fever is not necessarily septic, but sepsis is the *first thing* to be thought of, and we shut out other causes—sore throat, mastitis, constipation, and the essential fevers like typhoid—before coming to a positive diagnosis of puerperal infection. That a woman may have fever from the bowels is possible, but simple constipation does not cause it. Sometimes a sharp rise of temperature subsides completely and finally when the bowels were thoroughly evacuated. One must be very careful not to call a fever in the puerperium intestinal in origin without careful examination and mature deliberation.

Treatment of Puerperal Infection.—In this disease as much may be expected from good nursing as from medical and surgical treatment. Every effort is made to develop the patient's resisting powers, to strengthen her so that she can throw off the disease. For this, her surroundings should be the best obtainable; the outdoor treatment of such cases has been tried with success; at all events, a bright, sunny room, well ventilated and free from noises, should be selected; household worries should be kept from her, and the family should be admonished to be cheerful and not show the patient signs of anxiety. Visitors should not be allowed until convalescence is well established.

The skin excretes poisons, and the nurse will, therefore, see that this function is not interfered with. A

daily sponge-bath with water containing a little eau de Cologne or Florida water and a soap-and-water bath every third day are sufficient.

If the patient has a chill, the nurse surrounds her with hot-water bottles, gives her a hot drink, and covers her up warmly. When a sweat comes on, the nurse sees that the puerpera does not take cold by rubbing the body with a little warm water and alcohol. If the course of the disease is prolonged, the nurse will institute proper treatment to prevent bed-sores, as gentle washing with weak alcohol, followed by a little oil, the use of salves, making a ring of adhesive plaster with carded wool in the center, the use of a felt cushion, of the air-cushion, frequent change of position, etc. One of the best means to prevent bed-sores, as well as to preserve the strength of the patient, is the use of an invalid bed. The patient is elevated on this for the attentions to the genitals, bowel movements, etc., and also to relieve the sacrum from continuous pressure. In the absence of an invalid bed, the symphysiotomy frame (see Fig. 107) does equally good service.

The dressings of the vulva need be frequent, as the discharges are irritating, sometimes even corrosive. Antiseptics should not be too strong. The physician's advice should be sought here.

The bowels will need attention. If there is diarrhea, the physician will usually prescribe something; if constipation, the nurse will probably be instructed to give enemata. The nurse should call the physician's attention to the state of the intestinal canal and the character of the evacuations. If there is much tympany the physician may order turpentine stupes to the abdomen, and the nurse sees that they do not blister. He may also order carminative enemata or the rectal tube. For abdominal symptoms of peritonitis, ice or hot applica-

tions may be applied to the belly; there should be only one layer of cloth between an ice-bag and the skin.

Should the patient become delirious the nurse must watch her, not leaving her alone a minute, as she may jump out of the window or destroy her infant. An acute mania may develop in these cases. Septic patients are often placed in the Fowler position, that is, a half-sitting posture, to favor uterine drainage. For this purpose a back-rest is used, or the head of the bed is raised.

Nourishment.—Liquid diet is ordered at the beginning, but if the case promises to continue a length of time, semisolid nourishment may be ordered. (See Dietary, p. 452.) Nourishment should be pressed on the patient, and the appetite tempted with all the art the nurse possesses. If the stomach should prove intolerant, the strongest ally in fighting this disease is lost, therefore the nurse should not err on the side of too much zeal.

There are many new food preparations on the market, such as somatose, peptonoids, and tropon, but the best results are obtained if the patient can eat and digest well-prepared home foods.

In the vomiting of peritonitis both doctor and nurse stand powerless. Washing the stomach helps only for a short time. In extreme wasting, inunctions of benzoinated lard are recommended, and, as an aid, rectal alimentation. Salt solution may be given hypodermically or by the rectum.

Rectal infusion of saline solution by the drop method is much used in the treatment of puerperal sepsis (Fig. 149); 2 teaspoonfuls of common salt in 1 quart of warm water give the right proportion. The douche-bag is hung on the bed-post with a hot-water bag alongside, both wrapped in a towel. The hot-water bag keeps the saline solution warm. The douche-bag tube is connected

with a small catheter, and by means of a pair of artery forceps the tube is clamped so as to allow the solution

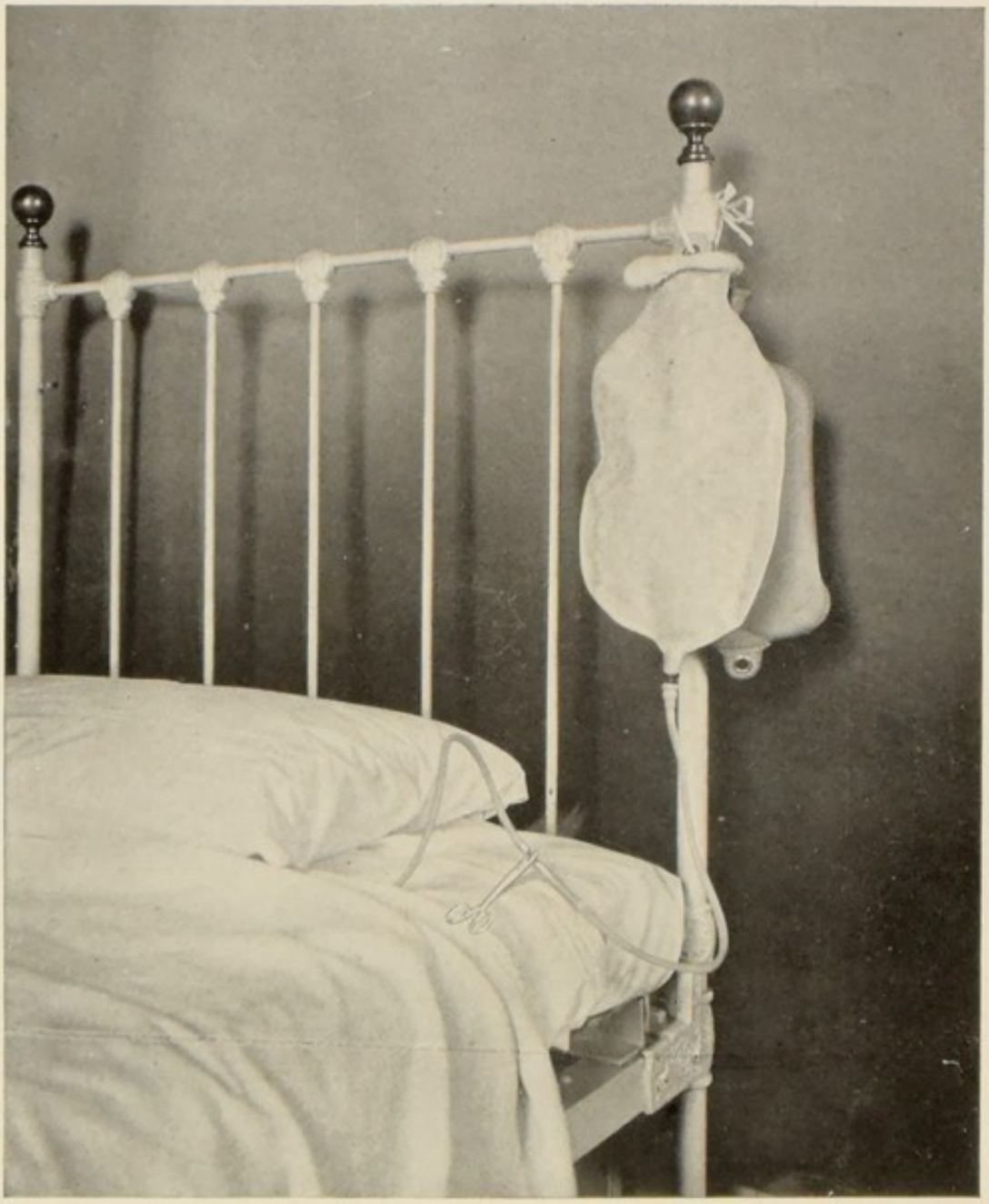


Fig. 149.—Continuous administration of saline solution per rectum. The douche-bag is wrapped with the hot-water bag in a large towel. Thus the heat of the solution is maintained during the prolonged administration. The artery forceps regulates the flow.

to drip from the catheter about one drop each second. This is called the "drop method." The catheter is then placed in the rectum. Sometimes the salt water is

absorbed as fast as it flows in; again, the patient cannot retain it long. Usually the patient has to be placed on a bed-pan, which is very uncomfortable unless a rubber

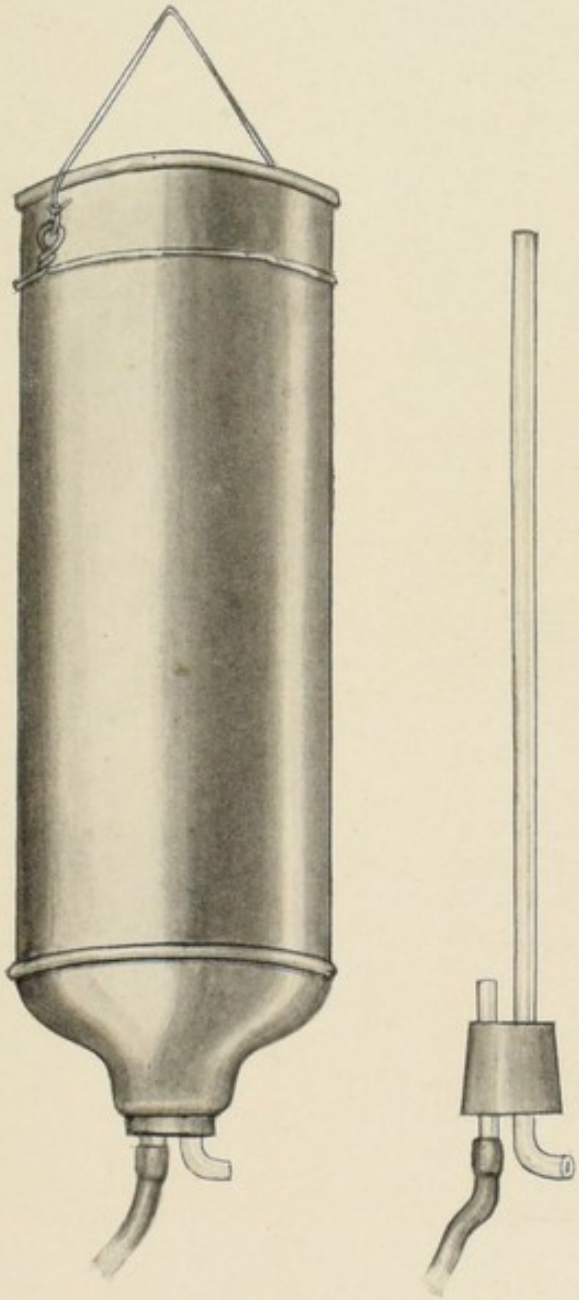


Fig. 150.—Vacuum bottle used as irrigator. The cork shown at the side carries two glass pipes, the rubber tube being attached to the shorter one.

utensil is at hand. Instead of the douche bag a vacuum bottle may be used, arranged as in Fig. 150, or an electric light may be immersed in the solution.

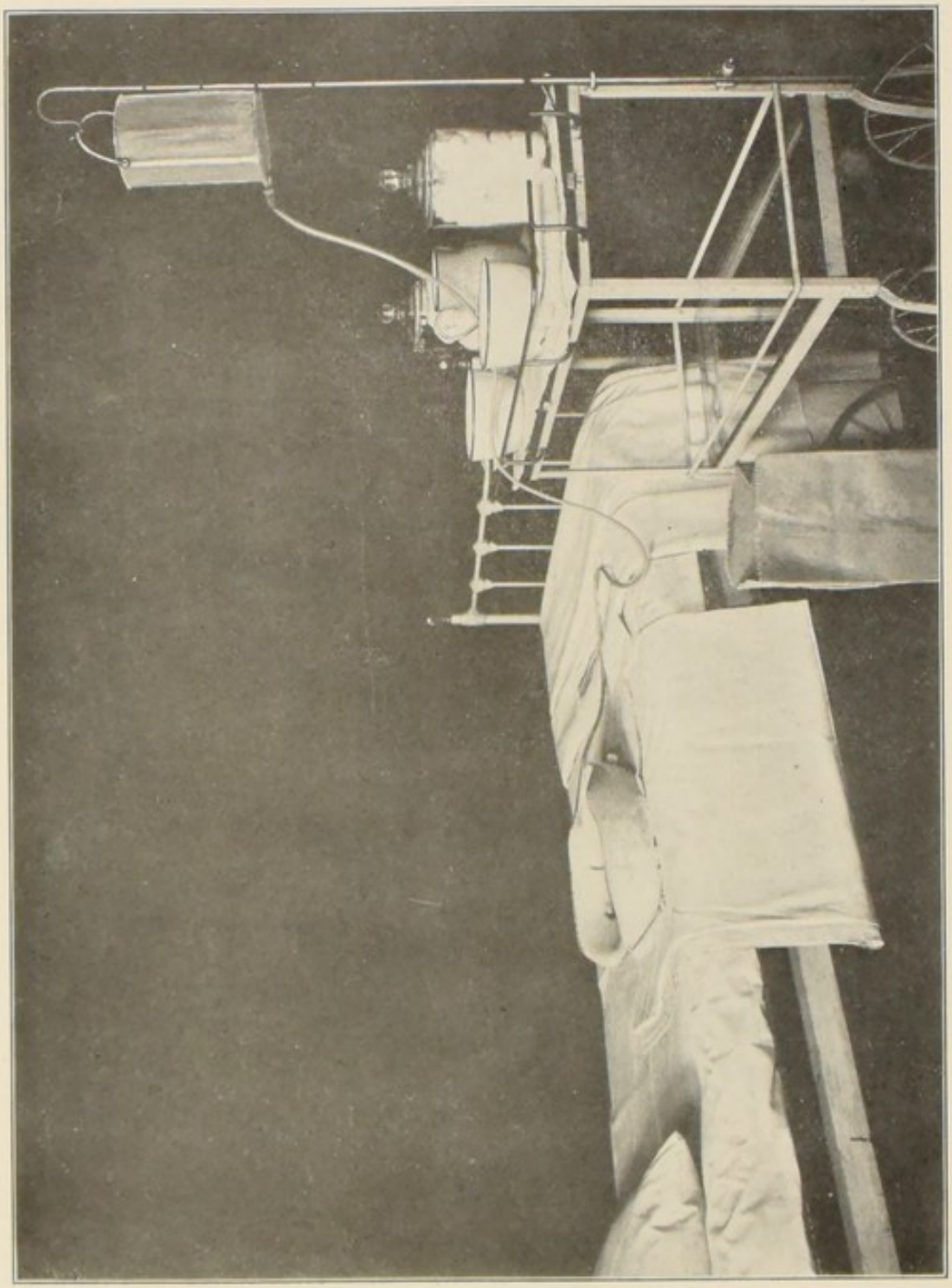


Fig. 151.—Arrangement for giving vaginal douche. The dressings and enemata are prepared for in the same manner.

The salt water stimulates the lymphatics of the pelvis and helps to wash the poisons out of the system.

Medicinal Treatment.—Unfortunately, we possess no medicine that is a specific for infections. Antistreptococcic serum, vaccines, Credè's ointment, and other remedies may be exhibited by the physician. At one time alcohol was much used, and, to a small extent, still has a place in the treatment. When given, whisky or brandy was preferred and in large doses. The fever is best treated by cool sponging. Ice-packs are too depressing, and the cold bath involves too much disturbance of the patient. Sometimes a warm pack reduces the temperature better.

Surgical Treatment.—The nurse may be called upon to assist at internal examinations of the patient, to prepare for uterine douches, for curettage, even for major operations by the vaginal or abdominal route. The methods of preparation for all these are given in appropriate chapters, so that repetition is unnecessary. The nurse should not be expected to give uterine douches, although the physician may instruct her to do so. A uterine douche is a more serious matter than was formerly thought. Vaginal douches may be ordered frequently given, but many physicians are changing their practice in this regard too. The writer does not use them in sepsis. The arrangement for giving the vaginal douche is shown in Fig. 151. When an abscess forms around the uterus, the physician may open it, and in some cases the uterus itself is removed.

The Child.—It is best for the patient not to nurse the baby if her illness is at all severe—first, because she has not the vitality; second, her milk is none too good for the infant; third, the infant may become infected by being so close to a focus of infection. As it is, the babe runs great danger of infection through the nurse unless the

latter is fully alive to the situation and takes the extraordinary precautions necessary.

The nurse, if there is only one, should use sterile rubber gloves whenever she touches the discharges of the mother, and another pair when she dresses the navel of the child. It is better to have a special nurse for the infant. If the child does not nurse, the breasts should not be pumped in the hope of preserving the milk. Pumping will not preserve the supply if nursing is long interrupted, and it may lead to an abscess in the breast. The milk will return itself if the child is put again to the breast after not too long an interval. The author has seen the milk return after three weeks. The child may be with its mother very little, and precautionary measures should be constant in preventing infection from reaching its navel, eyes, and throat.

The Nurse.—For difficult cases of puerperal infection two nurses are really needed, and there is plenty of work for both. It is better if one nurse takes the mother and the other the child. The nurse should insist on getting at least six consecutive hours of sleep daily and several hours of recreation in the sunny part of the day, which should be her opportunity to go out and revivify her blood with fresh air and sunshine. The patient, too, will be better for it.

The nurse must be careful not to infect her own hands. Fatalities are known. She must, therefore, care for all cracks and hang-nails. It is wise to use rubber gloves for the vulvar dressings, for this reason as well as for those previously mentioned. If the slightest irritation is observed on the hands, the physician's advice should be sought. Infection of the nurse's eyes has occurred, therefore the nurse should, as should all hospital or sick-bed attendants, learn to avoid rubbing the eyes and face while on duty.

History Sheet.—The temperature in septic cases is very irregular, and the physician will wish it taken every

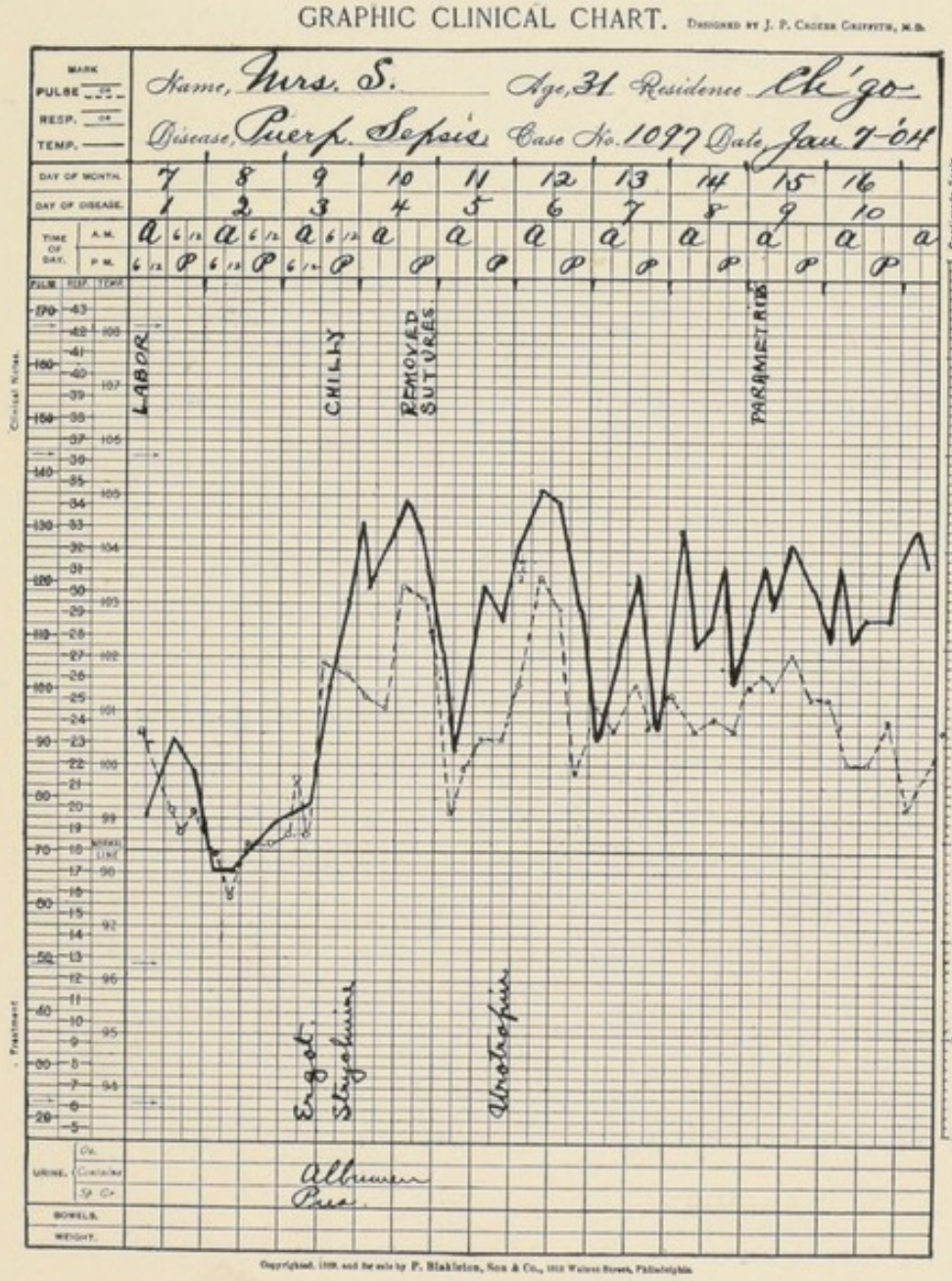


Fig. 152.—Graphic temperature chart of a case of sepsis. The solid line shows the temperature; the dotted line, the pulse.

four hours, also the pulse and respiration. A full history sheet should be kept and all unusual occurrences noted. Graphic history sheets aid the physician in acquainting

himself with the case, therefore the nurse should learn how to make them (Fig. 152).

Disinfection.—All pads and cloths soiled by the discharges from the patient should be wrapped in newspapers as soon as removed and burned. Sheets, towels, etc., should be thrown into a tub of 3 per cent. carbolic solution and allowed to soak several hours before they are sent to the laundry. In the laundry the time of boiling the clothes should be at least forty minutes, and the boiler must be tightly closed. The blankets used about the patient should be washed like other bed-linen. An effort is to be made to limit the infection to the room occupied by the patient. The nurse, therefore, keeps her utensils together, protects tables and other furniture from being soiled by the discharges, and keeps the bath-room free from infection.

The physician should be provided with a sterile gown for his visit or examination, and with sterile soap and towel for his hands on leaving.

The discharges from the vulva, from abscesses, or from wounds should be caught in antiseptic dressings, and these surfaces kept clean by frequent dressings. The room is kept free from odor by full ventilation and sunlight. A sun-bath will do the patient good.

After the case is terminated the patient is given a new bed; the mattress she occupied is burned, and the bed taken down into the yard and scrubbed and carbolized. Basins are boiled and furniture scrubbed with 3 per cent. carbolic solution. The room is thoroughly fumigated with formalin (see p. 440), and, in general, the case treated as one of the contagious diseases, although it is not contagious in the accepted sense of the term.

On leaving the case the nurse sends all the clothes she wore while on it to the laundry, and after a full bath and hair shampoo dons aseptic apparel. For the next four

days a daily full bath and hair shampoo, using a great deal of soap, are recommended. The nurse may ask why she is required to undergo such thorough cleansing, when the physician goes about among such heterogeneous cases without as many precautions. Let her remember that the physician stays with each patient but a few minutes, and has a change of air between each two calls, while she is in the infected atmosphere nearly seventeen hours out of the twenty-four. Then, too, if she goes to a new patient susceptible to infection, her more intimate association with the case invites sepsis, even if she carries but very little with her.

PUERPERAL THROMBOSIS

The blood in the veins of the legs may stagnate and clot; this is called thrombosis. The return circulation being thus shut off, the part becomes edematous. Usually there is little fever with this—a mechanical thrombosis due to poor circulation and to the fact that the veins are enlarged and tortuous. The element of danger in these thromboses is that a bit of clot may break off and, carried by the blood-stream, reach heart and lungs. This is called embolism, and is often fatal. The nurse will seek to prevent embolism by keeping the affected limb very quiet for several days, and by not rubbing or massaging it. Care should be exerted when the patient moves in bed and when the limb is bathed.

If an infection proceeds from the sides of the uterus and attacks the cellular tissue and the veins about the pelvis, a condition called **phlegmasia alba dolens** results. By the laity this is called "milk-leg," and refers to the ancient notion that it is due to "driving in of the milk." It really is an infection which travels along the veins and the cellular tissue of the pelvis. One or both legs may be affected. The limb is swollen and painful,

and the skin is tense and white, almost translucent. It is very tender to the touch. Convalescence takes weeks or months, and often the leg remains swollen or swells when the patient is long on her feet.

The nurse will be instructed to keep the patient very quiet, to elevate the limb a little (Fig. 153), to apply a warm, moist dressing, a bandage, or special medicines.

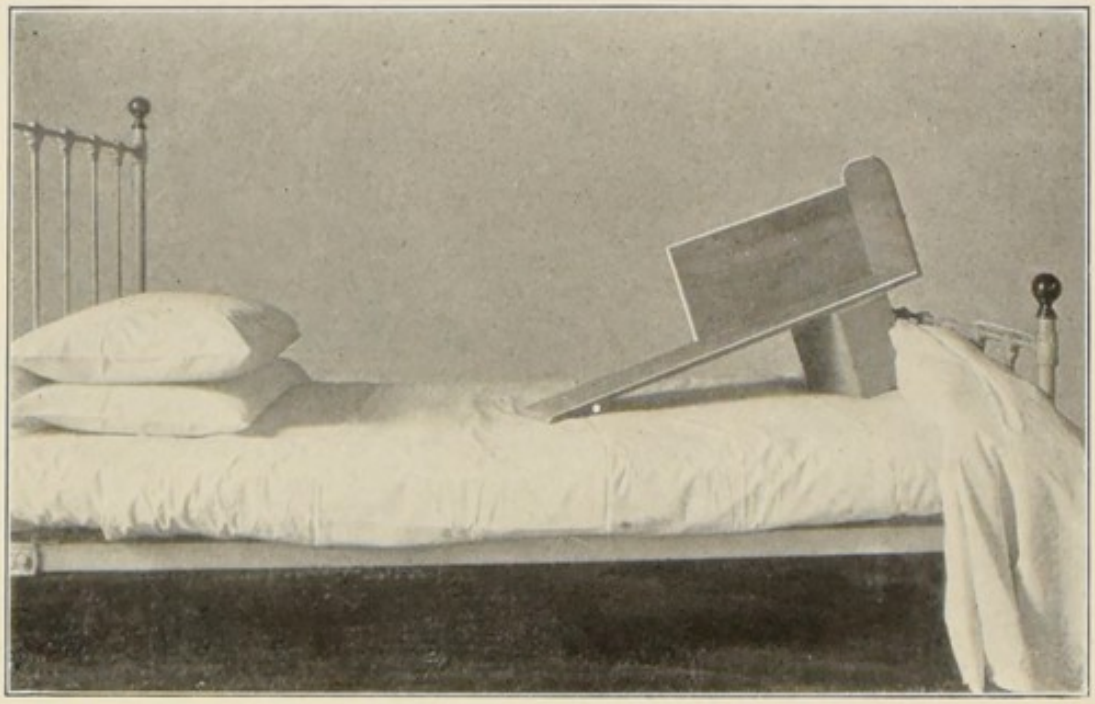


Fig. 153.—The box used for elevating the leg in phlegmasia alba dolens. It is smoothly padded with cotton covered with gauze. An air cushion is placed under the tendo Achilles. If the foot tends to fall outward it may be supported by a light adhesive strap to the foot-board. In summer this may be made of wire netting.

The foot must not be allowed to support the bed clothes, as "drop foot" will result. A cradle is used to prevent this. Bed-sores will result from poor nursing of the case. Later on, when the fever is gone and signs of inflammation are absent, the doctor may prescribe gentle massage. Sometimes these cases are only part of a general blood-poisoning or pyemia, and then they are really serious, usually fatal.

AFTER-PAINS

Primiparæ, unless the uterus contains a clot, are not troubled with painful uterine contractions after the child is born—"after-pains" as they are called. Multiparæ are annoyed by them, and they increase in severity with succeeding puerperiums. They are due to lack of tonicity in the uterine muscle, or to the presence of a clot or a bit of placenta in the uterine cavity, in which case they are especially beneficial, as they expel the foreign body. In all cases they are of good omen, though the patient may suffer considerable distress. If the nurse tells the patient this fact, it may help her to bear with them until they disappear, which almost always occurs within forty-eight hours. During the nursing of the infant the after-pains aggravate, due to the nervous stimulation of the uterus through the breasts—a fact we make use of in practice to get the uterus to contract. In some women the after-pains are of special severity, and the physician should be informed of it, so that he may prescribe an anodyne. Household remedies are warm fomentations over the uterus; a salt solution enema; compression of the abdomen; a warm drink, soda-mint tablets, and suggestion, the nurse trying to divert the patient's attention. When a clot or other foreign material is in the uterus, the physician may wish to remove it. Preparations are made as for the douche, p. 224.

TYMPANY

Occasionally after delivery the intestines fill up with gas and the abdomen becomes as large as, and sometimes larger than, it was before the birth of the child. The condition rarely may become dangerous or even fatal. It seems to be a paresis of the intestinal walls or stomach similar to that sometimes occurring after

abdominal section. The physician's attention should be called to it early, and he will prescribe some carminative by mouth or by rectal injection. Asafetida has proved valuable in these cases. Turpentine stupes and the high rectal tube are also used. An enema of milk and molasses, of each 1 pint, is very effective. Chamomile tea makes a pleasant enema The abdominal binder should be removed. Abdominal massage is practised only on the physician's order. If the tympany is due to a peritonitis, the outlook is gloomy Nearly all cases not due to inflammation rapidly subside under treatment.

CONSTIPATION

Difficulty may be experienced in getting the bowels to move during the puerperium. In one case the author found a tumor almost as large as the uterus at term filling up the lower abdomen, composed of feces. If cathartics and ordinary flushings prove insufficient, high colonic irrigation with inspissated ox-gall and glycerin may be ordered, or it may be necessary, if the fecal impaction is lower, to remove the mass with the fingers and suitable scoop-like instruments. An ox-gall enema is prepared as follows: 1 dram of inspissated ox-gall is mixed with 2 ounces of glycerin into a smooth paste; with constant stirring water is poured into it until the amount is 1 quart. The mixture is injected slowly into the bowel and retained several hours if possible. For removing hardened feces from the rectum the patient is brought to the edge of the bed, warmly covered, because the operation requires some time, and the nurse, with rubber gloves on, under an intermittent stream of salt solution, loosens and breaks up the masses. After the rectum is emptied, a few ounces of sterile olive oil or vaselin (liquefied by heat) are injected to allay the irritation.

VESICOVAGINAL FISTULA

In cases of excessively prolonged labor or of instrumental delivery, it occasionally happens that the wall between the bladder and vagina is torn or sloughs out. The resulting communication between the two cavities is called a vesicovaginal fistula. If such a communication

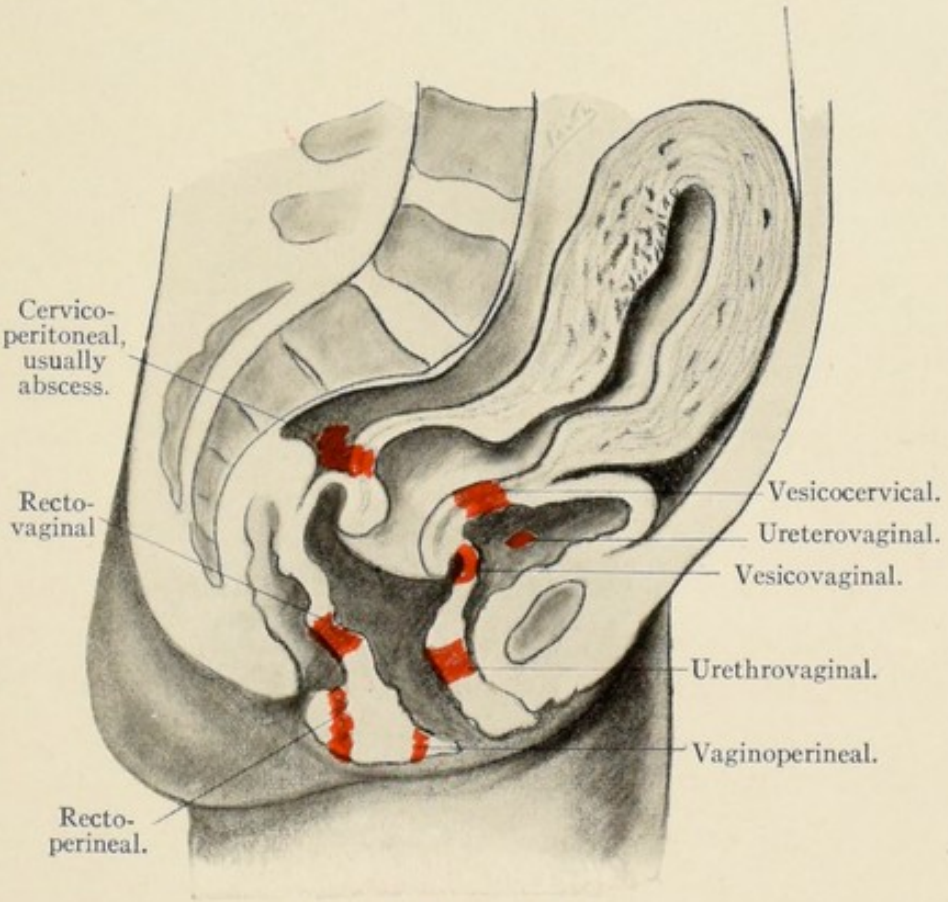


Fig. 154.—Sites of fistulæ.

is made with the rectum it is called a rectovaginal fistula (Fig. 154). In the former case the urine will escape from the vagina continually; in the latter, the feces and gas will continually soil the vagina. The nurse will have extra work keeping the parts clean until they are sufficiently recovered to permit a plastic operation.

After vesicovaginal fistula operations usually a per-

manent catheter is inserted and continuous drainage of the bladder is maintained. The success of the operation depends largely upon the nurse, because if she allows the catheter to be plugged with urinary salts or to be kinked, the bladder will become overdistended, and,

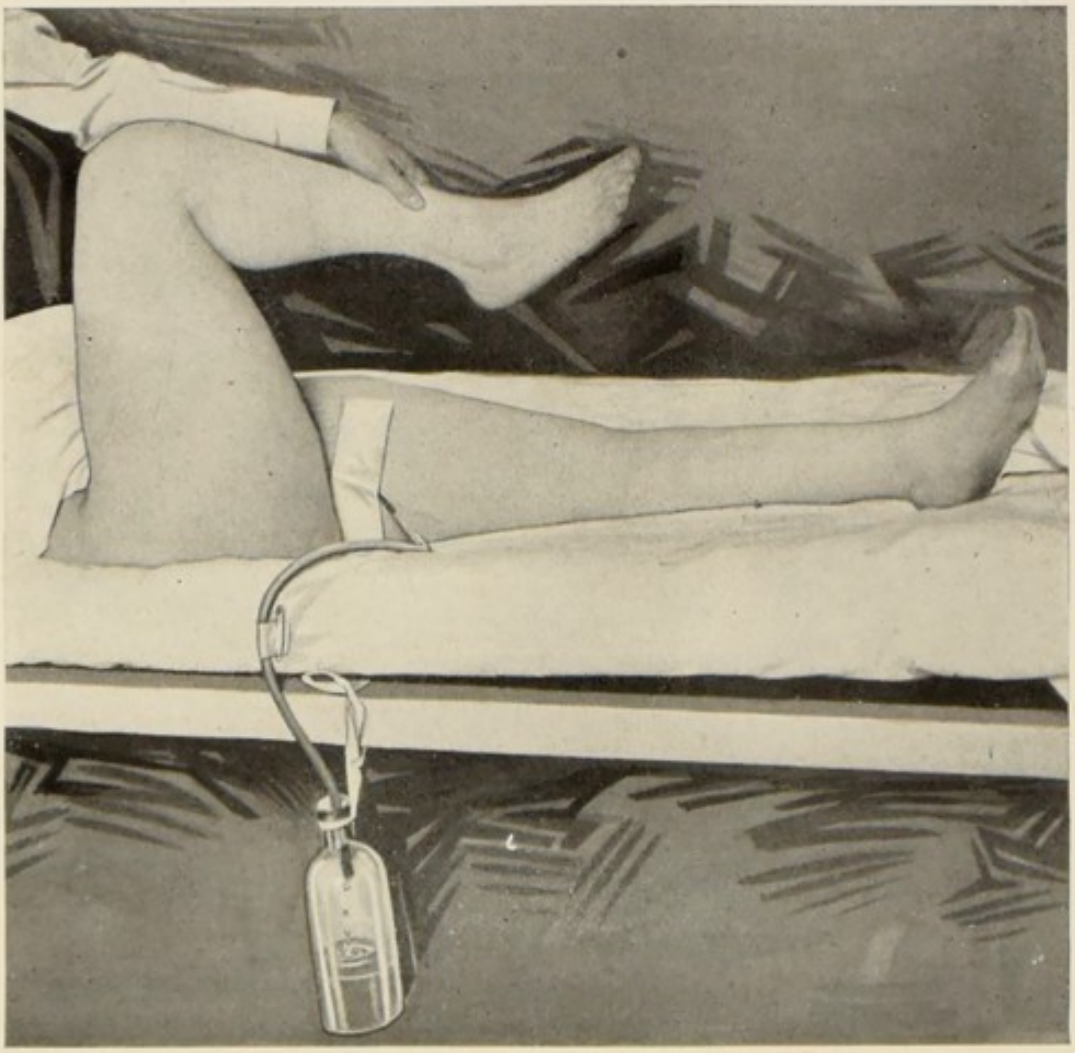


Fig. 155.—Permanent catheter in place, draining into bottle hung at the side of the bed. The rubber tube must be rigid enough to resist compression by the thigh.

since the urethra is blocked, the urine will find exit through the stitches, thus spoiling the operator's best work.

A No. 16, French scale, soft-rubber catheter is placed in the bladder and fastened to the thigh with adhesive

plaster (Fig. 155). A large glass connector unites it with a stout rubber tube (lumen $\frac{1}{4}$ inch), leading under the thigh into the mouth of a large bottle hanging at the side of the bed. The nurse observes the urine dripping from the free end of the tube, and she must at once investigate any stoppage of the flow. The dripping must be uninterrupted. Night and morning the catheter is removed and a new one inserted, which must also be done if the urine ceases to flow. Medicines are usually given to prevent excessive deposition of salts in the catheter, which is the greatest menace to success.

CYSTITIS

Inflammation of the bladder is an occasional complication of the puerperium. It is usually due to infecting catheterizations, but in some cases injury to the bladder during labor predisposes to the infection. The nurse can read a warning here—to be always aseptic in her catheterization.

The symptoms of cystitis are painful and frequent urination, vesical tenesmus, pain over the bladder, tenderness on pressure, pus and blood in the urine; later, alkaline fermentation in the bladder.

The treatment is both internal and local. The patient will be given some urinary antiseptic, like urotropin, and the physician will perhaps order the bladder washed out with saline solution or some weak antiseptic. Washing the bladder is simple, the preparation being the same as for catheterization. After the urine is drawn off, the tube of the douche-bag is attached to the catheter and the bladder allowed to fill. The bag is held 18 inches above the pubes. The water is then allowed to escape, and this lavage is repeated several times at each sitting.

If the physician wishes to cystoscope the patient, that

is, look into the bladder, the nurse will prepare for this in the same manner as if she were going to wash out the organ. In addition she should provide a tall jar for solution in which to place the cystoscope, a sterile syringe holding 2 ounces, and 1 pint of sterile water as clear as crystal. This water the physician uses to distend the bladder while he is looking into it with the cystoscope. Cystoscopes (excepting the simple tubular ones) must not be boiled, and are to be delicately handled.

HEADACHE

A woman should not complain of headache during the puerperium. If a headache comes on after labor, the nurse should watch for other symptoms of eclampsia. If a woman has lost much blood at the labor she may suffer from an anemic headache. There is a headache from exhaustion, from too much excitement, as too many or irritating visitors, from hunger, from too much ergot, and from insomnia. Sometimes the eyes are at fault, and the patient may have to wear eye-glasses in bed, and if a woman with weak eye muscles looks down at her baby all the time it is nursing she may acquire a headache from eye-strain. Constipation is another cause of headache, and neurasthenia also. The physician will inquire into the cause and seek the remedy, but the nurse may do much both in prevention and cure by exercising her art—nursing.

PUERPERAL INSANITY

This sad accident is not very infrequent. It occurs most often in women with an hereditary taint of insanity in the family, in cases of toxemia during pregnancy, after eclampsia, and after sepsis postpartum. Melancholia and mania are both found, and one may lead to the other. In both forms suicidal tendencies are marked, and the

mother may try to destroy the child. After recovery she may repudiate her own infant, or only slowly learn to love it.

The symptoms of beginning puerperal insanity are sleeplessness, anorexia, delusions of sight, hearing, smell, loss of love for the infant, even hating it. The patient may become acutely maniacal, with extreme and exhausting jactitation, and try to jump out of the window; or she may lie apathetic and melancholy, but may suddenly make an attempt to kill herself or the baby.

Treatment.—There are three important parts of the nursing care of such cases: First, prevent the patient from committing suicide and from killing the baby; second, procure sleep; third, keep up the nutrition.

To accomplish the first—*prevention of suicide*—the patient should be isolated in a room whose windows are barred. If they are completely covered with double wire fly-netting nailed down it is sufficient, and does not give the patient the idea of a prison. All pictures and extra furniture should be removed, and everything that has a polish which may give reflections and which the patient may misconstrue; also everything that is sharp or cutting, as glass, table-knives, or forks. Nothing movable save the table, divan, and chairs should be at hand.

The patient must not be left alone an instant. Two nurses are absolutely necessary. When the child is with the mother, the nurse must watch her very sharply, as she may strangle the little one before it can be drawn away from danger.

The general rules for nursing the insane are applicable here, and it is desirable that a nurse having such special training be employed. For the exhausting jactitation, gentle restraint may be absolutely necessary, but one should remember that restraint is also exhausting to the patient.

Procuring Sleep.—The physician will prescribe somnifacient drugs, of which hyoscin, scopolamin, morphin, opium, and chloralamid are usually selected; but the nurse may do much to procure rest for the patient. Let her give the enema and the bath in the evening, or an alcohol rub, with general massage, followed by a cup of hot malted milk or an eggnog. Absolute quiet must reign throughout the house, and no visitors be allowed. The patient must sleep.

Nourishment.—This is of great importance and difficult, because the appetite is gone and the patient may try to die by starving herself. She may imagine herself too wicked for the food given her, or have other delusions, and the nurse may make use of her delusions to insinuate food. All the art of cookery and the arts of the nurse are to be used to provide sufficient nourishment, and the nurse should keep an accurate record of the daily amounts ingested, so as to be able at all times to show the physician that the puerpera is not suffering. Should the patient refuse nourishment, she will have to be fed with a stomach-tube.

Saline solution is sometimes administered hypodermically. It may make the patient hungry. If the mother has milk, she may nurse the infant. Let the nurse watch them carefully; usually the milk secretion diminishes, or the infant does not thrive, and it is best to wean it.

These cases require from two to eight months for recovery, although occasionally this may never be complete. An important question is the removal of the patient to a sanatorium. In the writer's opinion, this is usually by far the best course. If the patient can have skilled nurses and all the care she could get in the sanatorium at her own home, with complete isolation, she may be as well cared for at home.

CHAPTER IV

COMPLICATIONS OF THE PUERPERIUM—(Continued)

DISEASES OF THE BREASTS

THE most common disorder affecting the breasts is **simple engorgement.** The general notion is that the breasts are overfilled with milk. This is true only in part. While a small amount of milk forms spontaneously in the breasts, the symptoms are due to lymphatic and venous engorgement. One can see this in some cases, even the skin being edematous. The engorgement occurs on the second, third, or fourth day, when the "milk comes in," and it may occur at the time of suddenly weaning the child, when the usual relief of engorgement produced by nursing is absent.

Symptoms.—The breasts are very heavy, painful, and hot; they feel warm, but there is no rise of body temperature. There is no such thing as "milk-fever"—a fever the ancients ascribed to the engorgement of the breasts on the third or the fourth day. Fever at such times is usually due to infection. Examination of the breasts shows them to be much enlarged, tender, sometimes edematous, and of a bluish, mottled appearance. The nipple is flattened so that the child cannot grasp it, and the secretion of milk may be suspended—the breasts are choked up with swelling. The part of the gland running up into the axilla enlarges too, and the patient cannot bring her arm to the side.

If left alone, the engorgement gradually disappears, the gland becomes soft, and the milk flows readily when the child nurses. If irritated by too much or too rough massage, by breast-pumps, and too frequent nursing, the engorgement is slower in going down, but it will gradually disappear.

Treatment.—The practises of physicians vary. Some apply heat; others, cold. Usually orders are given to bind the breasts tightly (Fig. 156). A saline cathartic is often given to draw the blood away from the breasts.

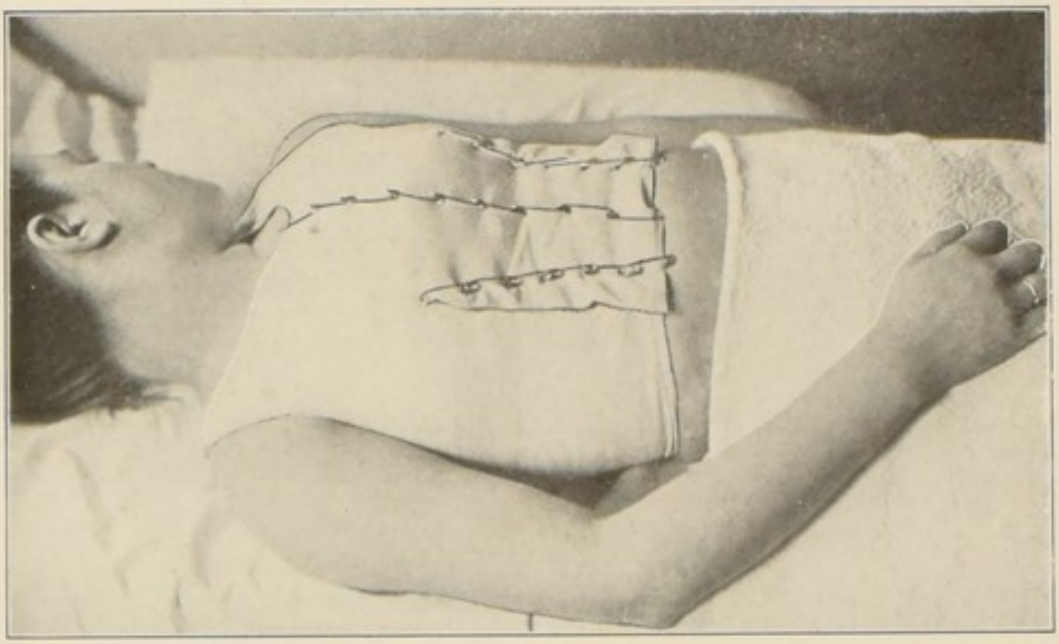


Fig. 156.—The breast-binder applied.

Massage is practised only on the physician's order, and the same is advised in regard to the breast-pump. Neither massage nor the breast-pump is to be employed when there are signs of inflammation in the breasts.

The practice of the author is as follows: If the engorgement is severe and causes much pain, a saline laxative is ordered, and liquids by mouth are restricted. The infant is allowed to nurse only every four hours. The breasts are tightly bandaged and an ice-bag is applied to each of them. These measures will almost

always prove adequate. If they do not, the nurse gently massages the breast for five minutes and then reapplies the binder. If this brings no relief, which is unusual, a hot boric dressing is applied. Aseptic gauze is wrung out of hot boric acid solution, both breasts snugly padded with it, and over all a layer of oiled silk and a bandage are placed. This is sometimes more grateful to the patient than the ice. If compression is wished in addi-

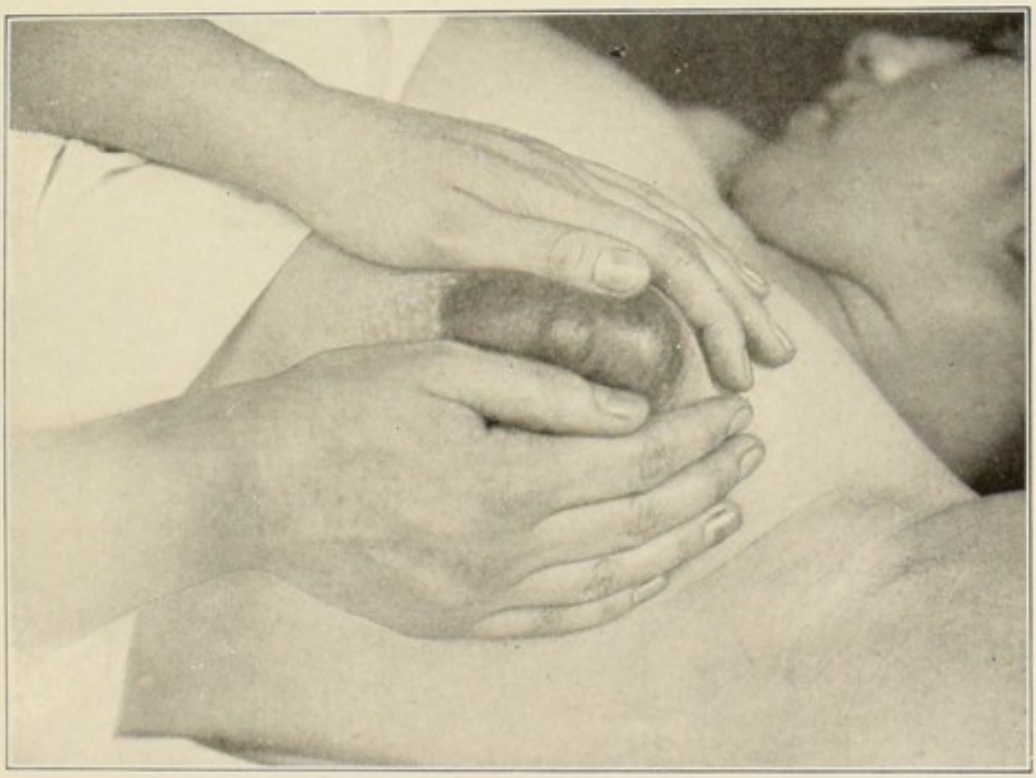


Fig. 157.—Massage of breast: Even compression of entire breast. First motion.

tion, a round oatmeal bowl may be inverted over each breast and bandaged on.

Massage is carried out as follows: The nurse sterilizes her hands and anoints the breasts with sterile albolene or oil. The first motion (Fig. 157) is one of even compression of the whole breast. Both hands are spread out as evenly and smoothly as possible over the breast, and firm compression exerted against the chest. The

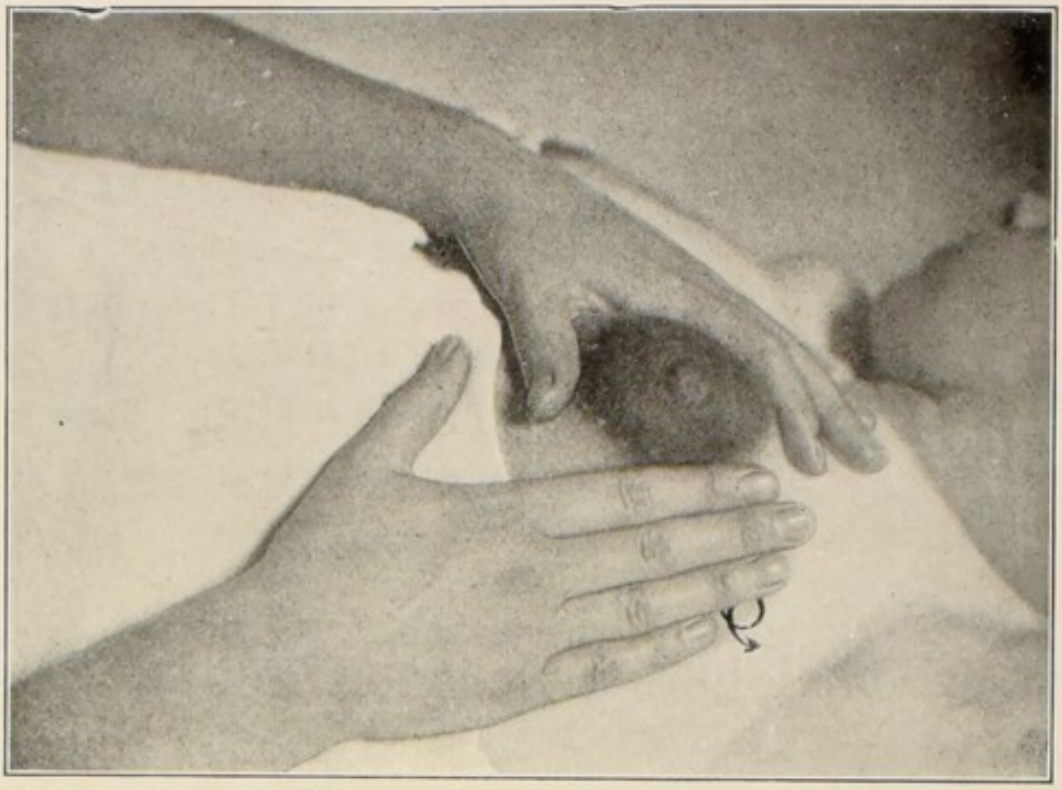


Fig. 158.—Massage of breast: Pressing the lymph in the direction of the peripheral lymph-vessels. Second motion.

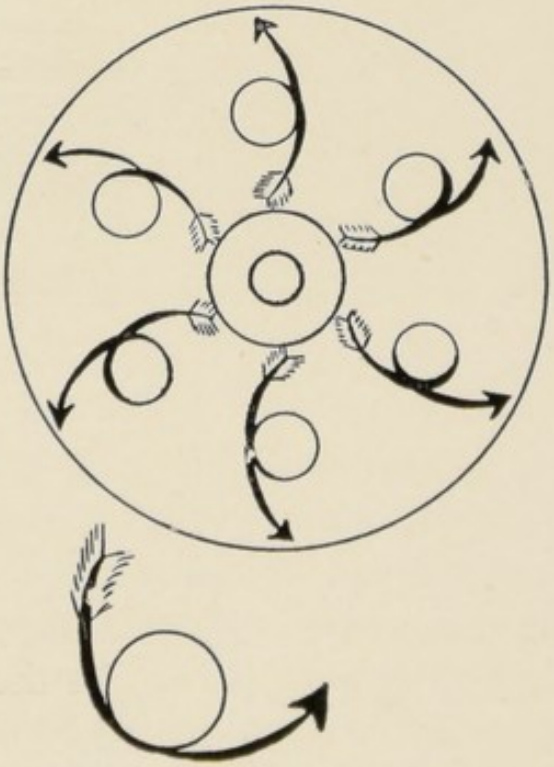


Fig. 159.—Diagram of the breast strokings in the second motion. The shaded portion of the arrows shows the increase in pressure of the stroke.

blood and lymph are thus pressed out and away from the gland. On removing the fingers the nurse may see depressions in the surface. This pressure is not painful,—just the contrary. After this even pressure has been practised a few minutes and all the gland covered, gentle circular strokings are made from the nipple toward the periphery (Fig. 158). The four fingers make circles around the nipples, pressing harder as they go away from

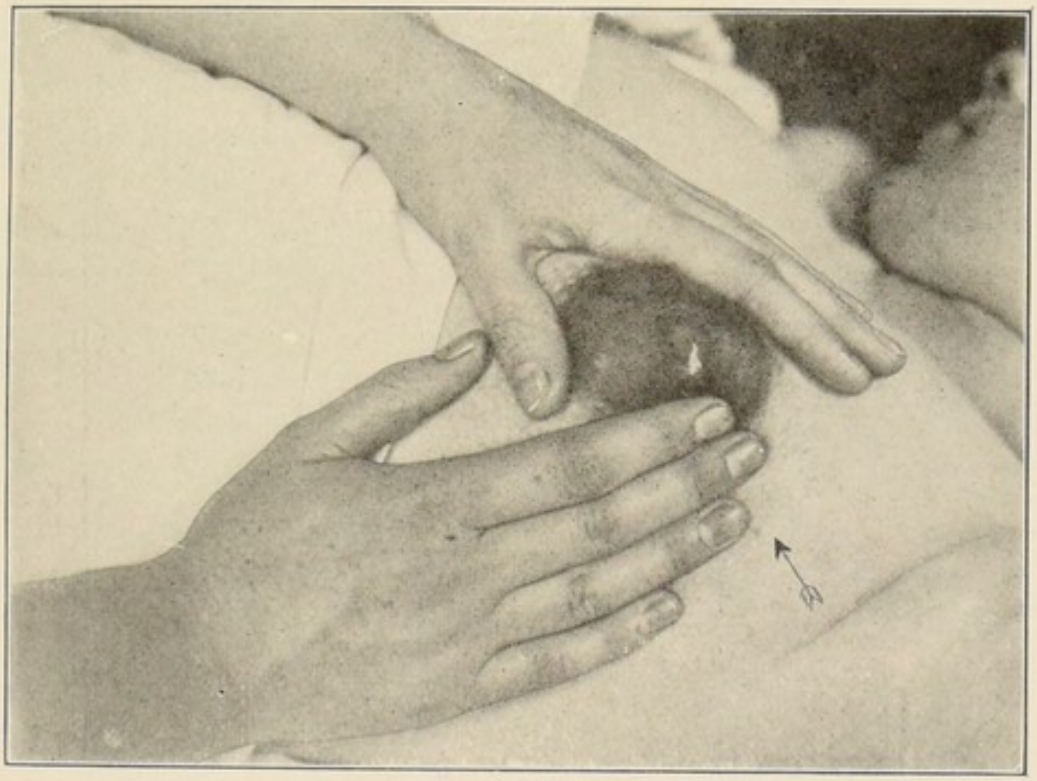


Fig. 160.—Massage of breast: Wiping the milk toward the nipple. Third motion.

the nipple (Fig. 159). The breast is steadied by the other hand. The idea is to press the lymph out of the breast.

After circling the breast twice, the third motion is instituted (Fig. 160). One hand steadies the breast, while four fingers of the other hand wipe the milk toward the nipple. Any milk formed is thus squeezed out of the nipple. This is the least important of the three motions.

The last maneuver is a repetition of the first, and nearly always the patient will feel much relieved by the procedure, even though no milk has been expressed. The breasts are now bandaged smoothly and tightly.

Abnormalities of the Nipples.—The normal nipple varies much in different women. Fig. 161 gives silhouettes of many forms. If the nipple is flat, or even depressed, the child may be unable to get hold of it.

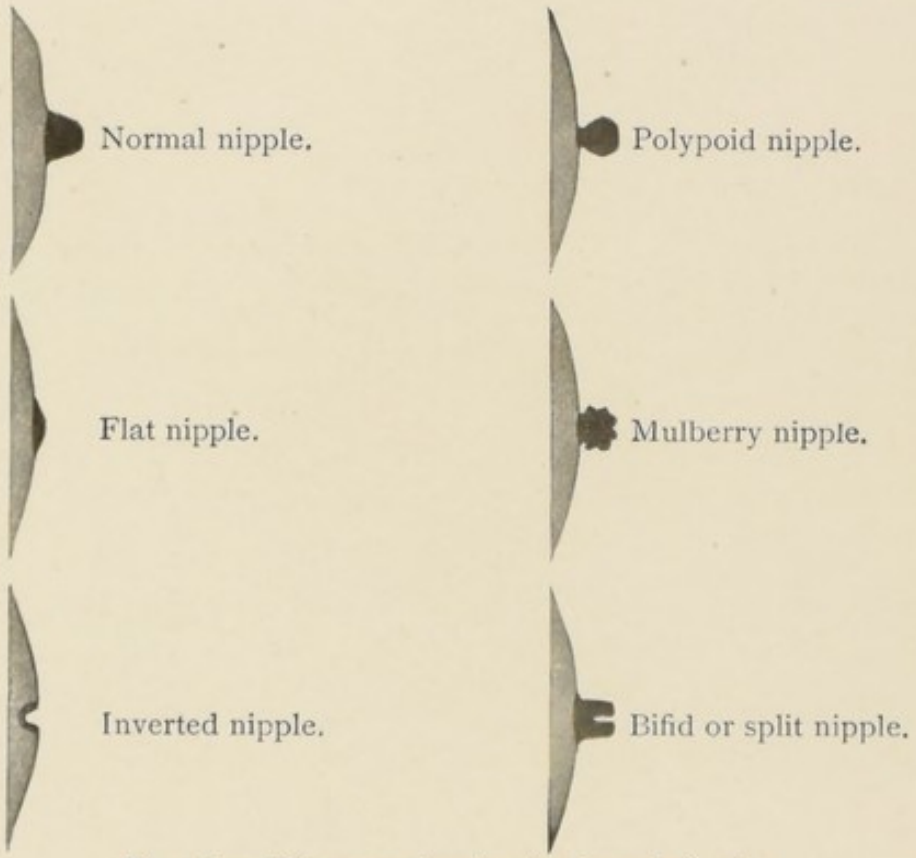


Fig. 161.—Diagram of variously formed nipples.

Engorgement of the breast is common, and if fruitless efforts at nursing are persisted in, cracks occur and abscess may be the final result. If the child cannot quickly develop a nipple sufficient for sucking, and if the milk does not flow readily with the use of a nipple-shield it is best to discontinue nursing. During pregnancy attempts should be made to develop undersized and depressed nipples. (See p. 89.)

If the nipple is congenitally fissured, as the mulberry nipple; bifid, as the double nipple, or pedunculated, the tendency to crack is marked, and trouble with nursing is inevitable.

Cracks, Fissures, and Blisters of the Nipple.—These are very important, because they sometimes render nursing difficult or impossible, to the detriment of the infant, and they may also lead to mastitis, with abscess. The integrity of the nipple must, therefore, be preserved. The nurse should frequently inspect the nipples, to detect a crack or blister in its incipiency, especially if the patient complains of tenderness when the babe grasps the nipple. If she cannot find a crack with the unassisted eye, a magnifying-glass in good light will usually show one. Sometimes there is an unexplained sensitiveness of the nipple. This occurs in neurotic women, and may be so acute as to forbid nursing, even though there is a good milk-supply. Sometimes the infant bites the nipple unnecessarily. It is a habit, and should be cured by gently patting him on the back until he learns better. Sometimes the baby will not let go of the nipple, preferring to keep it in the mouth, even when not nursing. This must not be allowed. To remove the nipple from the infant's mouth without hurting the nipple, insert the little finger into the mouth at the angle of the lips and let the air in.

Cracks are longitudinal or circular; the latter are the worst. A crack may deepen into a fissure, and a fissure, if transverse, may partly amputate the nipple. If longitudinal, it may split the nipple. A blister often precedes a crack, and a little superficial ulcer may result from a blister. Blondes are more liable to these affections than brunets, and red-haired women seem particularly predisposed, perhaps because their skin is so thin and delicate. The precautions to be taken during preg-

nancy are given on page 89, under The Hygiene of Pregnancy.

As soon as a crack is discovered, it should be reported to the physician and treatment should be instituted. A great many methods are employed. The author uses the following, but the nurse will do well to get exact instructions from the attending physician: First, the intervals of nursing are lengthened to four hours and the breasts used alternately; second, Wansbrough's leaden nipple-shields (Fig. 162) are applied. These are little shields made of thin lead having the shape of a sugar-loaf hat. They are scoured with Sapolio, boiled, and then applied to the nipples, being supported by a bandage. The

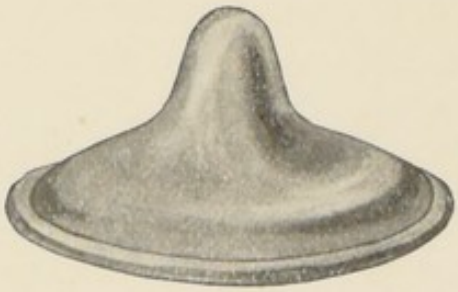


Fig. 162.—Wansbrough's leaden nipple-shield.

theory is that the lactic acid in the milk acts on the lead, and the nipple is bathed continuously in a sort of lead-water application. This explanation has been questioned, but the fact remains that the little appliance is very successful in curing cracked and ulcerated nipples. To hasten the cure, or if the leaden shields are not used, the crack or blister is brushed with a 2 per cent. solution of nitrate of silver. If there is a deep fissure or ulcer, it is best to begin the treatment by touching it up with a 20 per cent. solution of nitrate of silver and then apply the shields.

Before nursing the shield is removed, the nipple washed with boric solution, and a glass nipple-shield applied.

(See Fig. 76.) To get the infant to nurse with this shield it is well to fill it with sterile water before inverting it over the nipple. The child sucks out the water and the milk follows. The teterelle may also be used. Should the milk start with difficulty, a hot application will bring it to the surface.

Sometimes the above treatment fails, although the author is very seldom thus disappointed. In these cases he uses astringents, and the best is nitrate of silver. The nipple is washed with a 2 per cent. solution of it morning and evening, and it is allowed to dry in, in the sunlight.

If the fissure is a deep one, the child should be kept from that breast for a few days. In this time, with the nitrate of silver application and the leaden shields, the fissure will have healed sufficiently to allow nursing with the glass shield or the teterelle.

It is not necessary to say here that extreme asepsis must be practised to keep these cracks from being infected; the glass nipple shields must be boiled twice a day, and when not in use should be kept in saturated boric solution. They are placed in this solution only after thorough rinsing inside and out with scalding water. Milk curdles in the folds of the rubber, and for its removal the rubber needs to be turned inside out.

Among the hundreds of remedies for cracked nipples, only compound tincture of benzoin, glycerin, glycerin with boric acid, collodion, collodion with antiseptics, castor oil and bismuth, and alcohol need be mentioned. They may be used as succedanea. A dressing of 70 per cent. alcohol applied for four hours A. M. and P. M. sometimes cures when the other remedies fail.

Mastitis.—Inflammation of the mammary gland or the tissues about it is called mastitis. There are four varieties. The inflammation may be in the skin around

the nipple, or a little abscess may form in one of the tubercles of Montgomery. The inflammation may be in one or more lobes of the gland—the so-called parenchymatous form, or glandular mastitis. If the inflammatory process occurs in the fat and loose tissue between the lobes, we speak of periglandular cellulitis or phlegmonous mastitis, and if the infection travels beneath the gland to the connective tissue which fastens the mamma to the chest-wall, we find pus under the gland, and speak of submammary abscess. This is very serious and, fortunately, rare. The commonest is the parenchymatous variety, and it is the most amenable to treatment.

The cause of all these forms is infection. Germs obtain access to the gland and set up inflammation. The different varieties spoken of are made by the different routes which the germs travel before they cause the inflammation. Normally, many breasts contain germs, but these are either naturally harmless or they require special conditions to make them virulent. Such conditions are cracks, fissures, ulcers of the nipple, bruising of the breasts, either by too brisk massage or other injury, too much pumping of the breasts, squeezing of the breasts, and efforts to get them to secrete milk when they cannot do it. It is a question if simple milk stasis causes abscess. Surely engorgement itself does not. Overstimulation of the breast may result in infection and abscess. Infection is often carried directly to the breasts on the fingers of patient or nurse from the lochia, from an infected umbilicus, or from any source of infection. As a rule, these cases may be prevented by proper protection of the organ and continual watchfulness in avoiding infection. If there are cracks or fissures, asepsis must be especially thorough, as it is here that the infection usually gains entrance.

Symptoms.—The symptoms of mastitis are pain in the affected breast, and particularly in one spot, and tenderness and swelling of the same; there may be a chill, and there is nearly always fever, which may reach 105° F. The pulse is high, and we observe all the manifestations of a febrile attack—headache, malaise, pains in the bones, hypersensitiveness to light, etc The part of the breast that is inflamed is hot and tender, and later may be reddened. If, under treatment, the fever and other symptoms abate within forty-eight hours, one may feel encouraged that an abscess will not form If the fever remains high for more than two days, one will have to fear this outcome. With proper treatment the prognosis is good. In almost all cases an abscess can be prevented.

Treatment.—As soon as the nurse detects the first signs of inflammation of the breast she notifies the attending physician, and until he comes she withholds entirely the child from the breast, and applies a very tight breast-binder. The physician may order ice applications. These must usually be kept up constantly for forty-eight hours. Two large ice-bags are applied to each breast and they are kept half-full, so that they be not too heavy on the chest (Fig. 163). The breasts are supported by the binder, and the ice-bags lie directly on this, not separated from the skin by enough cloth to prevent the cold from reaching the gland (Fig. 164). The skin must feel really cool to the touch, or no good is being derived from the ice. If the patient becomes chilly, a hot-water bag is applied to the feet and the arms are wrapped in flannel. A saline cathartic is usually ordered, and the liquids in the diet are restricted. With these measures the inflammation almost always subsides without suppuration. The ice-bags are removed one by one after the patient has had a normal temperature for twelve hours. The child is put

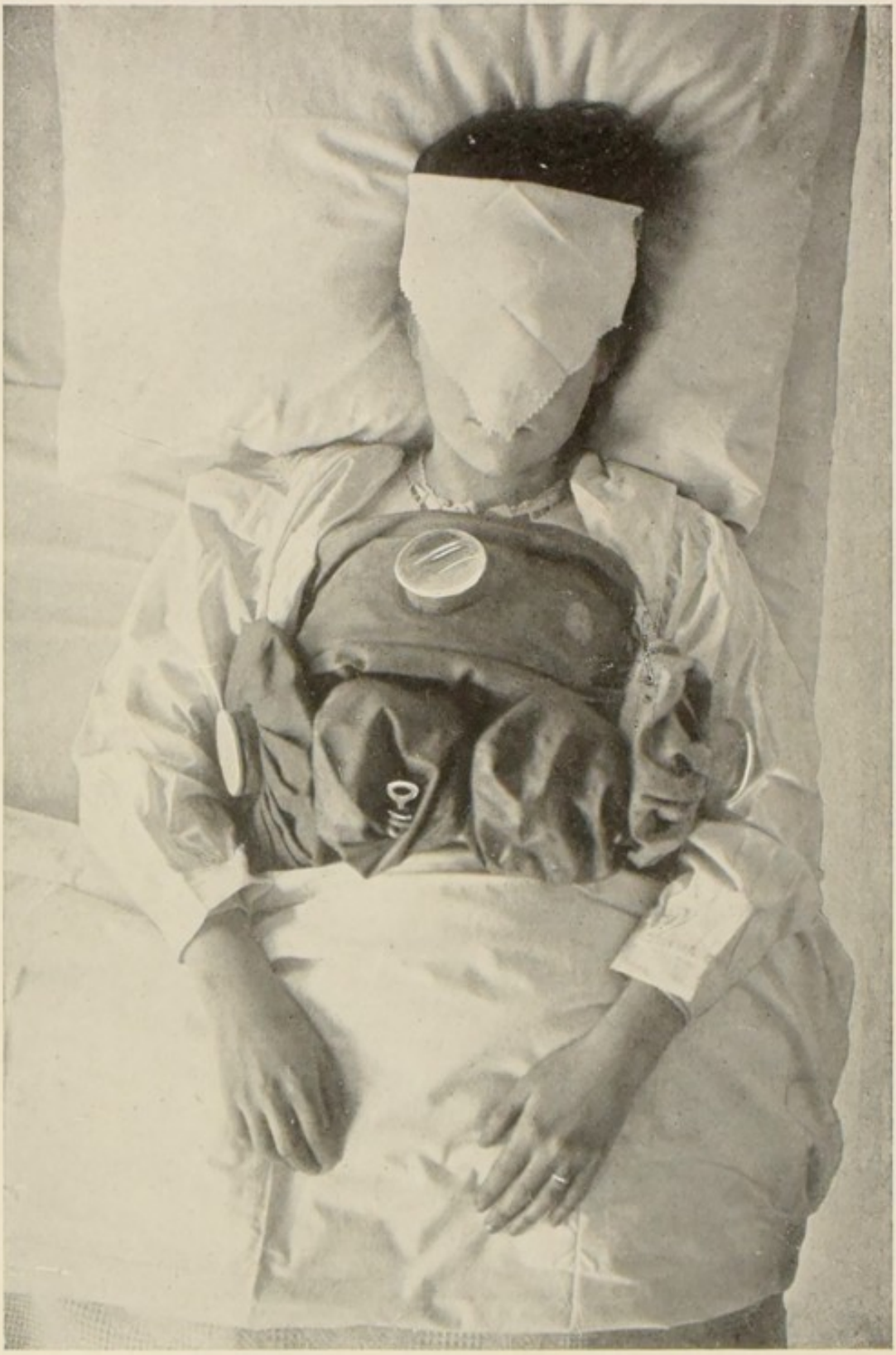


Fig. 163.—Breasts covered with ice-bags. A thin gauze binder over all holds the bags in place.

back to the breast twenty-four hours after the fever is gone and at least six hours after the last ice-bag is removed.

The nurse may be asked if the milk will not permanently dry up if the child does not nurse for several days. Experience shows that it does not. Even non-pregnant women can start the breasts to secrete milk by putting a vigorous infant to the nipple. A maid who was given the care of an infant at night kept it quiet by letting it

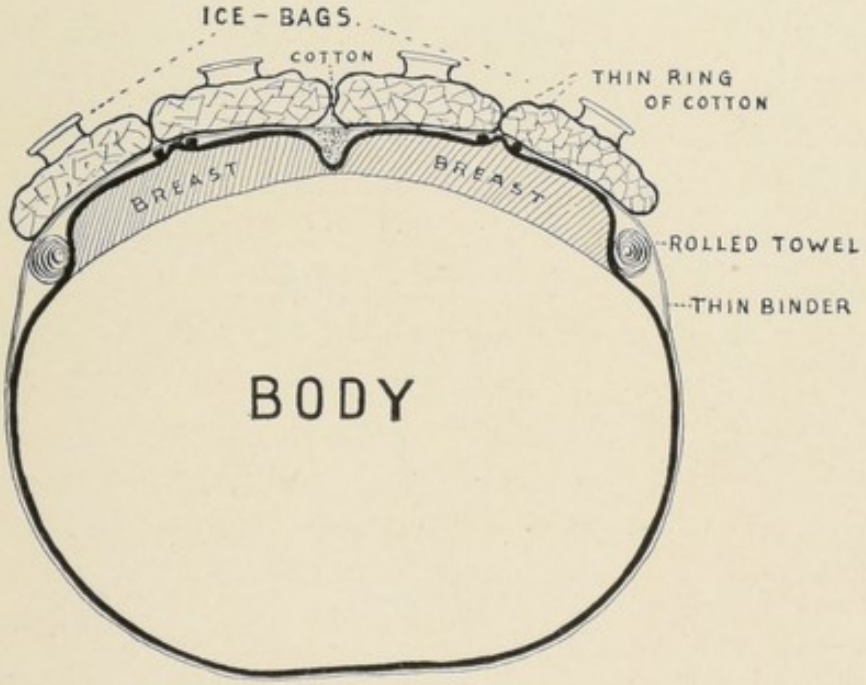


Fig. 164.—Schematic section of body, showing relation of ice-bags to breasts.

suck on the nipple. Milk appeared and she wet-nursed the child. The same occurrence was noticed in a woman forty-nine years old whose daughter died in labor. She suckled the child, although her bosom had not been pressed by an infant for fourteen years.

No massage or pumping of the breasts is allowable at any time during the treatment of mastitis. Should an abscess form, the condition being shown by irregular temperature, chills, and softening and redness of the

inflamed portion of the breast, the nurse will be required to prepare for operation—that is, for draining the breast. Ordinary surgical rules are observed here; repetition is not necessary. After the abscess is opened the nurse, having to dress it, should be careful not to carry the infection to the woman's genitals or to the baby's navel. Rubber gloves should be used for dressing the breast.



Fig. 165.—Bier's congestion treatment of mastitis.

Suppuration is often prolonged, and there may be a succession of abscesses, fairly riddling the breasts and disfiguring them. In addition, the general health may suffer, therefore in these prolonged cases the nurse will arrange for a generous diet, outside living, and all the factors making for rapid recuperation.

The latest treatment of mastitis is the "congestion therapy" of Bier. A large dome-shaped glass is in-

verted over the breast and the air exhausted from it by means of a pump (Fig. 165). The bell is applied several times a day for thirty minutes. The physician must be asked for accurate instructions regarding its use.

Galactorrhea, or Excess of Milk.—This is not a common condition, and when it occurs, is seldom persistent. After a few weeks the activity subsides to a normal that is sufficient for the infant. If the clothing is soiled by the constant leakage of milk, sufficient pads or a glass reservoir shield should be placed to catch the overflow, and a snug breast-binder should be constantly worn. The patient should reduce the amount of water drunk and of starches eaten. The bowels should be moved daily by saline cathartics. The infant should be put to the breasts less often, and regularity is to be insisted on. Medicines are sometimes given to check the secretion of milk. These are belladonna and iodid of potassium. The nurse should watch for their physiologic effects, as some women have an idiosyncrasy for them.

Agalactia, or Scarcity of Milk.—This condition is much more common than galactorrhea. It is little less than a calamity when a woman is unable to nurse her child. That a woman should refuse to nurse her infant when she has milk and is well is unpardonable.

Unfortunately, a large number of women cannot nurse, either because of ill health or because they have no milk. Many children die, either directly of the want of mother's milk, or indirectly of children's diseases to which they fall easy prey if they have been brought up by the bottle. The custom of giving children to wet-nurses or to others to be brought up on the bottle is an ancient one. Cæsar reproached the Roman women for doing it and for squandering their affection on dogs and monkeys.

The writer has noticed a decided improvement among women in regard to nursing their children.

Causes.—The causes of deficient milk-supply are general weakness or ill-health, worry, lack of nourishment, a puny baby, malformation of the breasts or the nipples, and absence of gland tissue. In the last class of cases the breasts may be large with fat deposit. If there is no gland tissue, it is useless and dangerous to try to stimulate the secretion of milk.

Symptoms.—The symptoms of deficient milk-supply are: first, the distress of the child—its loss in weight; second, the pain in the breasts and the absence of secretion. The child is unsatisfied with the nipple; he may suck for a short while, but, finding nothing there, will refuse it and cry. After supplemental feeding he goes to sleep. When there is plenty of milk, the mother can feel it leave the breast and see the infant swallow. There are also some drops of "white nourishment" around the mouth. These are all absent in agalactia. Weighing the child before and after nursing proves the functioning of the breast. If the mother persists in nursing after the supply has diminished, the act comes to be attended with pain in the breasts, radiating around to the back, first only during the nursing, later in the intervals also. Unless nursing is interrupted, serious inroads on the woman's health may result.

Treatment.—If there is not enough milk in the breasts an attempt may be made to stimulate the secretion by diet, cool baths, and massage of the breasts. Medicines have very uncertain, if any, action. Pituitrin has recently been tried, also thyroid extract. The physician may prescribe a malt extract, somatose, or other preparation vaunted to stimulate the secretion. The author's experience with malt preparations is that they often fatten the patient and dry up the milk.

By increasing the liquids in the diet the total quantity of milk may sometimes, not always, be increased. When

the milk-supply is not augmented, the patient puts on fat. The patient is given milk in large quantities, water, very weak tea, chocolate, oatmeal and barley gruels, and oyster-stews, in addition to her regular diet. The effect is not permanent, and too much water thins the blood. Alcoholic drinks should be restricted or, better, avoided, and certainly by a mercenary wet-nurse. Alcoholics are not good for the infant.

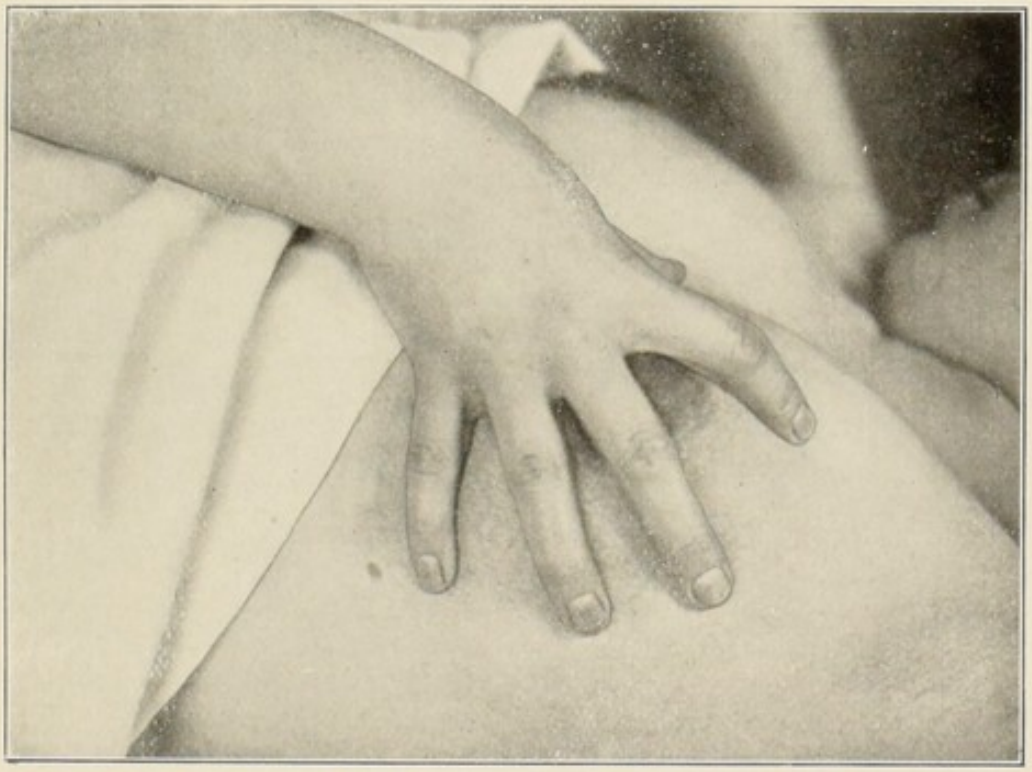


Fig. 166.—Massage of breast to stimulate the flow of milk: First motion.

Cool full baths stimulate the skin and the breasts also. They may be taken daily and at about 80° to 84° F. The whole body should be briskly rubbed with a coarse towel, avoiding the mammæ.

Bier's method of producing artificial engorgement has been applied to the breast to stimulate the flow of milk. The results thus far have been fair.

Massage of the breasts stimulates the formation of milk. When massaging the breasts for this purpose the

rules given on pages 309–310 do not apply. One wishes here to irritate the gland. This is done by raising the whole breast from the chest wall (Fig. 166) and working it gently between the fingers. Care should be used not to bruise the delicate organ, as an abscess may result. The gland is then held against one hand, while the tips of the outspread fingers of the other hand make circular movements all around its periphery (Fig. 167).

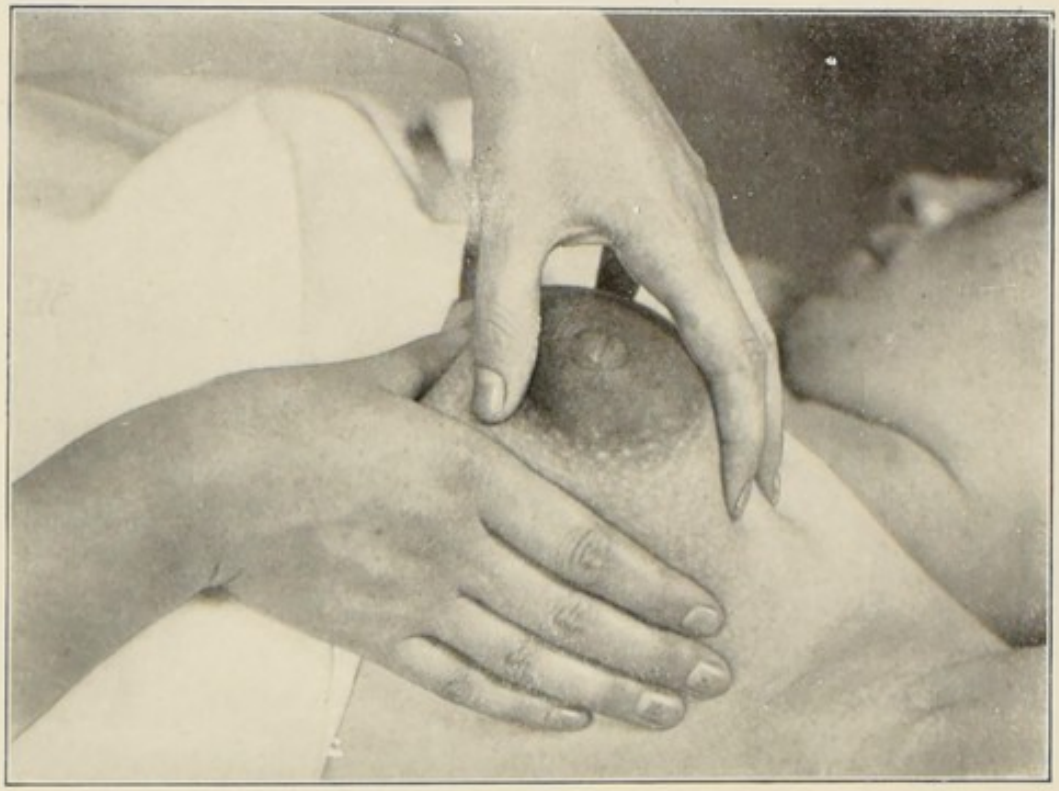


Fig. 167.—Massage of breast to stimulate the flow of milk: Second motion.

Electricity has been tried, with indifferent success. The best stimulant for the milk secretion is a vigorous infant.

One should not be discouraged too soon, as the establishment of the milk secretion is sometimes slow. In one case sufficient milk diet did not come until the fifth month. Often after the patient is up and gets outdoors the milk comes in large quantities. One may be misled to believe that this is the action of some special drug or of feeding.

If, however, the measures instituted have no effect, it is wiser to discontinue them as soon as this fact is apparent. Too great zeal in forcing the breasts to act may result in mastitis. The milk secretion has been known to cease completely on a sudden fright experienced by the woman, and it has been observed that a quiet, placid life contributes to a normal and continued flow of milk.

Abnormal Milk.—Remarkable as it may seem, the milk of the mother, although plentiful, may not agree with the child. The writer has seen cases where it seemed to act like an irritant intestinal poison, and fatalities have even been reported. These cases have all been neurotic mothers, and most of them in the higher classes. Chemic and microscopic examinations have not given satisfactory explanations. The condition may or may not recur in the subsequent pregnancies.

The child will refuse the breast, in which case the milk may have a foreign taste, or it will vomit the ingested milk or have a diarrhea from it, sometimes with fever. The milk may appear yellower and thicker in these cases, showing either a persistence of the colostrum or an increase in fat and protein—that is, it is too rich. Curiously, sometimes a child will refuse one breast and accept the other; in a case of this kind the milk of one breast was said to be salty.

If the milk is believed to disagree with the child, causing green, acrid stools, the nursing should be discontinued for forty-eight hours, the breasts being regularly emptied in the meantime by the breast-pump. The child is fed on a substitute milk, and at the end of this period another trial is made of the mother's milk. If it again causes intestinal disturbance, the wisest course to pursue is to obtain a wet-nurse for the child.

If the mother's milk is deficient in one or the other ingredient, the physician will instruct the nurse to add this

or that preparation of sugar, cream, barley-water, etc., to each feeding.

Drying Up the Milk.—When it is necessary to dry up the milk, the physician will usually instruct the nurse to bind the breasts up as tightly as the woman can tolerate it, to reduce the liquids in her diet, and to give her daily a saline cathartic. Before applying the binder the breasts thould be emptied by a strong infant or breast-pump, and sterilized with soap and water and a bichlorid solution. The binder is not disturbed unless the physician wishes an ointment, of which belladonna is the favorite, applied. Systemic effects have been observed from belladonna ointment applied to the breasts.

Experience has shown that it is better to leave the breasts entirely alone after the above treatment, and not to massage or pump them.

Care of a Wet-nurse.—If the mother cannot nurse her babe, a wet-nurse should be recommended. The family may not be able to employ one, or it may be impossible to obtain a suitable one, but the fact stands out that the best nourishment for a newborn babe is mother's milk, and no effort should be spared to provide the same. Only the two reasons given above ought to be allowed in the discussion of the engagement of a wet-nurse. The author is aware that a wet-nurse at all times is not an unalloyed blessing, and sometimes even an almost intolerable nuisance, but the family should be encouraged to bear with much for the sake of the infant. After a few months, when the child has gotten a good start, the wet-nurse may be dispensed with—if really necessary.

The physician will select the woman, and having satisfied himself that she is healthy and has good milk, has no syphilitic or nervous disorders, will ask the nurse to look after her. The wet-nurse on arrival should be received quietly, allowed to bathe, and should then rest

a few hours in bed. This is to quiet the usual excitement and perhaps alarm occasioned by her new surroundings The nurse can do much to make her feel at home. The first milk of the breast is pumped out, and, after the woman has rested, the child is allowed to nurse. The milk may be scanty for a day or so, probably because of the mental disturbance alluded to.

A wet-nurse should do light work about the house, and she must take exercise out-of-doors. The nurse takes care that she is cleanly about her person, her teeth perfect, that her bowels are kept in good order, and that she has sufficient sleep Anything abnormal in these matters should be reported to the physician.

The diet is important. Let the woman have those things to which she has been accustomed. If a woman who is accustomed to brown bread, soup-meat, and potatoes is allowed to eat rich pastries, fried meats, and heavy sauces, she will put on fat and the milk will dry up. The cook is to be instructed not to allow the wet-nurse to eat indigestibles and acids, as these affect the milk. It is fatuous to try to keep the milk by plying the wet-nurse with beer, malt extracts, rich foods, liquids, etc. If the milk is increased in amount, the quality is bad. A change of wet-nurses is needed. Should the woman menstruate, there is apt to be some slight disturbance of the infant's bowels, but usually not sufficient to contra-indicate nursing. All these precautions are particularly needed in the case of a premature infant. If plain living, with light household duties, a moderate amount of exercise out-of-doors, and a quiet, undisturbed life do not give a good milk-supply, another wet-nurse is to be selected.

CHAPTER V

THE DISORDERS OF THE FIRST WEEKS OF LIFE

THERE are many conditions which arise during the first weeks of life—some mild, some serious—which the nurse ought to know. She has often to diagnose them and report them to the physician. It is well that she be acquainted with some of the methods of treatment, although in the individual case she obtains directions from the physician.

AFFECTIONS OF THE DIGESTIVE ORGANS

Indigestion heads the list in frequency of disorders of digestion. The causes are too frequent nursing, irregular feeding, letting the child drink too much or too fast, inappropriate food, especially common in artificially fed children, and exposure to cold. Overfeeding and overdrinking are very common. Indigestion is a symptom of intestinal infection.

The symptoms are restlessness, colic, vomiting, diarrhea, rumbling in the bowels (borborygmus), discharge of gas by mouth or rectum, and excoriations around the anus. The stools are green, acrid, foamy, and contain much mucus and clumps of undigested milk. There may be a little fever.

The treatment consists in removing the causes mentioned. The physician may prescribe pepsin or other remedies, beginning the treatment with 15 drops of castor oil. He may order food withheld for a short

period, and barley- or rice-water substituted. The nurse regulates the hygiene of the infant, but gives neither drugs nor household remedies without instructions.

Colic is one of the symptoms of indigestion, although it may occur when the stomach and bowels are acting well It is due to similar causes—errors in amount, quality, and time of the feedings. A bottle-fed baby almost never escapes many attacks of colic, and breast-fed infants not seldom suffer from it. It seems as though the intestinal canal requires time to get into systematic action. If the child is not kept warm, it is likely to suffer from colic.

Symptoms of colic are crying, with drawing up of the feet; often the child is awakened from sleep by colic, when it emits a short, sharp cry; rumbling in the bowels and passage of gas by the rectum, whereupon the colic ceases; and the symptoms of indigestion, if this is causative.

The treatment of the colic should begin with the removal of the cause—that is, regulation of the diet, a cathartic for constipation, and warm clothing, especially about the feet and abdomen. Household remedies in great numbers are given by nurses, but it is better to avoid them and get orders from the physician. If the nurse is alone, she may give the child a salt solution colonic flushing. Then it is laid on a warm-water bag for a while or cuddled up warmly against the nurse's breast. A drink of hot water, plain or with a few drops of essence of peppermint, is given. The nurse must not give a child whisky, paregoric, or other drug without express permission. The writer found a case where the nurse had been giving the babe crême de menthe until the little one was a toper.

Gastric lavage is sometimes ordered for colicky babies, as well as many medicines, of which calomel and the

aromatics are the commonest. Opium is used with great circumspection in infants.

Difficulty in Nursing.—The causes of difficulty in nursing are: ignorance, the babe must learn to suck; tongue-tie, cleft palate, and hare-lip; occlusion of the nasal passages, impeding breathing; sore mouth, as thrush and Bednar's aphthæ; diseases of the lung, as pneumonia, bronchitis, atelectasis; diseases of the brain, causing apathy and coma; prematurity, the infant feels no hunger and may "sleep away." The breast itself may be at fault; the nipples may be too small or depressed; the gland may be so engorged that the babe cannot take hold; the milk may not agree, having perhaps a foreign taste; or there may be no milk there.

With the cause the nurse will have the remedy.

Vomiting.—This is a symptom of many diseases, but principally of indigestion and gastro-enteritis. Infants normally vomit in the first weeks, and it may be due to overfilling of the stomach or to the fact that the stomach is situated favorably for regurgitation at this tender age. Only when the vomiting is persistent and attended with evident nausea or contains bile, blood, etc., is the symptom significant. There may be a pyloric stenosis or mechanical occlusion of the lower gut, in which case constipation will accompany the emesis. The treatment of vomiting is *nil* unless there is a real sickness behind it. The child may nurse a little shorter period than fifteen minutes, and should be handled carefully afterward. If the child should vomit blood, bile, or anything but milk, the nurse must notify the doctor at once.

Constipation.—Newborn infants are seldom costive, although in later months this is not uncommon. In the first days the bowels may not move because a plug of tough mucus has accumulated in the rectum (Fig. 168).

After this is gotten rid of the evacuations occur normally. In the first days, too, the bowels may not move because the anus is absent. This is a very serious condition, and requires operation; it should be reported to the physician without delay. In these cases the infant soon commences to vomit, but the general health is interfered with only late. Constipation may be due to insufficient food, to a lack of water, and to habit.

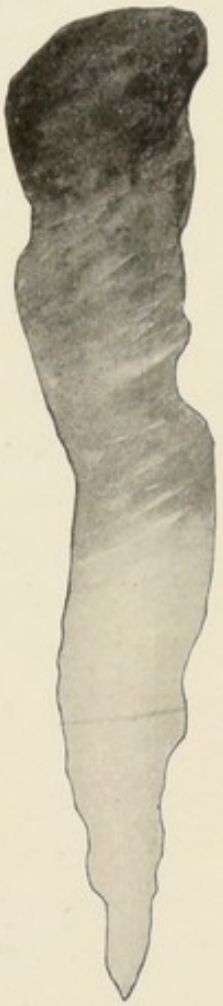


Fig. 168.—Plug of mucus from the rectum of a newborn child. Upper part stained by meconium.

The treatment consists of: first, regulation of the diet, colonic flushings, the use of castor oil or other laxative; later, massage. Glycerin and soap suppositories are not recommended. Gluten suppositories and oil enemata may be used as in the adult. After the cord is off and the navel healed, light abdominal massage is practised. Cathartics may be given the mother to act on the child through the milk.

Diarrhea.—This is much more frequent in the first weeks than constipation, and is more difficult to cure. The ingestion of the colostrum causes a physiologic diarrhea, it being evidently nature's object to get rid of the meconium in this way as soon as possible after birth. The writer has found that children do better if this tarry material is early gotten rid of, and, therefore, prescribes for all babies 10 drops of castor oil on the second day. If the milk is too rich in fats or proteins the infant may have a diarrhea, and if the mother is taking laxa-

tives the child feels their effects. Oftenest diarrhea is caused by gastro-intestinal infection, and then is usually attended by fever. Occasionally the infant has frequent watery movements of a yellow color and normal odor, and does not apparently suffer. These cases are not serious, simply being due to indigestion, and will get well if the child is made to nurse more slowly, and if the milk is diluted a little—for example, by giving some barley-water before the nursing. Often the condition of the bowels will not be satisfactory until the mother is up and out-of-doors. This seems to regulate the function of the mammary glands.

Green Stools.—The nurse should inspect and note the character of the child's evacuations. If they are abnormal, the doctor ought to know it. Normally the stools are dark green for two days, then brownish, then with the addition of yellow, and soon all golden yellow.

If the meconium is a long time in coming away, castor oil should be given to clear the intestinal tract, as this material is prone to decompose. If the child does not obtain enough food, the stools are scanty and brownish until the deficiency is supplied.

The stools should be semisolid, and the water margin around the solid part should be about $\frac{1}{2}$ inch wide. There should be no lumps or curds; the odor is that of sour milk—not offensive. There is very little mucus—not enough to give a glossy appearance—and the movement should not be frothy. If the stools are green, slimy, frothy, and full of whitish lumps, the child has indigestion. If the stools are, in addition, sharp, with a strong odor, and if the child has fever, an inflammation in the gastro-intestinal tract is present. In these cases the movements are so sharp and acrid that the buttocks and perineum of the infant are eroded, even ulcerated.

Such stools and such ulcerations are decidedly more common with bottle-fed infants. The nurse, in treating such a case, after following the physician's orders, may seek to improve the condition of the mother by providing mental quiet, good air and food, and regularity of feeding and nursing the baby.

Medicines, of which calomel is a favorite, are often given to correct the abnormal intestinal conditions.

If blood appears in the stools the case is called melena neonatorum. The blood, unless in large amounts, is dark—almost black. The red color comes out if the napkin is wet with water. The nurse will notify the physician at once, as the condition is serious.

Inanition Fever.—In the first days, before the milk comes, the infant may have a sudden rise of temperature —sometimes as high as 105° F., usually not over 103° F. In marked cases there are severe cerebral symptoms, even convulsions. The writer is very skeptical about these cases being due to starvation or thirst, but thinks that, more likely, they are due to bowel infection. Treatment consists of giving 15 drops of castor oil, a saline solution colonic flushing, much water to drink, and mother's milk. Cool bathing for the fever or an ice-bag to the head may be needed should cerebral symptoms develop.

Thrush or Sprue.—This is an affection of the mouth, due to the growth of a vegetable fungus on the mucous membrane. The fungus is called Saccharomyces albicans or Monilia albicans, and may readily be seen under the microscope. The tongue, gums, and inside of the cheeks are covered with a whitish pellicle, in spots or larger plaques, which cannot be as easily wiped off as can milk, but when rubbed hard leaves a bleeding surface.

Thrush is due to uncleanliness. It may be favored by poor health, and, therefore, is commoner in weak, sickly, and premature infants, but it is always due to neglect of

the mouth, and should not occur. In weak and premature infants thrush, by interfering with the nourishment, and in rare cases by growing down into the stomach, may be the direct cause of death.

The treatment requires persistence and care, especially in premature infants. After each feeding the mouth should be washed with saturated solution of borax, not boric acid. A piece of cotton is wrapped around the little finger, saturated with the solution, and with this the surface is gently gone over, removing all loose material. A daily application of a 2 per cent. nitrate of silver solution will hasten the cure. After the application of silver nitrate 2 drops of castor oil are put in the mouth to allay the irritation. A weak peroxid solution is also helpful. No sugar preparations or honey are to be used, and care is necessary to avoid hurting the delicate mouth.

Bednar's Aphthæ.—Far back in the mouth, where the lower jaw is connected with the upper jaw and where the cheek runs into the pharynx, is stretched a ligament. Over this ligament the mucous membrane is very thin, and in appearance white. If the nurse, when cleaning the mouth, rubs too hard at the back of the cheek, she will rub off the delicate epithelium over the ligament mentioned and produce a superficial ulcer—perhaps one on each side. These ulcers, called Bednar's aphthæ, interfere with nursing because they are painful, and they may lead to infection, with fever and serious illness. Prophylactically, the nurse will use only the gentlest force in cleansing the mouth. A daily application of 2 per cent. nitrate of silver to the ulcer is a very efficient remedy.

Marasmus.—This term is used to designate those cases of simple but obstinate wasting in infants. Pronounced cases of marasmus do not occur as early as the period with which we are dealing, but among premature

infants marasmus is one of the greatest dangers. The autopsies on children dead of marasmus show very little that is characteristic, yet the main symptom of the disease, excessive and continual wasting of the whole body, shows that the whole organism is profoundly affected.

The disease is due to errors of nourishment, and therefore occurs almost invariably in bottle-fed infants. It seems that such children cannot thrive on anything but the natural food, and will waste away and die in spite of the best care and most expert preparation of other foods. It must also be borne in mind that when an infant has actually begun to be marantic from improper nourishment, it may be difficult or impossible to get it to assimilate even mother's milk. There is a strong hint in this fact—not to waste too much time in trying various foods, but if not speedily successful in getting suitable nourishment, to provide mother's milk at any cost.

The symptoms of marasmus are those of simple wasting: loss of weight, until the little body is almost skin and bone, protuberant belly, loss of appetite, indigestion, and extreme susceptibility to all diseases, which take on a very fatal character.

Treatment may be summed up as follows: mother's milk and fresh air with sunlight.

AFFECTIONS OF THE RESPIRATORY TRACT

Fortunately, newborn infants seldom suffer with severe pneumonia, bronchitis, etc., but a child may easily take cold unless proper care is observed, and, once started, a catarrh is not easy to cure.

Snuffles is usually due to a slight rhinitis of innocent nature, but it may be due to a constitutional taint (syphilis), and the symptom should at once be reported

to the physician. If it is attended with a skin eruption, a blood disease is all the more probable.

For a simple **coryza,** a little warmed oil placed in the nostrils and rubbing the bridge of the nose with camphorated oil are sufficient. The condition disappears in a few days. Care is indicated in order to prevent the inflammation from going down into the lungs. The infant should be kept warm and not be allowed to get chilled when being changed or oiled. The bath had better be omitted for a few days.

Bronchitis and Pneumonia.—In young infants inflammation of the bronchial tubes is a serious matter, because pneumonia is so prone to develop. The causes are usually infection by the air or by aspirating infectious vaginal secretions during delivery. Children delivered by operations are much more likely to develop pneumonia. Treatment is entirely symptomatic. The physician may order stimulants, of which carbonate of ammonia is a favorite. Oxygen may be employed. Narcotics are usually rejected as dangerous. The wet-pack is the best means of reducing temperature. The nurse wrings a soft diaper out of water at a temperature specified by the physician—usually from 85° to 90° F.—and wraps it loosely around the chest. Over it comes one layer of soft flannel. This pack remains in place two hours, when it may be renewed. The cool bath may also be used to reduce temperature. The water should be 100° F. at the start, and be reduced to 94° F. while the infant is immersed. The bath should not last over five minutes. While in the bath the child must be watched for symptoms of shock. If weakened at all, a little whisky on the tongue and a warm-water bag are needed. The mainstay in the treatment is mother's milk. Without it few children recover. The child must be held in the arms a great deal, and its position frequently changed

—this to prevent the blood from stagnating in the lungs. The air in the room must be warm, moist, and fresh. Only good nursing will save these little sufferers.

Cyanosis, or Blue Babies.—When a child is born with congenital heart disease, or when the wall between the two sides of the heart does not close fully, the blood is not completely oxygenated in the lungs, and the skin of the infant remains bluish or cyanotic. The hands and feet are cold. This disease has been called morbus cæruleus. These children may grow, but they die young, being extremely susceptible to outward influences, as overexertion, indigestion, the eruptive fevers, etc. Occasionally apparent recovery occurs.

There is a condition in newborn infants, more common in cases of prematurity, where the lungs do not unfold and expand as they should. This is called atelectasis, and is very fatal. The children are blue, as the ones just described, but the condition is more quickly fatal. In either case if the child survives it becomes a narrow-chested weakling.

Treatment is tonic in either case, and later on systematic efforts are to be made to develop the chest by graduated muscular exercise and by all kinds of athletic sports to strengthen the heart. These must be taken under the control of a physician, to avoid overdoing it. Injurious influences should be held from the growing child, such as violent exercise, violent emotions, excess in diet, and extreme heat and cold.

AFFECTIONS OF THE URINARY ORGANS

Delayed Urination.—The nurse may notice that the infant does not urinate for a day or so after delivery, and inspection of the parts gives no reason for it. This delay is more common after operative deliveries, when the child has fever or jaundice, in the children of primiparæ,

and in premature infants. If the parts are normal, no alarm need be felt. The babe sometimes passes water in the bath, and since the urine is colorless, this is not observed, or the stain on the diaper is likewise not seen. The physician may order a diuretic medicine, as sweet spirit of niter (spiritus ætheris nitrosi), and ask the nurse to give the child a great deal of warm water to drink. As aids may be used a moist warm dressing around the pelvis and warm stupes to the abdomen and kidneys. A warm sitz-bath may be given. The catheter is rarely required. If the anuria is prolonged, the physician may pass the catheter to assure himself that the passage is free. Spontaneous cure is the rule.

Uric Acid.—The napkins of the newborn are not infrequently found to be stained with urine containing little reddish or brownish crystals. These are composed of uric acid or of urates, and indicate that the urine is concentrated. These salts are occasionally found deposited in the kidneys. A free flow of urine washes them out on to the napkin. The child may cry with a little pain as the sharp crystals are passing. The symptom is similar in cause and significance to the anuria just considered, and requires the same treatment.

Phimosis.—In boys the orifice of the prepuce is sometimes so small that the urine cannot readily escape, causing the infant pain and difficulty in urination. There is actual danger in this condition, because, since the skin cannot be retracted, the secretions decompose underneath and serious inflammation may result. The physician may dilate the preputial opening, he may incise it so as to allow the retraction of the skin, or he may perform the operation of circumcision.

Circumcision.—Among orthodox Jewish families the ritual circumcision is performed when the child is eight days old.

The nurse may see the ancient ceremony in all its interesting details performed by the ordained circumcisor—the "Mohel." The anesthetic employed is whisky and water 1 : 4, with a little sugar added. A bit of soft cake is wrapped in a corner of a handkerchief, tied with thread, wet with the whisky, and given the child to suck a few minutes before and during the operation.

The nurse will often be shocked by the lack of asepsis practised. Little can be done by the nurse to avoid infection of the wound, which not seldom occurs, although it is rare for the infant to die. Many infants have died from hemorrhage. If, as often happens, the ceremony is made the occasion of a large "party," the nurse must see that the mother is kept free from excitement and too many visitors. Even in families that have dropped the stricter orthodox beliefs the circumcision is practised, but the physician almost always performs the operation.

The nurse will make the usual preparations for minor surgery. Only scissors, rat-toothed forceps, and a few artery clamps are necessary. Stitches may or may not be used. The anesthetic used by the "Mohels" may be employed, and the infant will usually sleep several hours afterward, by which time the initial pain is gone.

It would be well for the nurse to have a styptic powder of dried alum in readiness, as sometimes there is obstinate hemorrhage.

The infant is wrapped warmly and laid on its back, with the thighs flexed on the belly, and held by the nurse with hands covered by a sterile towel. The child must be held firmly, because, though simple, the operation is delicate. The basin of hand solution and instruments are arranged conveniently as shown in Fig. 169.

The first dressing, which may be moist or dry, according to individual operators, should be left on six or eight hours. The nurse must watch carefully for secondary



Fig. 169.—Infant prepared for circumcision. Nurse stands on the left. On the right is a euchre table, protected with newspaper and sterile towel, holding basin of weak antiseptic solution and the instruments. The nurse's hands are covered by a sterile towel.

hemorrhage. To remove dressings, they must first be soaked with sterile water. For the first two days the part is covered with a moist 1 per cent. boric acid dressing. After this a little vaselin may be used. Care should be taken to allow no gauze to adhere to the glans, and the diaper must be arranged so as to exert no compression.

Should there be secondary hemorrhage, the nurse should wrap the organ tightly with gauze powdered with dry alum, and notify the physician at once. Until he arrives the nurse can exert constant circular compression and thus prevent serious loss of blood. Healing takes place in from three to seven days, and the child may be peevish and fretful until the source of irritation has disappeared.

Dilatation.—Some physicians make a routine practice of dilating the prepuce and drawing it behind the glans as a part of the daily toilet of the child. It may be necessary first to incise the edge of the orifice before the skin will go back. After the first retraction the nurse will be instructed to carry out the procedure. This is done by slowly slipping the skin back toward the pubis until the whole glans is exposed. Smegma is now cleaned off with vaselin, and the skin brought forward again. A lubricant is always applied.

AFFECTIONS OF THE SKIN

Jaundice.—A yellowish discoloration of the skin in newborn infants, called icterus neonatorum, in milder or severer gradations, is present in fully 40 per cent. of cases. It appears from the third to the sixth day, and affects the whole body. There are several theories as to its cause, as disorganization of the blood, inefficiency of the liver, causing an accumulation of bile in the blood, sepsis, etc. The writer believes that the worst forms are due to sepsis.

In the milder cases the child is unaffected, but when the skin is very yellow, especially if the whites of the eyes are icteric, the general health of the infant suffers. In some cases even the secretions from the nose, eyes, and other orifices are yellow. The bowels are usually out of order, and the infant gains slowly. The physician may prescribe medicines, but the nurse's duties will consist in providing an assured and adapted nourishment for the child, and giving colonic flushings to clear the bowel and to stimulate excretion of the bile by way of the kidneys and skin. The mother should be assured that the jaundice will fully disappear.

Eruptions on the Skin.—The skin of newborn babies is not always clear and smooth at birth. The writer has seen infants born with blisters from pin-head to finger-nail size and with raised eruptions of various kinds. The skin of some infants desquamates completely after birth, the epithelium coming off in large or small flakes. The epithelium may loosen in the palms of the hands in a large piece, and the nurse will need to use care in removing it.

Later the skin may desquamate as the result of fevers, or from intestinal disorders or toxemia, and the scaling much resembles that of scarlatina.

Vesicular Eruptions.—Tiny water-blisters on a red base, occurring closely set around the forehead, neck, and in the body folds, are due to sweating and to too warm clothing, or to a tender skin after the use of water or soap and water. This is popularly called "red gum." If there is no redness around the vesicles, the term "white gum" is applied. The scientific name for the affection is strophulus (this has nothing to do with scrofula) or miliaria. Prickly heat is the same affection, but in an aggravated form, with inflammation around the vesicles.

All three are caused by the sweat-glands being oc-

cluded, allowing the sweat to accumulate under the closed openings of the glands in the skin. They all cause the infant more or less discomfort, but most distress comes from prickly heat.

Sometimes the blisters run together and form blebs, or they may become pustular, when the case is not simple, as above described, but belongs to a class of skin infections some of which are serious and contagious.

An eruption of irregular, reddish-brown spots with uneven borders, fading to a copper color, is strongly suggestive of blood taint in the infant. If with this the child has snuffles, and if the region around the anus is reddened, eroded, and cracked, the suspicion of syphilis is grounded. The nurse must exercise constant precaution that she does not infect herself through the child.

Chafing, or Eczema Intertrigo.—In fat babies the skin in the folds is likely to macerate and become irritated. A watery exudation occurs, which may decompose and cause little abscesses. This is especially common in bottle-fed infants.

Treatment

The treatment of all these affections, except that of constitutional eruptions, is based on the principles of absolute cleanliness and dryness of the affected skin.

For the heat-rashes the child should be dressed in the lightest clothes, and on hot days left partly undressed, out of the way of drafts, for short periods during the greatest heat. The bath may be employed without soap, and the skin thoroughly dried without rubbing. The cloth is laid on the skin and the fingers are rubbed over it. Then stearate of zinc powder is applied to the affected parts. Finest powdered rice starch is also good. Powders containing boric acid should not be used.

Boric acid powder irritates the skin. For the intertrigo the same treatment is employed, and the folds are kept apart with a thin layer of cotton or old linen, which is frequently changed. In some cases water acts as a direct irritant and must be discontinued; this should always be done if the affection proves rebellious to treatment. Any other measure will be ordered by the physician. All eruptions should be noted on the record-sheet and shown to the physician.

It must be remembered that insect-bites, irritating dye-stuffs, or insufficiently washed clothes may cause eruptions on the delicate skin of newborn babes.

OTHER AFFECTIONS OF THE NEWBORN INFANT

Enlargement of the Breasts.—A few weeks after birth the nurse may notice that the breasts of the infant are enlarged. They may contain milk, which the old German midwives called "Hexenmilch," or witches' milk. This engorgement of the breasts disappears untreated. If the nurse rubs the surface too roughly or tries to squeeze the milk out, she may bruise the delicate organ and cause an abscess. In girls this is a very serious matter, as the gland is thus destroyed and the function of nursing rendered impossible.

Treatment.—The breasts are bathed, carefully anointed with camphorated oil, padded lightly with cotton, and a smooth little breast-binder is applied and sewed on. This lies undisturbed for five days, when the engorgement will have disappeared. During the necessary handling of the infant, the fact of the breasts being engorged should be borne in mind and the region not touched.

If an abscess forms, which is quite unusual under this treatment, it should be opened speedily to prevent complete destruction of the gland. The physician, there-

fore, ought to be apprised daily of the condition of the infant.

Vulvitis.—In female infants a moderate inflammation of the vulva may exist, and there may be considerable mucous discharge. No treatment save cleanliness, care to avoid injury, and the application of albolene is necessary.

Menstruation.—Once in about 50 cases of female infants a bloody, apparently menstrual, discharge appears on the napkin. In one case it was so profuse that the little one's health was affected. She was listless and limp for a few days. The bloody discharge almost never means anything pathologic, but it may, and should, therefore, be promptly reported. Treatment is usually unnecessary. In the case cited, 1 drop of ergot was given three times.

Delayed Separation of the Cord.—In puny children and in cases where the cord was large and thick, or where a hemorrhage occurred near its insertion, the process of gangrene and separation of the cord is very slow and may be delayed beyond two weeks.

The falling of the cord may be hastened by simple means. A little collar of cotton is made and saturated with 95 per cent. alcohol and placed around the base of the stump, which is then dressed as usual. Another method is to paint the stump and its insertion with 2 per cent. nitrate of silver. Only in rarest cases is it necessary to snip the remaining strands of tissue with scissors (aseptic).

Granulations of the Navel.—These sometimes form and cause a continual watery discharge, at times bloody, from the depressed surface. To cure them early, wiping with 2 per cent. nitrate of silver suffices; later they may have to be ligated and cut off.

INFECTIONS OF THE NEWBORN

A child is sometimes infected before it leaves the womb by bacteria floating in the blood of the mother, but for practical purposes we consider the infant, when born, sterile. Being an aseptic medium, it is at once attacked by germs from all sides. These germs gain entrance through the mouth, the eyes, the navel, the vulva, and any accidental wound. The little one is very susceptible to infection, and if these germs are at all virulent, they may overcome the slight resistance it offers

The duty of the nurse, therefore, is mainly to prevent infection of the newborn. The principle of this prevention is: asepsis of all things coming in contact with the eyes, the mouth, the navel, the genitals, and accidental wounds. Of course, those surfaces exposed to air will be contaminated by air-infection, but in private practice this danger is minimal, although in general hospitals, where pus is present, it must always be considered. The fingers of the nurse may be soiled by lochial discharges or from handling bed-pans or other non-sterile articles, and without proper disinfection she may dress the navel or wash the mouth. The clothes of the infant may have been mixed with infected linen, the rubber nipples and other utensils used by the infant when feeding may not have been boiled, the milk may be impure—indeed, the sources of infection are innumerable.

Infection of the Umbilicus.—The stump of the cord separates in two ways—by dry and by moist gangrene. Dry gangrene is the normal method. Moist gangrene is the quicker, but more dangerous, and is abnormal. Infection of the stump and at the line of union of the stump and abdomen shows itself by redness, edema, swelling of the skin, and an unhealthy appearance under the edge of the cord, even to the presence of a few drops of pus. There may be an odor to the cord,

PLATE III



Normally healing umbilicus. Third day.



The cord stump has dropped off, the base is covered with pink granulations, now being covered with epithelium.



Infected umbilicus. Fourth day. Note, area of swelling and redness, the pus and the moist stump of cord.



and the child may have fever, which may reach 103° F. In severer cases the navel may ulcerate, or an inflammation may extend more or less over the belly, or the infection travels along the vessels inside the abdomen until the liver is involved, and general, fatal blood-poisoning results. The importance of asepsis of the navel may, therefore, be appreciated by the nurse. If there are any signs of inflammation about the navel, the nurse will report it to the physician. He may make tiny incisions into the inflamed area for drainage, and then apply a wet, weak, antiseptic dressing—50 per cent. alcohol is sometimes used. Antiseptic powders are preferred by some physicians. Should the cord become moist, with an appreciable odor, the nurse must correct the condition early, as it may lead to graver infection. The stump is wrapped in cotton, saturated with 50 per cent. alcohol, and then dressed as usual. Every eight hours this dressing is renewed, and three dressings will ordinarily suffice. Antiseptic powders, as boric acid, salicylic acid, iodoform, and starch, are occasionally employed.

Infection of the Eyes, or Ophthalmia Neonatorum.—Ophthalmia neonatorum is an acute purulent inflammation of the mucous membrane of the eyes of the newborn. While a few other germs may be causative, the most common cause is the gonococcus of Neisser, or the gonorrhea germ (Fig. 170). It gains access to the eyes from the vagina while the infant is passing through, or it is wiped into the eyes by the nurse or doctor when the infant is given its first attention (the bath, etc.), or it is allowed to get in during the first days of life from an infected bath-tub or the finger of the nurse, or perhaps the mother herself while the child is being handled.

In whatever way the germ gains entrance, it quickly sets up a violent inflammation of the conjunctiva. At first the lids grow red, then there is a thin, irritating dis-

charge, with yellowish flakes. After a few hours this becomes purulent and the lids become so swollen that the eyes are closed (Plate IV). Unless active and constant treatment is instituted, the inflammation gains headway, the cornea may ulcerate away, and the whole eye be destroyed One-third of the blindness in the world is caused by this dreadful affection, and it is primarily venereal in origin. If ever a nurse has the opportunity to show of what she is capable, now is the time. Really

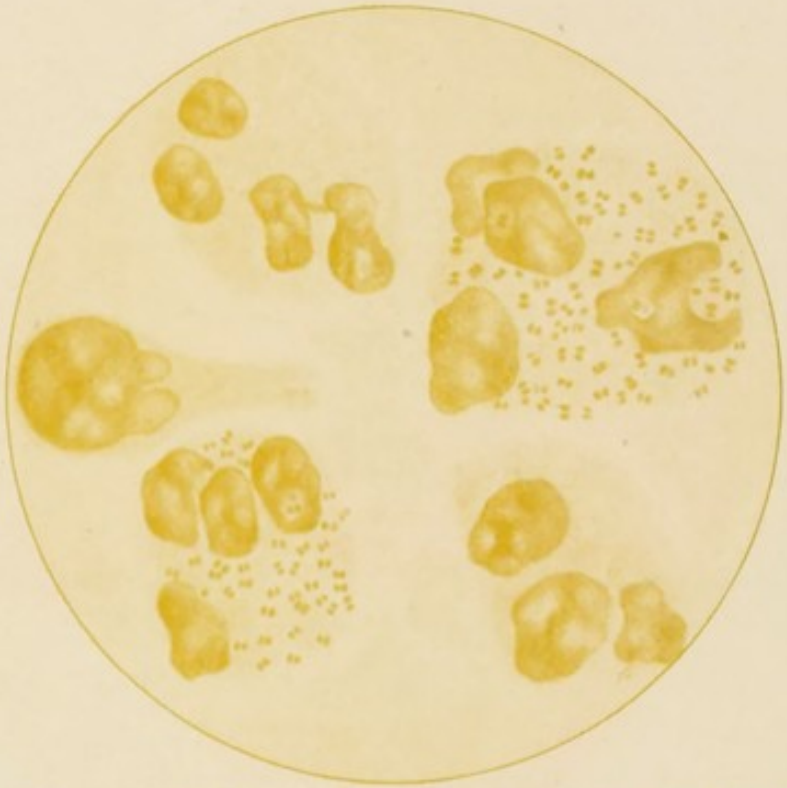


Fig. 170.—Diplococcus of Neisser, the gonorrhea germ, taken from the pus of the eye.

at least two nurses are demanded in a case of ophthalmia. Treatment must be unremitting, and each order of the doctor must be punctually carried out.

Prevention.—If a woman is known to have gonorrhea, or if there is a foul discharge, the doctor may wish the vagina douched antiseptically several times during labor, and extra care taken that nothing gets into the eyes at any time. In all cases directly the head is born the face

PLATE IV



Acute ophthalmia neonatorum.



is wiped with pledgets squeezed dry out of a weak bichlorid or lysol solution; then the lids may be opened, and warm boric solution allowed to flush out the conjunctival sacs. After this, the Credè method, or some equally reliable method of prevention, is used. If a case occurs or is suspected in a nursery where there are other children, the infant is to be isolated at once, separate utensils used for it, its clothes disinfected before being sent to the laundry, and the nurse should not touch anything that will be used for the other infants.

Treatment.—In the first stage of the disease the physician may order ice applied to the eyes. If only one eye is affected, the nurse protects the other one by covering it with cotton and holding this in place with adhesive plaster. The arms of the baby must be bound down to the sides, so that infection may not be carried by them. The covered eye should be inspected every four hours for evidences of beginning infection.

The application of ice to the eyes is shown in Fig. 171. A large piece of pure ice is placed in a sterile basin and saturated solution of boric acid is poured over it. Bits of sterile cotton the size and shape of a 5-cent piece are moistened in the boric solution and laid on the ice to cool. The infant is placed on a warm-water bag, then on a pillow on a table, and snugly covered up. The nurse then seats herself comfortably at the head, and places the ice-cold pledgets on the lids, changing them every minute, and throwing the waste into a paper bag at the side. The order may be to keep up the application of cold for twenty-four hours and not to interrupt it while the child is nursing.

The secretions must be frequently removed from under the lids, because they are very acrid and erode the delicate cornea. This is the great danger of the disease. For removing the pus from the eye the best method is a stream of saline solution or boric solution. The nurse

arranges things as in Fig. 172. In the can or douche-bag is the solution as ordered, of a temperature of about 70° F. The bag hangs 20 inches above the infant's head, and the tube is armed with an ordinary medicine-dropper tip, with a large opening. The force of the water must not be too great. The nurse arranges the

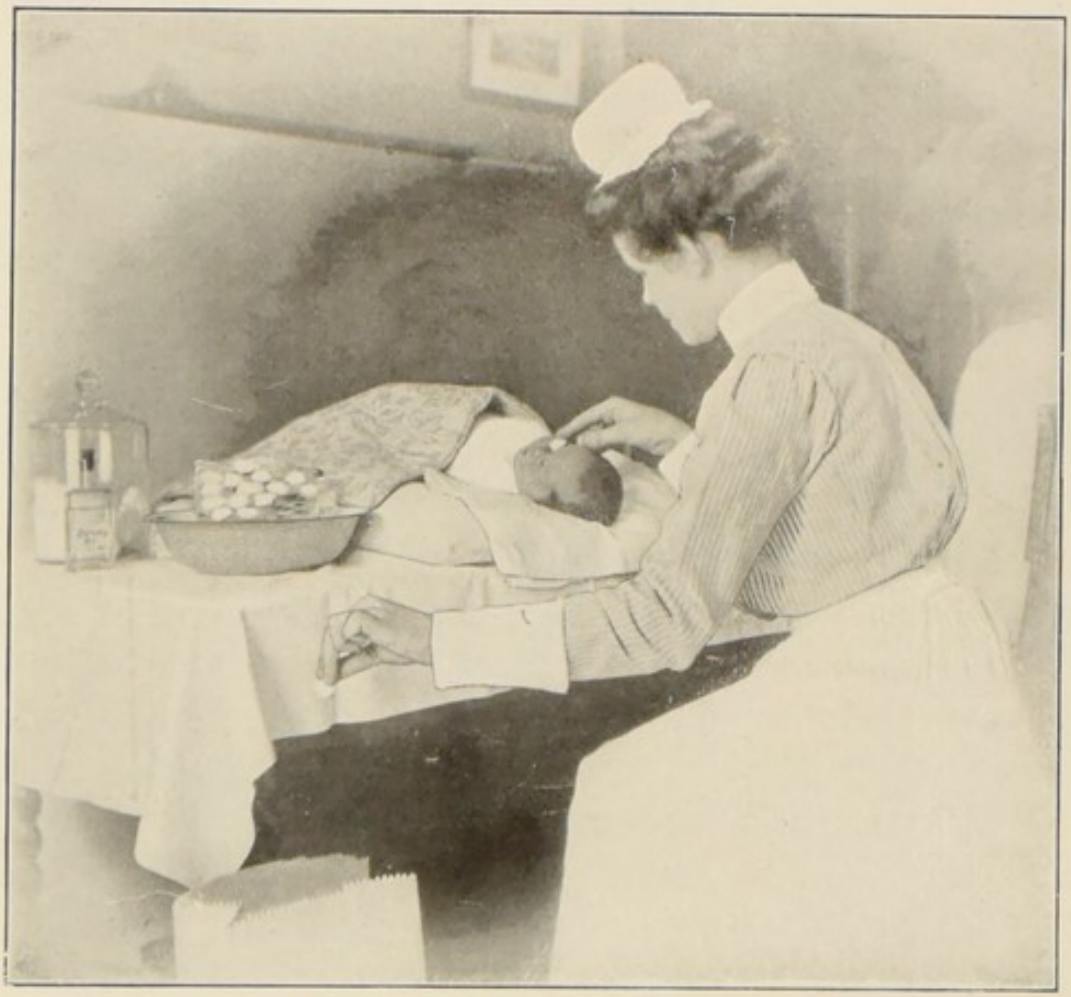


Fig. 171.—Arrangement for application of ice to the eyes.

child on her lap on a rubber drainage-sheet leading into a bucket. The left hand steadies the child; the right holds the point in the fingers, while the ball of the hand rests on the side of the infant's head, pressing it gently against the knee, thus steadying it. The point is directed at the inner corner of the lower eye, so that the force of the stream washes everything from under and from the

inner corner of the lid outward. The infant usually opens the eye under the gentle force of the stream, but if it does not, the left hand may be used to separate the lids. Some nurses find it more convenient to place the infant



Fig. 172.—Arrangement for irrigation of the eyes. The pledget in the left hand is placed against the cheek to prevent the fluid from getting into the nostrils and mouth.

on a table, as in Fig. 171, for the eye irrigation. These irrigations may be needed for weeks or even months.

The physician may make applications of nitrate of silver to the lids, or may prescribe the newer remedies, protargol or argyrol. Atropin is sometimes used to

dilate the pupil, and the nurse should watch for its toxic effects. Conscientious nursing alone will save the light of day for the babe.

Care of the Nurse Herself.—During all this prolonged course of treatment the nurse should protect herself from infection. This is done, first, by never touching her own eyes during the treatment of such a case without previous thorough sterilization of the hands; second, avoiding spattering solutions, used for irrigation, on her person or dress.

Infection of the Mouth and Throat.—One of these, thrush, has already been considered. The gonococcus may infect the throat, and the child may have a pharyngitis due to streptococci. The writer has noticed pharyngitis with fever more commonly in general hospitals that accept maternity cases. Cases are reported where the infection invaded the Eustachian tube, the middle ear, and thus reached the brain. A streptococcic septicemia may result from gastro-intestinal infection.

HEMORRHAGES IN THE NEWBORN

Quite a number of children are lost at a very early period of life through hemorrhage. This is a subject of which little is positively known. The newborn may have more or less profuse hemorrhage from the bowels—the so-called melena neonatorum, so named because the blood is black; there may be hematemesis; hemorrhage from the navel; from all mucous surfaces, or into the skin. The child may be a "bleeder." The nurse can do nothing but compress a bleeding spot favorably situated until medical aid can be obtained. The physician may order gelatin administered, or calcium chlorid or saline solution, or perhaps all three, and the nurse should make the necessary preparations. Nowadays hemor-

rhage is treated by the injection into the child of blood drawn from an adult, or of human blood-serum, or that of the horse or rabbit.

OPERATIVE INJURIES

During obstetric operations the nurse may marvel at the amount of force used by the accoucheur, fearing that both mother and child may be destroyed. While it is



Fig. 173.—Left facial paralysis following delivery by forceps (Budin).

true that in many cases both escape entirely, it is also true that in not a few cases both mother and babe are seriously and irreparably injured. Bones of the arm and leg are not seldom broken, the skull may be fractured, or a hemorrhage in the brain may be caused by difficult operative deliveries. Minor injuries are pressure-marks by the forceps on the head and face, facial paralysis, and bruising of the face, with swelling of the eyes. Infants born in face presentation are much disfigured. The

lips are swollen and the face mottled with hemorrhages in the skin.

The facial paralysis (Fig. 173), while it distorts the face a great deal, almost always disappears before the end of a week. The swelling of the eyes and face goes down in a few days.

Pressure-marks left by the forceps crust over and dry, healing taking place underneath. If they are deeper,

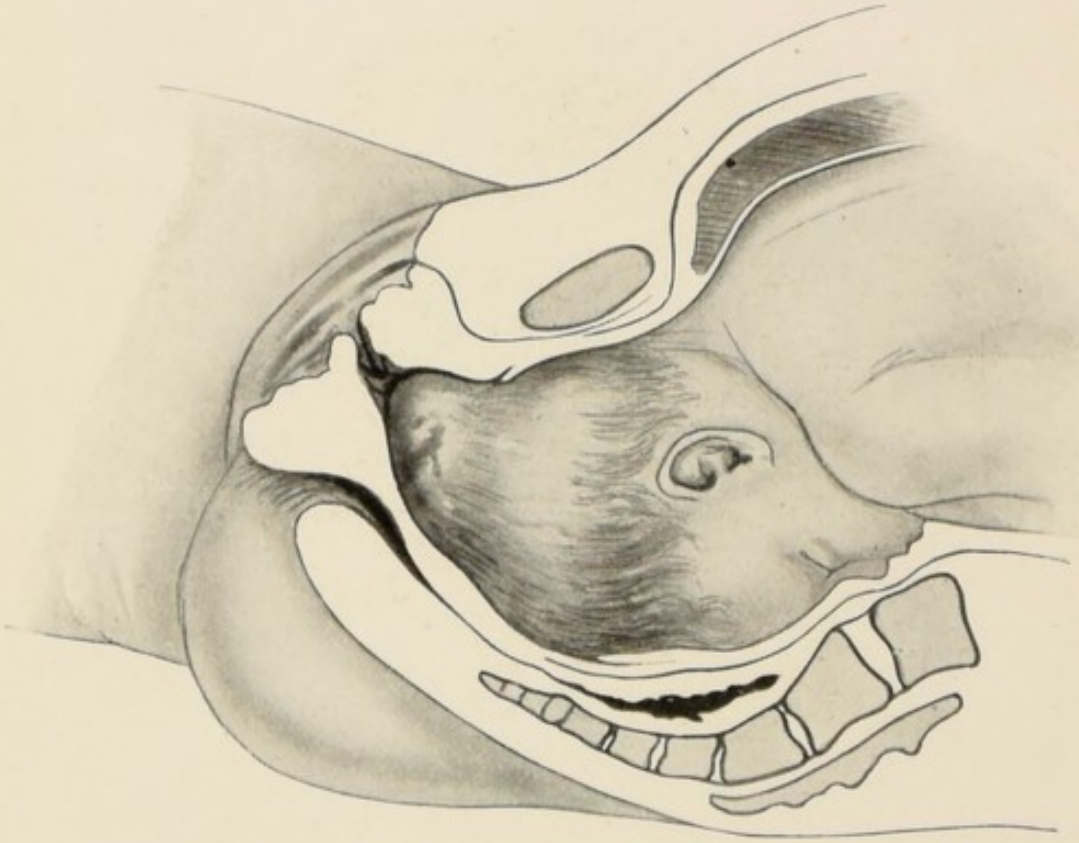


Fig. 174.—Showing how a caput succedaneum is formed.

extending into the bone, a bit of skin, or even a bit of bone, may ulcerate off, with the production of pus. The antiseptic care given ordinary surgical wounds is applied in these cases. Antiseptic solutions should be very weak when applied to infants, as they are susceptible to chemic poisoning.

When the physician has set broken bones, the nurse will see that the dressings remain in place, sewing them

securely if necessary; that they do not become soiled by urine, vomit, or other discharges; that they do not cut the infant or cause chafing, and that the parts below do not swell from too tight bandaging.

Injuries to the Brain.—It is best for the infant if it comes into the world easily, without assistance from art. No matter how skilfully the accoucheur may deliver the fetus, his method is brute force compared



Fig. 175.—Double cephalhematoma. This followed a spontaneous and relatively easy delivery.

with the smooth process of nature, and almost always the infant suffers injury. True, this injury may be slight, or not even apparent at the time, but evidence is accumulating that birth-injuries lead to nervous diseases later in life, as headaches, imbecility, epilepsy, insanity. More light is needed on this subject. Difficult operative deliveries may produce hemorrhages, small or large, in the brain. These may produce cyanosis, con-

vulsions, and death within a few days, or, if the child recovers, permanent paralysis remains.

Caput succedaneum is a swelling on the top of the newborn infant's head (Fig. 174), found at birth, due to the pressure and venous congestion it undergoes during delivery. The edema disappears in from a few hours to a day.

Cephalhematoma is a blood tumor on the cranium of the infant, lifting the periosteum from the bone (Fig. 175). It appears, after a day or so, as a roundish, soft, painless, fluctuating swelling on either side of the head. Depending on their size, cephalhematomata persist for weeks or months, but they will gradually be absorbed. The mother's fears may thus be allayed. Few physicians operate in such cases.

CONGENITAL DEFORMITIES

It is well that **monstrosities** are so seldom capable of extra-uterine existence, since they are not uncommon.

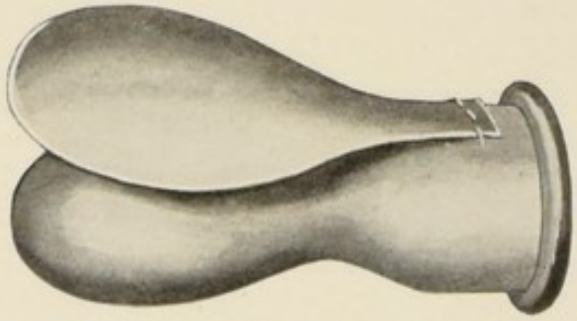


Fig. 176.—Nipple for babies with cleft palate (Starr).

When a monster is born, the nurse should not allow the mother to see it, and it should be hidden from the gaze of curious relatives or friends. The mother must never know she has given birth to such an infant.

If the child is born with a **harelip** or a **cleft palate,** nursing may be so seriously interfered with that the general health may suffer. Mucus accumulates in the

throat and may cause pneumonia. To avoid this the child is to be kept in a partly sitting position. The physician may provide a special nursing nipple for such cases (Fig. 176), or direct that the child be fed by gavage until strong enough to bear operation.

Occlusion of the anus or **imperforate anus** the nurse will discover when she comes to take the infant's temperature and by the fact that the bowels do not move. The physician is to be informed at once, as an operation must be immediately undertaken to make a

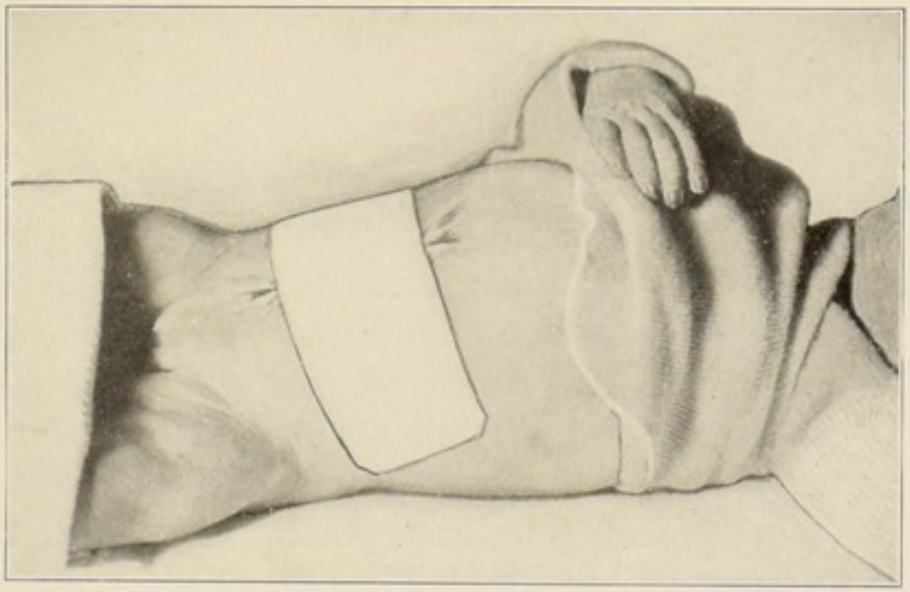


Fig. 177.—Adhesive plaster applied for the cure of umbilical hernia.

passage. Occasionally the bowel is occluded higher up, and laparotomy may be performed. The result is almost uniformly fatal.

Tongue-tie is a very simple condition, but it may be the cause of the child's not nursing properly, and is often overlooked. The tip of the tongue is attached to the gum of the lower jaw by a thin band. This should be nicked at the edge with scissors, and then torn back by the finger-tip. The physician is to do this, as there is sometimes persistent and perhaps dangerous oozing.

Supernumerary fingers and **toes** should be removed when the child is a few weeks old.

Hernia.—*Umbilical hernia* is quite common, and is due to imperfection of the abdominal wall at the navel, and not to improper tying of the cord. Spontaneous cure is the rule, and this may be hastened by a 2-inch strip of adhesive plaster, placed so as to hold the navel together from the sides (Fig. 177). First the skin should be disinfected and dried with alcohol.

Inguinal and *femoral hernias* are rare. Premature children may have them. They often heal spontaneously, although they are more likely to need a truss than the navel hernia. The prognosis is good.

SUNDRY COMPLICATIONS

Convulsions.—In the first three weeks infants may have spasms from cerebral injuries received during labor, such as fracture of the skull and hemorrhage in the brain; second, from intestinal disorders associated with a general toxemia; third, from the so-called "starvation fever," which the author believes is an auto-intoxication or infection; fourth, from tetanus or lockjaw infection; fifth, from cerebrospinal meningitis the result of infection, usually from the navel; sixth, from atelectasis pulmonum —this is commoner in premature infants.

Very often, preceding the actual convulsion the child will show premonitory symptoms. These are twitching of the muscles of the face or extremities, stiffness of the jaws or of the body (in tetanus the stiffness of the jaw is marked), refusal to nurse, continual sucking or swallowing movements, a staring expression in the eyes, and a short, high-pitched, sharp cry without any apparent cause for it. When the nurse observes these things, or if she is surprised by the actual spasm, she will inform the physician at once. Little can be done until he

arrives. Should the infant stop breathing after the convulsion, or if the cyanosis is too prolonged, a warm full bath may be given and a few drops of diluted whisky poured down the infant's throat. Oxygen, if at hand, may be administered.

The physician may order sedative medicines, as bromid and chloral, and ice to the head.

Lockjaw, or **tetanus,** is due to infection, usually of the navel, with the tetanus bacillus. Dust or dirt, nothing else, is the cause, and it means some lack of asepsis in the tying and cutting of the cord, or its after-care.

The first symptom the nurse may note is the general illness of the child, then refusal to nurse, then stiffness of the jaws; now come rigid convulsions—the body may become as stiff as a ruler.

Treatment has been fruitless, although perhaps with the antitetanus serum there may be more hope of saving the child. In hospitals care must be taken not to carry the infection from one infant to another.

Complications Due to the Use of Hot-water Bags.—The hot-water bag itself should not be a complication of the first infancy, but it not infrequently is so. Nurses cannot be too earnestly admonished to watch warm-water bags applied to children and patients in general. If a bag leaks or if the cover or the child's skin is moist, the danger is greater. The bag should never feel hot to the skin. The nurse should not trust the sensitiveness of the hand, because the skin here is tough and cannot judge high temperatures. The bag should feel just comfortably hot to the cheek. It must be well stoppered and perfect. The baby must be dry. The electric pads on the market also are not safe, but require watching. Breaks in the insulation of the wires may allow a short circuit and set the bed on fire.

Overlying the Child.—When the infant is permitted to lie with its mother, the latter, turning in her sleep, may strangle it. The nurse will find the child dead in the bed. In cases of illegitimacy the question of deliberate infanticide will come up.

Asphyxia Neonatorum.—Children sometimes die of asphyxia while still in the uterus, but more often they are lost through this accident during or just after delivery. The asphyxia may be caused by too early separation of the placenta, by compression of the umbilical cord, or by pressure on the brain. Before delivery, the physician knows the infant is in danger of asphyxia by the irregularity of the heart-tones and the passage of meconium.



Fig. 178.—The tracheal catheter. This should never be boiled, as it is woven and varnished. It is sterilized in bichlorid solution or formaldehyd vapor.

There are two degrees of asphyxia, called asphyxia livida and asphyxia pallida, the first being mild, the latter, severe. In livid asphyxia the child is dark blue and stiff and the face is swollen; in pallid asphyxia the child is pale, except around the mouth, which is blue, the body is limp as a rag, and the heart beats faintly or not at all. Unless the child can soon be gotten to respire regularly, it will die.

Treatment.—This consists of removal of foreign matter from the air-passage, preservation of the body heat, and artificial respiration. The physician may aspirate mucus, blood, etc., that may have been drawn into the windpipe, by means of a tracheal catheter (Fig. 178), or he may hold the infant as in Fig. 179 and wipe the mucus from the back of the throat. By compressing the chest

the mucus may be brought out of the trachea within reach of the finger. The infant is then placed in a hot bath (106° F.). Some physicians place the infant alter-

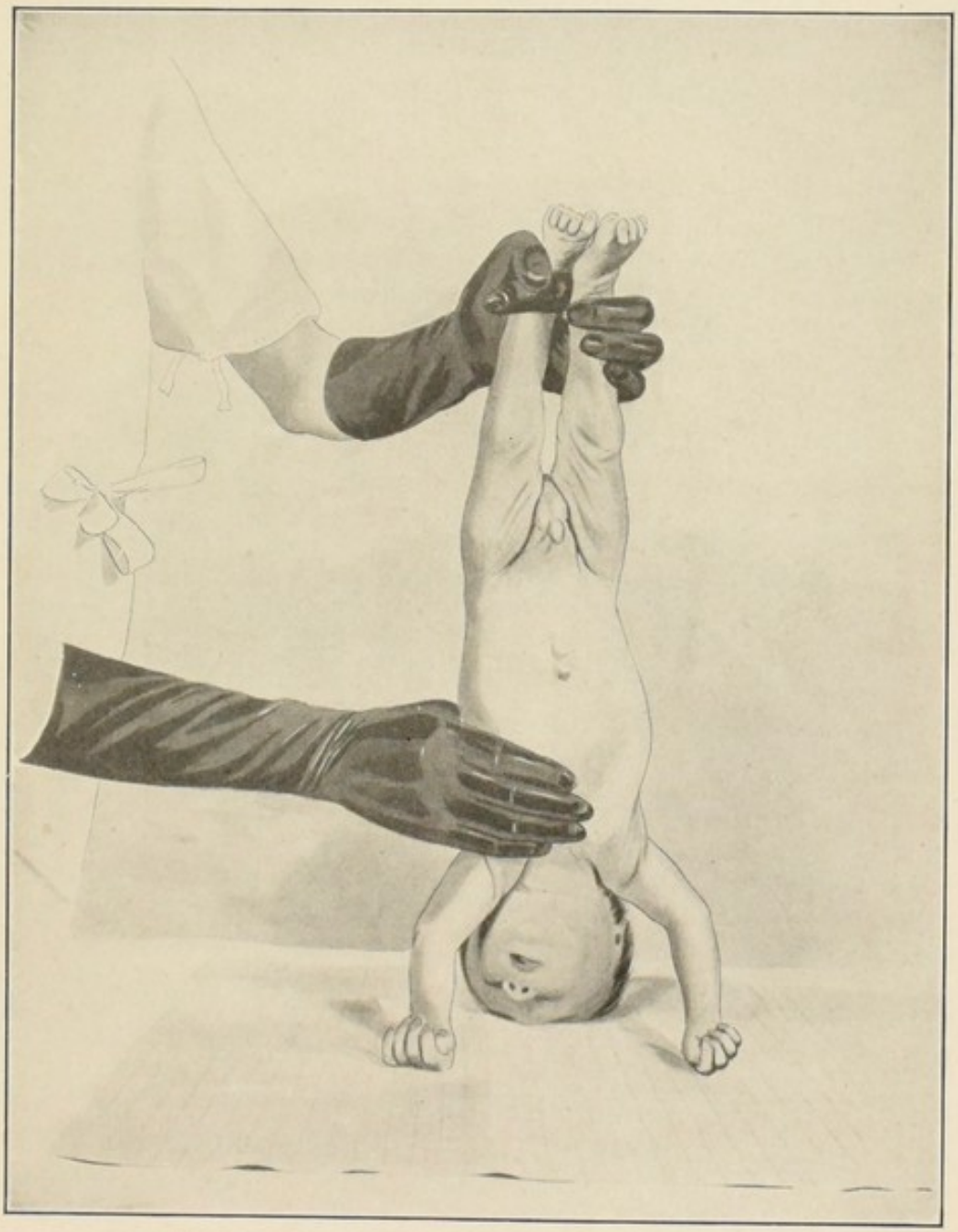


Fig. 179.—Resuscitation of an asphyxiated infant.

nately in hot and cold water—a severe shock to the little one, and a procedure the author has never found necessary.

In mild cases these measures suffice to bring about

normal breathing, but in asphyxia pallida the respiratory apparatus is paralyzed, and the physician or nurse must perform artificial respiration until the nerve-centers recover enough to carry on the function.

There are many methods of substitute breathing, but the nurse may practice only a few, the others being dangerous and for the physician to employ.

A simple method is shown in Fig. 179. The child is supported by the feet, with the forehead resting on a



Fig. 180.—Author's modification of Byrd's method of resuscitation of asphyxiated infant. First motion. Expiration. Child is nearly inverted to allow fluids to run into the throat, from which they are removed by the finger.

table, so that the head is pressed a little backward. Mucus, blood, etc., are removed from the fauces, and then, with the thumb over the back and the fingers over the front of the chest, the nurse makes light compression. This forces the chest together, and, by suddenly relaxing the pressure, the elasticity of the ribs opens the chest and air can be heard to rush in. This maneuver is repeated twenty times a minute.

Another method, known as Byrd's, consists in alternately folding and unfolding the child like a book (Figs.

180, 181). Sylvester's method, used so much in resuscitating drowned persons, may also be employed (Figs. 182, 183). It consists of alternately stretching the arms high above the head and pressing them down fast to the sides. The physician may insert a tube into the trachea and blow air directly into the lungs. Oxygen is sometimes used, and with success.



Fig. 181.—Author's modification of Byrd's method of resuscitation of asphyxiated infant. Second motion. Inspiration. Child's head is raised, and whole body strongly extended.

Throughout all these procedures continual care is to be taken not to cool the babe too much. The skin is wet, the child shocked, and it refrigerates rapidly. In fact, sometimes the child dies because of too violent and prolonged manipulations intended for resuscitation. The hot bath, warm flannel receivers, and the warm-water bag, gentle friction with a warmed hand under cover, all tend to keep up the babe's temperature.

After the child has begun to breathe, it should be warmly clad, placed in an airy room surrounded by warm-water bottles, or, if there was much shock, in the incubator for a few hours.

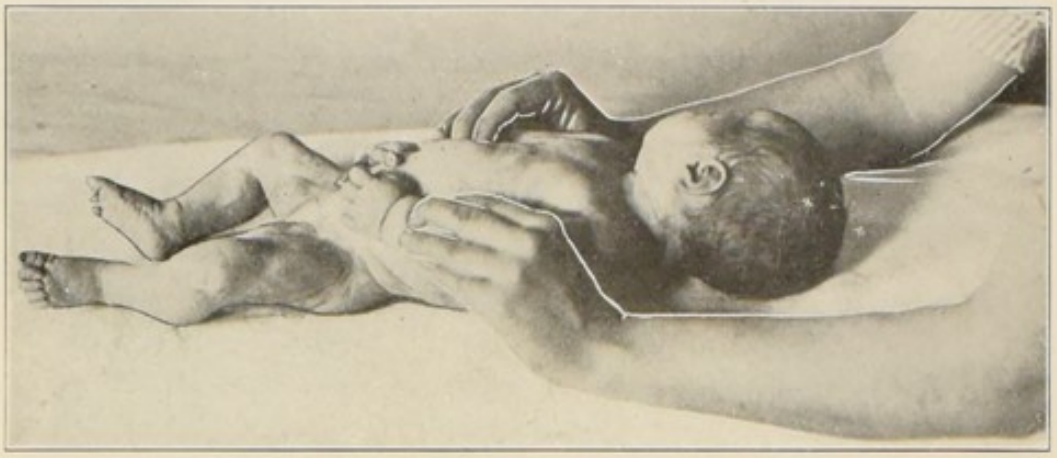


Fig. 182.—Sylvester's method of performing artificial respiration. First motion. Expiration. The arms are pressed firmly against the chest. The infant is covered with a warmed towel during all these maneuvers.

Infants revived from asphyxia occasionally develop a secondary asphyxia which is worse than the first, as it is due to atelectasis pulmonum or hemorrhages into its brain. The child is, therefore, to be carefully

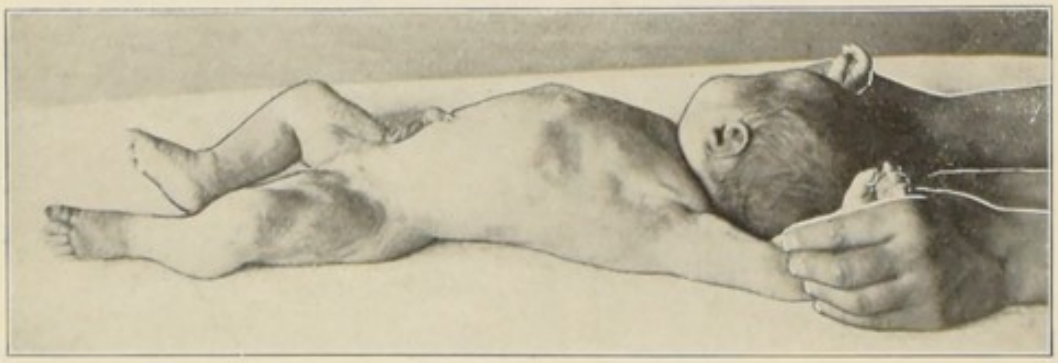


Fig. 183.—Sylvester's method of performing artificial respiration. Second motion. Inspiration. The arms are stretched firmly above the head.

watched for signs of returning cyanosis and for the characteristic grunt or moan. Since hemorrhage may occur in the brain, the nurse will watch for symptoms of cerebral irritation, although treatment of such accidents is not hopeful.

CHAPTER VI

THE CARE OF PREMATURE INFANTS

THE care of premature infants requires the highest kind of nursing skill and the greatest self-sacrifice and devotion. The results, however, are gratifying in the extreme, as nearly every child that can respire and digest food can be saved. These children grow up and are strong, so that there is no argument for refusing them the necessary care.

There is a popular notion that children of the eighth month of pregnancy have less chance of survival than those of seven months. This notion, like many others, is a popular fallacy, although it is very old, dating from the time of Hippocrates, who said that the weakness of the eight months' child was due to its being tired with efforts to leave the uterus, whereas if it waited until the ninth month it was sufficiently strong.

The longer the infant remains in the womb, the stronger it becomes, although if the pregnancy goes too far over time, the child may die. We regard as premature all children born before three weeks of the normal end of pregnancy. Depending on the degree of prematurity, the children present the following characteristics: They are small, weighing from 2 to 5 pounds; the skin is red, thin, and the blood-vessels show through; the body is partly covered with a fuzzy growth of fine hair called lanugo; the nose has little white comedones; the ears are soft and pliable; the child looks old, especially after a

week, when the loss of weight has occurred, and the little body is shriveled; the cry is weak and whining, but most of the time the infant lies in a peculiar stupor; the temperature has a tendency to be subnormal and very irregular; the bowels are sluggish; the urine is scanty; later jaundice is usually marked.

The initial loss of weight is relatively greater in premature infants, and the return to the birth-weight is much slower, requiring some twenty to thirty days (Fig. 184). Since the appetite is often in abeyance, these little mites would starve to death unless fed forcedly. The lungs of premature infants are slow to unfold, remaining in a condition called atelectasis pulmonum. This is usually fatal, unless properly relieved.

Latterly our knowledge of premature infants has increased, and we are more successful in rearing them. To be successful requires three things: first, mother's milk; second, good nursing; third, a good incubator. That heat is absolutely necessary for premature infants was known since ancient times. In the Middle Ages premature infants were wrapped in the skin of a sheep with the wool on, or put in a jar of feathers. Later they were enveloped in cotton. Sterne, in the middle of the eighteenth century, relates how the child of a physician was raised by the "same artifice that one used to make chickens hatch in Egypt. He put his son in an oven, properly constructed, heated regularly, the temperature of which was regulated by suitable instruments." Nothing came of this suggestion.

In 1857 Denucè described a double-walled bath-tub, with water in the interspace, for the rearing of feeble infants. In 1866 Credè, of Leipsic, used an identical contrivance, although he did not publish it until 1884. In 1880 Tarnier had Odile Martin, a poultry raiser of the Jardin de Plantes, Paris, constructed an infant incubator

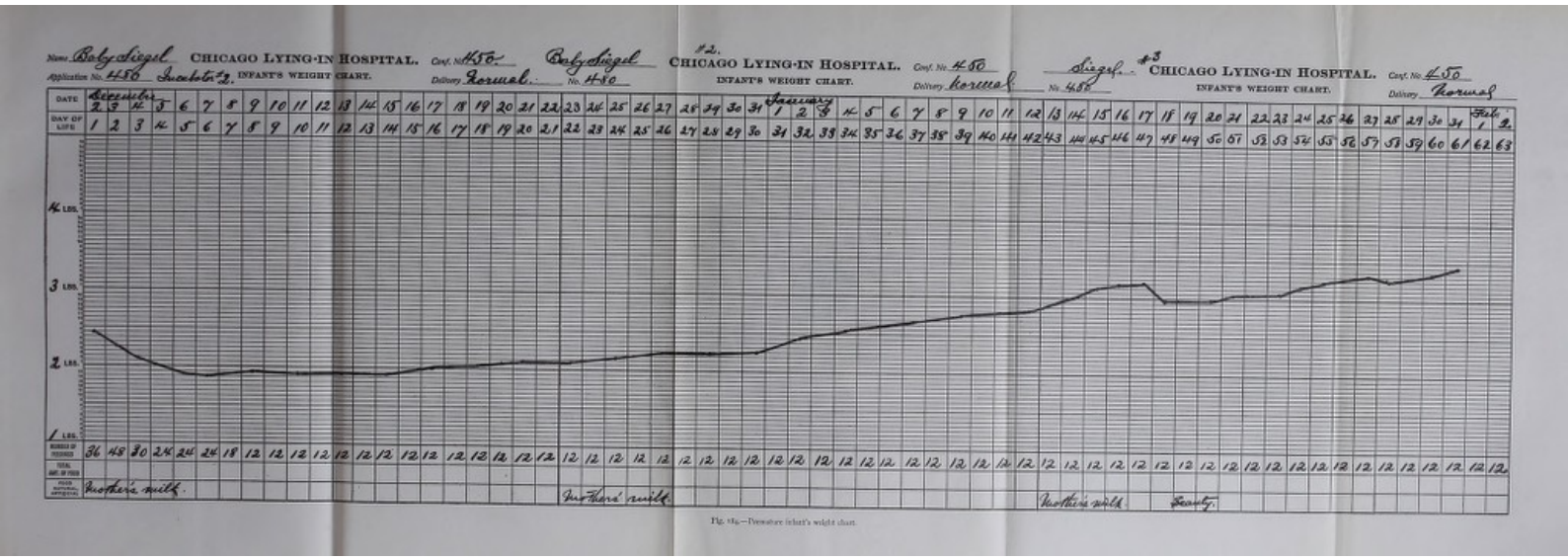


Fig. 184.—Premature infant's weight chart.

on the plan of a chicken incubator. It was installed in the Maternitè, and could hold several children. Winckel constructed a permanent bath in which the child floated, thus avoiding the rapid evaporation and to imitate

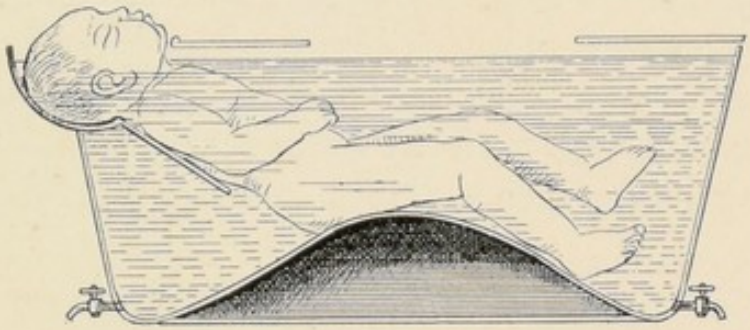


Fig. 185.—Winckel's permanent bath for premature infants.

more closely the liquor amnii (Figs. 185, 186). This bath is obsolete now. Some hospitals have a double-walled room, properly ventilated and heated to 84° F. all the year round. The discomfort of the attendants and

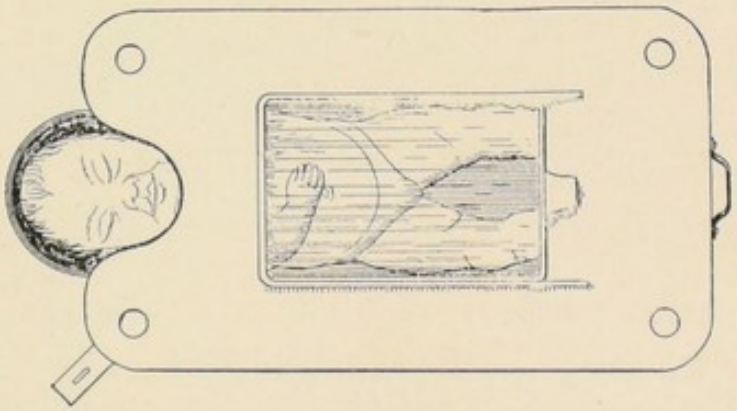


Fig. 186.—Winckel's permanent bath for premature infants.

the danger of spreading infection among these susceptible infants are the objections to this method. The individual incubator connected separately with the outside of the house by an air-intake pipe is the best.

THE INCUBATOR OR COUVEUSE

There are several, made of wood and of metal, on the market. Some open at the top, others at the front. Some, as the Auvard, are heated by hot-water bottles, some by hot air, some, as the Sharp and Smith, by hot water (Fig. 187). Most are heated by hot water, which is by far the best method, because the temperature is kept evenly. Most incubators have no automatic heat regulation, and with such the nurse must carefully watch the thermometer which is placed inside, and provide more



Fig. 187.—The Sharp and Smith incubator.

or less heat as needed. Both overheating and chilling are to be avoided. A few instruments have automatic heat regulation, but even here the nurse must occasionally consult the thermometer to assure herself that the thermostat (or heat regulator) is working properly.

In all incubators heated by steam or hot water the nurse must see that the supply of water does not run low. This endangers the infant and also the apparatus.

The ventilation of the incubator is highly important. The writer has never seen a closed incubator ventilate

properly unless it was connected with the air outside the building. All incubators of the box type require the lid to be left slightly open, to insure the infant an adequate fresh-air supply. This is especially necessary in summer. The air seems to stagnate. The incubator should be raised at least 2 feet from the floor, and should be free from exposure to drafts, dust, and chilling. It must be lighted, because for the first week the infant requires close watching.

If an incubator of modern type cannot be obtained, one can improvise a warm nest for the infant by means of a large clothes-basket well lined with blankets, a soft pillow, and six or eight hot-water bottles. These are changed frequently. With constant attention such a makeshift will do better work than most of the incubators on the market.

Every city should be provided with an "incubator station." This is a plant connected, preferably, with a lying-in hospital, consisting of several incubators and the necessary specially trained nurses, wet-nurses, and mechanical appurtenances. To these stations children could be brought, even from great distances, for that particular care which special training and practice only are able to bestow. The station of the Chicago Lying-in Hospital is a model of this class, and deserves a short description here:

As shown in Figs. 188 and 189, the incubators are of steel and glass, and embody principles of heating and air circulation used in no others. They are heated by a hot-water pan placed 5 inches below the infant's bed. The boiler for heating the water in the pan may be seen at the right side. The system is identical with that used in the hot-water heating of houses. The heat regulator is above the boiler, and, once set at the desired temperature, requires no attention. The child is handled

through the two doors in front, and is fed through the sliding window on the left. On the left also is a box containing a glass of water. This is for moistening the

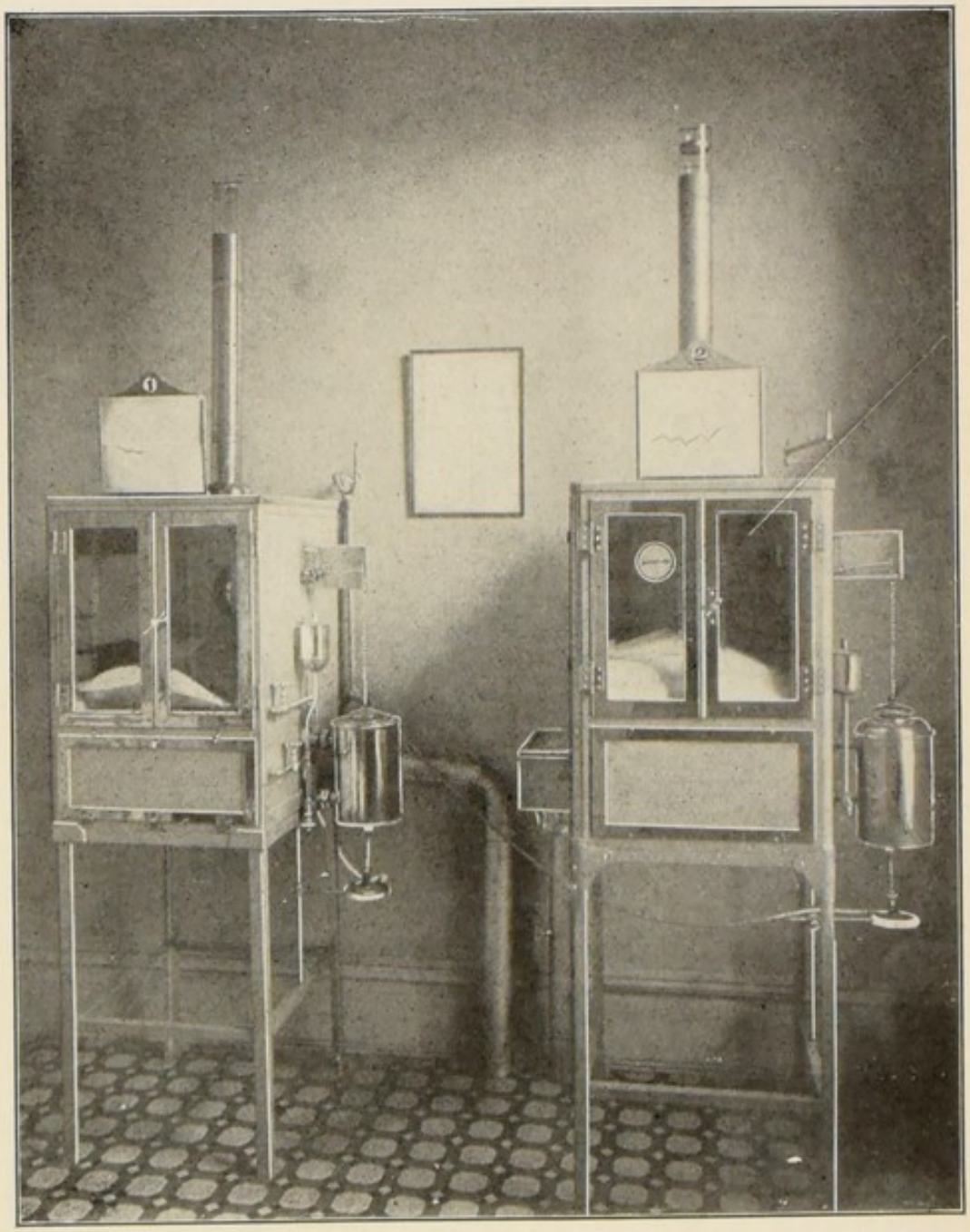


Fig. 188.—Two of the incubators of the system at the Chicago Lying-in Hospital.

air. The air, fresh from the sunny outside, is led by a 3-inch flue directly into the box, passing through a cotton filter. The opening from the box into the heating

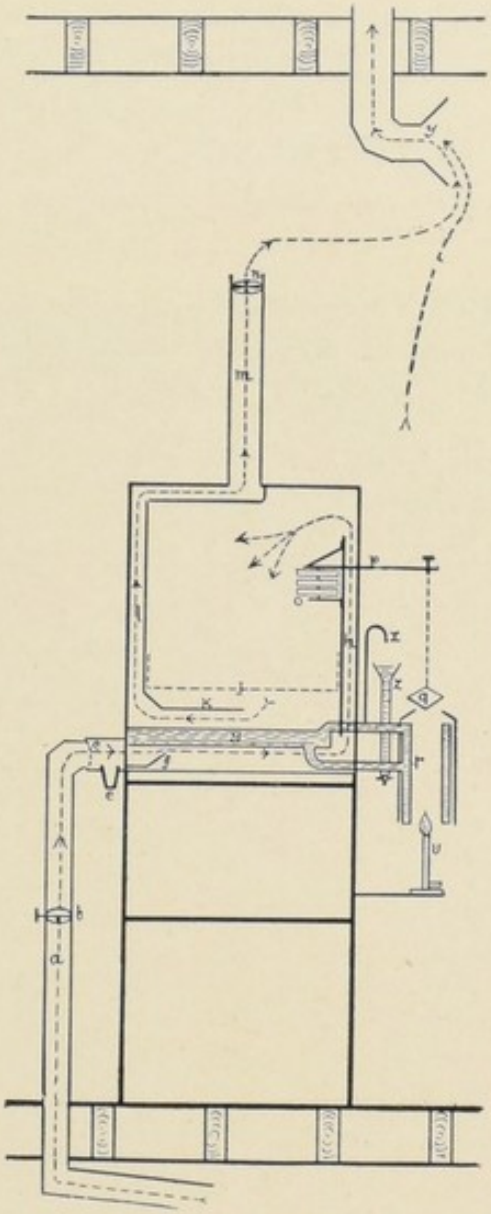


Fig. 189.—Diagrammatic section of incubator system in Chicago Lying-in Hospital: *a*, Pipe bringing air from outside; *b*, damper; *c*, cotton filter; *e*, glass of water in moisture-box; *f*, screen to distribute air evenly under warming-pan; *g*, water-pan; *h*, flue conducting air into bed-chamber; *j*, bed; *k*, draft plate to lead air out of bed-chamber into flue *l*; *l*, escape flue; *m*, chimney; *n*, anemoscope; *o*, ethyl-chlorid disks; *p*, lever; *q*, cover of air-flue over heater; *r*, hot-water boiler; *v*, gas-burner; *x*, air-vent to hot-water system; *y*, exit flue through ceiling; *z*, filling cup for the hot-water heating system. The dotted line shows the course of the air through the instrument.

chamber of the incubator is closed by a sliding damper, by which the amount of air admitted to the apparatus is regulated. The air is heated by passing around a large

pan of water (connected by pipes with the water boiler on the outside), and, after circulating around the infant, is automatically removed through a flue on the top of the box. A little wheel in this flue (an anemoscope) indicates the current of air. The child lies in a basket sus-

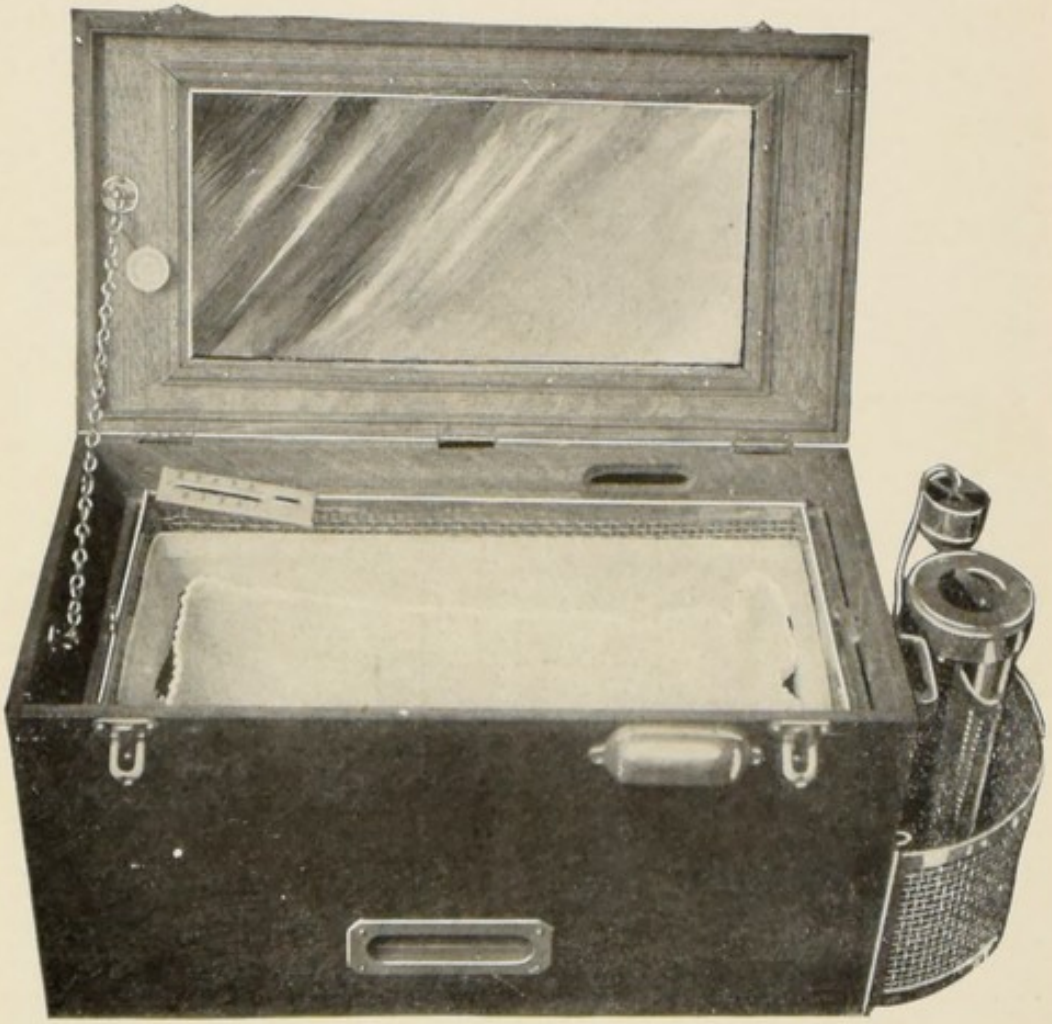


Fig. 190.—Incubator ambulance open, showing electric light, thermometer, infant's basket with eiderdown flannel mattress, and coverlet.

pended over the hot-water pan; the mattress on which it lies is of eiderdown.

A delicate thermometer is fastened near the side window, so that it may be easily read, and a hygrometer, to indicate the degree of moisture, hangs in the back.

The room in which the incubators are installed has also

a natural ventilation through the ceiling to a space under the eaves, which is likewise ventilated. The schematic drawing will show the tortuous current of air; the nurse may follow the dotted line in its windings from below the floor, through the apparatus, and out through the ceiling. This is an ideal arrangement, as it provides a certainty of fresh, filtered, moistened air, and even in stormy weather precludes a draft through the incubator.

Many children have to be brought from distances, sometimes of many miles, and for such transporta-



Fig. 191.—Incubator ambulance closed, ready for transportation of infant. During transit the child is closely observed through a window in the top.

tion an ambulance incubator is provided (Figs. 190, 191). This is a perfect incubator in miniature, with a circulating hot-water system heated from the outside by an alcohol lamp, well ventilated, and lighted by electricity. It is 21 inches long, 11 inches wide, and 11 inches high, and can be easily carried by one person.

Care of the Incubator.—The temperature should, as a general rule, be kept at about 87° F. It may fluctuate from 86° to 91° F. without being dangerous. If the infant is strong or less premature, or if it sweats too

much at this temperature, the regulator should be set at 86° F. or even 84° F. If the child is very premature or if its temperature persists in remaining low, the incubator must be warmer, being set at 91° or even 93° F. This, however, is seldom necessary for any length of time —two or three days at most, when a temperature of 87° F. is more desirable. With a little practice the nurse gets to know what degree of heat is best suited to the particular infant. As the child grows older the temperature of the apparatus is maintained at 84° or 80° F., and then the infant is placed inside only at night, being put in a warm basket during the day.

With incubators without automatic heat regulation the nurse must consult the thermometer placed alongside the child, and increase or decrease the heat by the means provided in the particular apparatus. With a little experience the nurse can judge by putting her hand inside the incubator whether the air is of the right temperature, but this must not be relied on.

The *moisture* is important. In incubators of the style last described this is provided for by hanging a piece of gauze in the water-glass of the moisture box at the left. Should the hygrometer or, what is just as reliable, the dry mouth and lips of the babe show that moisture is needed, this may be easily accomplished by placing a small flat pan of water under the bed on the warming-pan. In incubators of the Auvard pattern the moisture is provided by a sponge hung near the head of the infant. This sponge must be wet frequently and sterilized daily, as it is not a clean thing. In summer less moisture is needed than in winter.

The hot-water system of the large steel incubators requires little attention. The filling is done through the cup on the right side, and the system must be filled and water stand in the cup before the gas-burner is lighted.

Every day a little water is supplied to replace that lost by evaporation.

In the old-fashioned incubators or in improvised baskets the hot-water bottles must be frequently changed. In those with steam boilers great care must be taken that the kettle does not boil dry.

The Ventilation.—If the incubator is provided with a flue and wheel, or anemoscope, the nurse can easily see that air is passing through the apparatus by the motion of the wheel. This wheel must be delicate and sensitive, or it will fail to show the circulation of air. The nurse must see that the bearings of the wheel are free from dust and slightly oiled. Great care is necessary in handling it because of its delicacy. If there is no indicator of this kind, and in box incubators, it is safest to leave the sliding cover or door open a trifle, and protected from drafts by hanging a towel over it. This is necessary in summer in all apparatus not connected with the outside air. In addition, the ventilator openings provided in the incubator are left free. In winter or in very windy localities those incubators connected directly with the outside air need a little watching. While experience has shown that they can accommodate themselves to a change from 45° above to 8° below zero, and also functionate in a gale blowing 60 miles an hour, still the little life inside is so delicate and precious that one must be assured the apparatus is working properly. In winter the damper in the air-flue is kept almost closed; in summer, wide open.

The Bed.—The incubator bed should be of eiderdown. No rubber sheet is used. No pillow is needed. Sometimes it may be necessary to lower the infant's head, which is done by raising the foot of the basket. Cotton has been found objectionable as a mattress for the tiny

babies; it is used for the larger ones and after the little ones have developed.

The Dress.—This should be of the finest wool flannel obtainable, and made as simple as possible. The idea of wrapping the infants in cotton and oil is a popular fallacy and costs lives. As soon as a premature infant is born, it

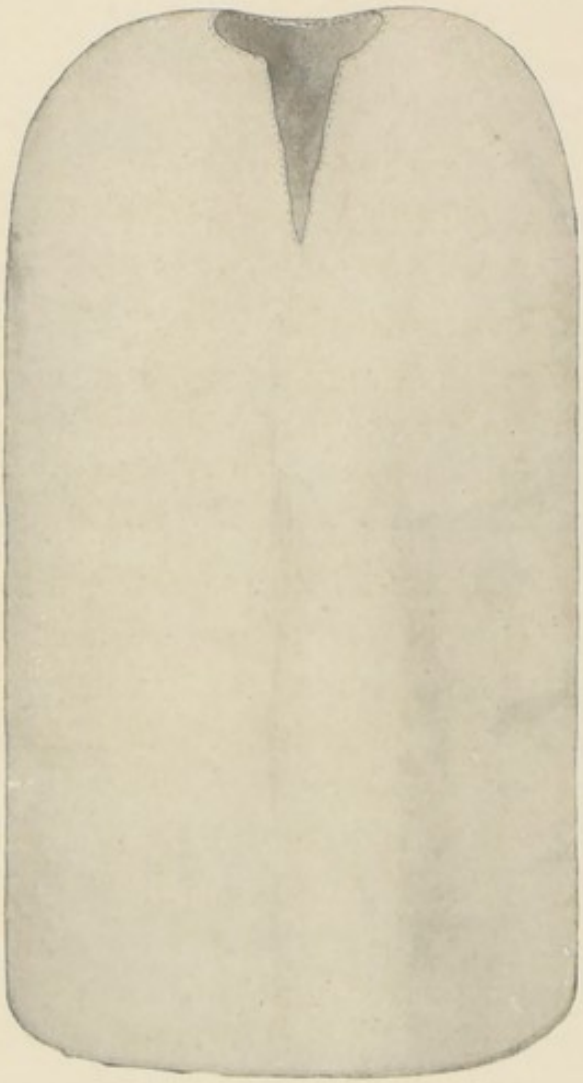


Fig. 192.—Incubator infant's dress.

should be wrapped in warm wool flannel and placed in the incubator. If no incubator is at hand, until proper provision can be made the child, wrapped in a warm woolen blanket, is surrounded by warm-water bottles and kept in a very warm room. The nurse will note

how the necessity of heat is emphasized. The Chicago Lying-in Hospital has received 60 or more infants, completely refrigerated, even though oiled and wrapped in cotton.

A simple bag, 34 inches long and 20 inches wide at the bottom, stitched around the neck, without sleeves, has been found the best (Fig. 192). It is open at the bottom, so that the infant may be "changed" without trouble, and long enough to double over and make a sort

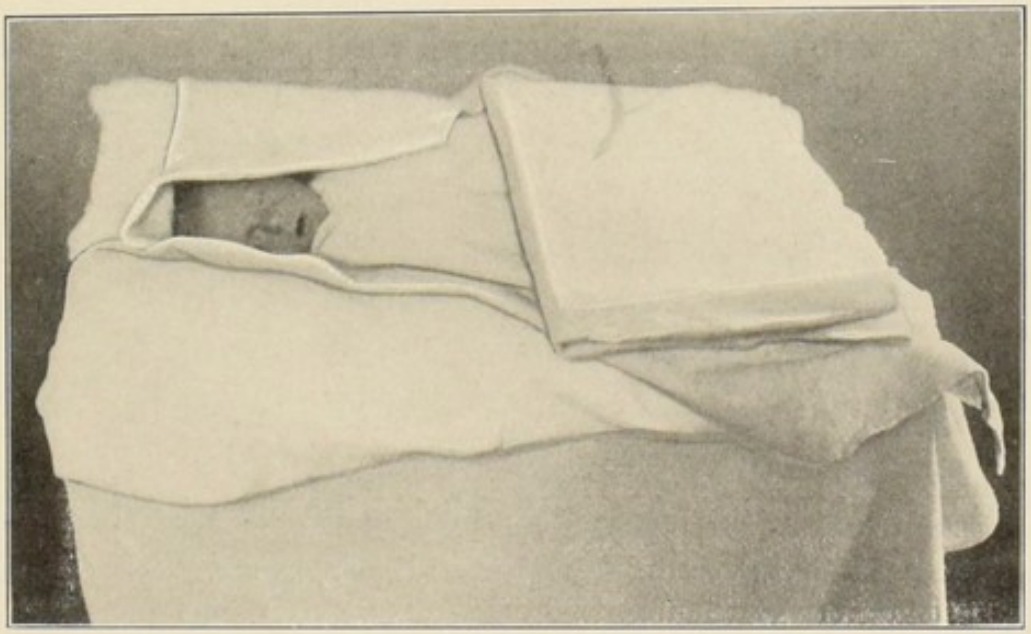


Fig. 193.—Incubator infant as it lies in the apparatus, showing the dress folded up over the body, making a blanket, and the shawl over the head and shoulders.

of cover reaching to the shoulders. The child is covered by a light, wool-flannel blanket which makes a sort of hood over the head (Fig. 193); the abdominal binder is of wool, the diaper alone being of cotton material.

After the child is removed from the incubator it naturally requires heavier clothing.

Warm Feet.—Even in the best incubators the child's feet may be cold; this is due to poor circulation. A warm-water bag should be laid under the feet, carefully

protected so that it shall not burn. The temperature of the infant, taken by the rectum, may be elevated by this warm-water bag, a fact to be borne in mind in reporting or recording a fever.

The Diet.—Without question, mother's milk is the food for premature infants, and should be obtained at any expense of money and effort. It must come from a healthy woman whose own baby is thriving. For this reason an incubator station is better connected with the lying-in hospital or it must have a staff of wet-nurses. Feeding must begin a few hours after birth to avoid exhaustion and to combat the great initial weight-loss.

For the smallest infants from 5 to 20 drops of a two-thirds mother's milk in water are given every thirty minutes with a medicine-dropper. If the child retains this, the amount is increased to 30 or 40 drops. After from twenty-four to thirty-six hours the intervals are lengthened to an hour, and later to two hours.

Diet Table Used at the Chicago Lying-in Hospital

For Infants Weighing Less than 3 Pounds

1st day,	every	30	minutes,	15	drops:	Water	1	part,	milk	2	parts.
2d	"	"	hour,	30	"	"	1	"	2	"	
3d	"	"	"	40	"	"	1	"	"	2	"
4th	"	"	1½ hours,	1	dram:	"	1	"	"	2	"
5th	"	"	1½ "	1	"	Pure mother's milk.					
6th	"	"	2 "	1½	drams:	"	"				
7th	"	"	2 "	1½	"	"	"				

For Infants Weighing Less than 1800 Grams (3 lbs. 12 ozs.)

	Total quantity.		Every hour about
1st day	63 gm.	(2 oz. ½ dr.)	45 drops.
2d "	127 "	(4 oz. ½ dr.)	75 "
3d "	151 "	(5 oz.)	1½ drams.
4th "	200 "	(6½ oz.)	2 "
5th "	224 "	(7 oz. 2 dr.)	2 " 15th
6th "	230 "	(7 oz. 4 dr.)	2½ "
7th "	263 "	(8½ oz.)	2 " 45th
8th "	281 "	(9 oz.)	3 "
9th "	303 "	(10 oz.)	3½ "

For Infants Weighing from 1800 to 2200 Grams (3 lbs. 12 ozs.–4 lbs. 9 ozs.)

	Total quantity.		Every hour about
1st day	120 gm.	(4 oz.)	75 drops.
2d "	173 "	(5½ oz.)	2¼ drams.
3d "	247 "	(8 oz.)	2¼ "
4th "	281 "	(9 oz.)	3 "
5th "	312 "	(10 oz.)	3¼ "
6th "	347 "	(11 oz. 2 dr.)	3¾ "
7th "	364 "	(11 oz. 7 dr.)	4 "
8th "	393 "	(12 oz. 5 dr.)	4¼ "
9th "	404 "	(13 oz.)	4½ "

For Infants Weighing from 2200 to 2500 Grams (4 lbs. 9 ozs.–5 lbs. 4 ozs.)

	Total quantity		Every hour about
1st day	153 gm.	(5 oz.)	1½ drams.
2d "	266 "	(8 oz. 5 dr.)	3 "
3d "	299 "	(10 oz.)	3½ "
4th "	341 "	(11 oz.)	3¼ "
5th "	365 "	(11 oz. 7 dr.)	4 "
6th "	390 "	(12 oz. 5 dr.)	4¼ "
7th "	400 "	(13 oz.)	4½ "
8th "	413 "	(13 oz. 3 dr.)	4¾ "
9th "	418 "	(13 oz. 4 dr.)	5 "

One cannot follow this table exactly, some infants requiring less, others more, than herein stated; some infants require diluted milk for weeks. A small child that is several weeks old requires more than a larger infant in the first days. Occasionally a 3-pound baby will drink 1 ounce of milk every two hours. As a general rule the child is allowed as much as it can be induced to swallow, and the appetite varies day and hour. One must not overfeed, because of the danger of indigestion and regurgitation. The former invites intestinal catarrh, while the latter may lead to choking and asphyxiation. On the other hand, one must give sufficient nourishment, because the spark of life is faint and the child cannot express hunger. Feeding must, therefore, begin soon after birth, and be carefully and consistently practised. If the infant does not get enough food, it will lose weight, it will lie in a peculiar stuporous condi-

tion, and will be subject to attacks of fainting, sometimes with marked cyanosis.

The amount of each feeding must be recorded, and if the infant nurses at the breast, it must be weighed on a delicate scale before and after nursing, the difference representing the amount obtained. The total in twenty-four hours gives the amount ingested by the infant. It

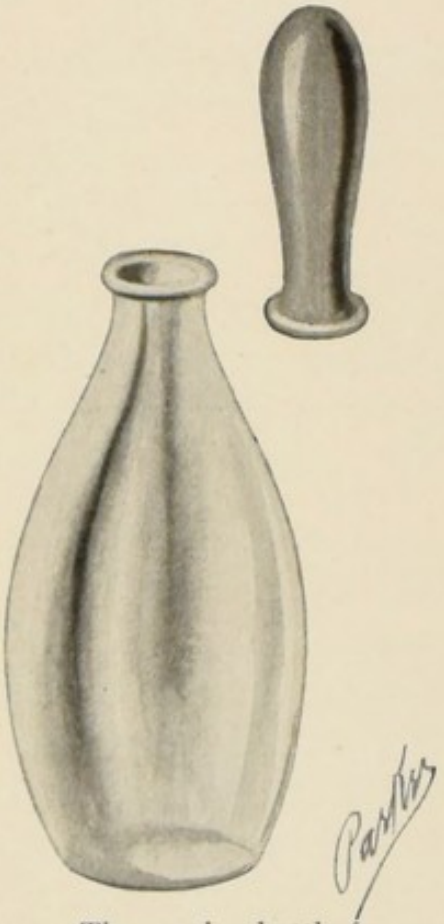


Fig. 194.—The nursing bottle for premature infants. Capacity, 1 ounce.



Fig. 195.—The feeding-dropper.

should be equivalent to about one-fifth of the child's weight. Thus a child weighing 3 pounds should be fed about 9 ounces of milk a day. If the child shows any symptoms of indigestion, a little peptic salt is given with each feeding.

Method of Feeding.—If the infant can suck and swallow, the milk is given by means of a small vial and

a tiny nipple (Fig. 194). If the child can swallow but not suck, the milk is dropped into the throat with a feeding-dropper (Fig. 195). The breast-pump that draws the milk, the bottle, the dropper, the nipples, etc.,



Fig. 196.—The practice of gavage.

must always be sterile to avoid infecting the intestinal tract.

Should the child neither suck nor swallow, it must be fed by means of a method known as gavage, introduced by Tarnier, of Paris (Fig. 196). This consists simply of

feeding by means of a stomach-tube. The tube used is a soft-rubber catheter, size 8, American scale, for the tiny babes, and No. 10 for the larger ones. It is attached to a small funnel or the glass part of a nipple-shield. When the proper amount of milk is obtained, which is done by means of a breast-pump (see Fig. 77), it is diluted and warmed, and the tube, etc., sterilized. The infant is placed on the lap with the face upward and a little to one side (Fig. 196). The tube is filled with milk, clamped with the fingers, passed into the throat, and quickly into the stomach. A depth of 4 inches is usually right. The child swallows the tube sometimes with avidity. Then the measured quantity of milk is slowly poured in, taking care that air is not permitted to enter. Then the tube is withdrawn with a rather quick motion, the child is held quiet for a few moments, after which it is carefully replaced in the incubator on its side. The child must be watched for a few minutes to see that the milk does not regurgitate and strangle it.

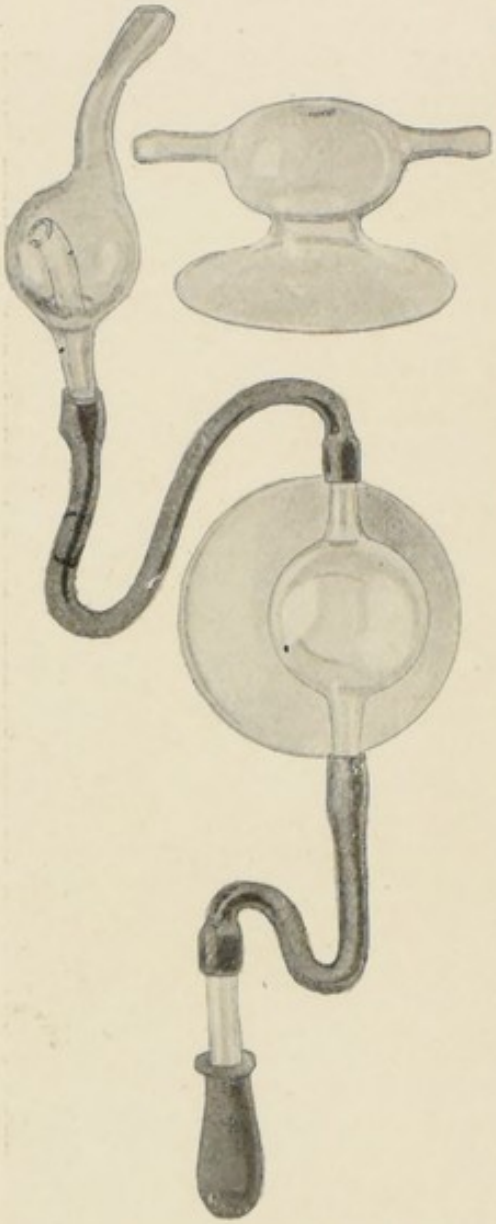


Fig. 197.—The teterelle, showing front and side view. Above and to the left a glass bulb to collect saliva that might flow down the tube.

Overfeeding is very prone to occur with gavage, therefore one must refer to the table herein given, and watch the infant for signs of distress, as abdominal

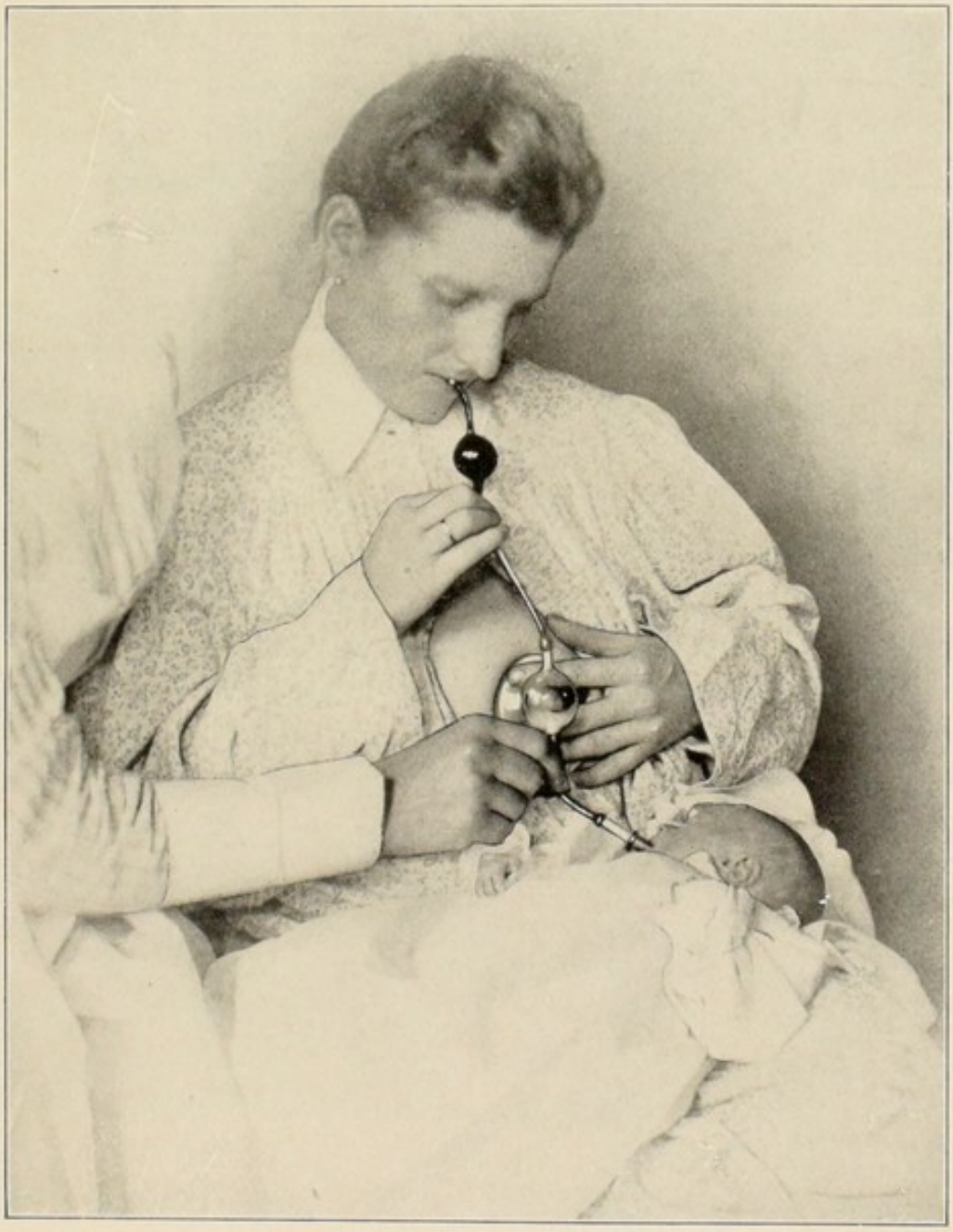


Fig. 198.—The teterelle in use.

distention, vomiting, indigestion, etc. Tiny infants are fed in the incubator through the side window or by partly removing the cover of those constructed on the

box pattern, but after the child is strong enough it is fed on the lap of the nurse, in a warm room, and protected from drafts. For gavage one must remove the infant from the couveuse.

As soon as the babe can be put directly to the breast, this should be done, as nothing can match the life-giving fountain. If the nipple is too large, or if the milk does not flow readily, a teterelle (Fig. 197) may be used. The nurse compresses the tube leading from the bulb with the fingers, the mother draws the milk into the bulb, and then the nurse allows it to flow into the child's mouth (Fig. 198). A pump may be used instead.

One should see that the infant has sufficient water. Since the interior of the incubator is warm and the skin is thin, evaporation is rapid, and, therefore, the little body dries out.

If mother's milk is positively unobtainable, we are forced to rely on substitute feeding.

The Bath.—Premature infants should be handled as little as possible, because it is depressing to them. A bath such as is usually given to infants may throw them into collapse. The practice of smearing the infant with vaselin or sweet oil is bad, as it refrigerates the little body. The skin must be kept clean and the pores open or the infant will not thrive. As soon as the child is born it is covered warmly, and, in a hot room, the whole body is anointed with warm benzoinated lard. This is carefully and quickly wiped off, under cover, with a hot towel. The child is immediately placed in the incubator. If the infant is very weak the first dressing is postponed several hours or until it has recovered from the shock of birth and the unavoidable exposure afterward.

Daily for the first week the whole body is anointed with finest benzoinated lard, an animal fat that sinks into the skin and furnishes a small amount of food. The face

and buttocks are occasionally washed with warm water. When the infant is sturdier, it is given what is known as a "dip" every other day. This is a gentle immersion into water at 103° F. for not over thirty seconds. Then the little body is quickly lifted into a warm towel and dried. After this the whole body is anointed with the benzoinated lard. The bath as usually given is not employed until the child is quite vigorous.

The Care of the Eyes, Nose, Mouth, etc.—The eyes are not given any attention except ordinary cleanliness, and the same may be said of the nose, ears, and mouth. Extraordinary care must be used not to injure or abrade the tender mucous membranes, as the infant is very susceptible to infection, which may easily gain entrance in this manner. Each morning the mouth may be washed with boric acid solution, but this is not needed if the tongue is clean. In girls the vulva must be handled with extreme delicacy and care be taken not to infect it. The buttocks are so tender that the skin cracks and inflames easily, especially if the bowel movements, from indigestion or enteritis, are sharp and irritating. In such cases no water should be used, and the treatment described on page 343 should be minutely carried out.

In boys the diaper should be applied loosely, thus avoiding compression of the delicate external organs. The meatus urinarius should be inspected frequently, as a tiny bit of dried secretion might stop the flow of urine.

The infant must not lie long after urination or bowel movement before changing, first, because the discharges decompose quickly in the warm incubator and befoul the air in it; second, because the skin around the nates will become inflamed, and third, because it may lead to infection of the child. The change must be made quickly and gently, with the smallest amount of exposure, and the child returned to the incubator without delay. Some

incubators are arranged to allow this attention without removal of the child.

General Care.—Every day during the anointing the infant is given a general massage. This comprises gentle rubbing of the skin, kneading of the muscles of the extremities, and bending of the joints. That this must be extremely gentle and tentative at the start and more vigorous as the child grows stronger is not necessary to say. If the child is very premature, these attentions are given every other day. They are not omitted, because the infant needs some stimulation to bring it out of the torpid state in which it usually lies, and which disposes it to stagnation of the blood in the extremities and the lungs. The child should lie alternately on the two sides for the same reason. The temperature is taken by the rectum morning and evening, and every four hours if there is fever. Every other day the infant is weighed naked, and care should be taken that the little body is not chilled. For the weighing the babe is wrapped in a hot diaper. A record is kept of all these things.

Removal from the Incubator.—This depends on the age of the child and the rate of growth. As a general rule, when the temperature remains normal for days, when the child is about $4\frac{1}{4}$ to $4\frac{1}{2}$ pounds in weight, we remove it to its cradle. This varies, of course; so the length of stay is from five days to six weeks. There should be no haste in removing the child, as it will thrive better in the apparatus, having less to contend with. Operative cases are removed when they have recovered from the shock of the delivery. Some infants, even though small, are uncomfortable in the incubator, and sweat profusely, cry, and are fretful. These cases, which are rare, do better in a warm crib. Often these symptoms denote fever due to some other cause, which, being relieved, the infant is comfortable again in the

incubator. The change from the incubator to the crib must be made gradually. If the incubator is of the box pattern, the lid is removed for part of the day. If the couveuse has automatic heat regulation, this must not be done, as opening the doors disturbs the thermostat; here the infant is gradually accustomed to being outside by being kept in a warm crib or on the nurse's lap for longer and longer periods. After a while it is placed in the incubator only at night, and if it bears this treatment well, it is left in the crib entirely.

THE PARTICULAR DISEASES OF PREMATURE INFANTS

These children may have all the affections of full-term newborn infants. These illnesses are very severe, however, and the premature infant is subject to certain particular conditions.

After atelectasis, sepsis carries away most of these mites of humanity, and the nurse's main function is to guard against it at all points of entry. The entry is through the body orifices—mouth, nose, navel, especially the last—and from the gastro-intestinal tract and lungs. Infections of the navel are rare since the antiseptic treatment of the stump is practised. Infection through the lungs is not uncommon, but is hard to diagnose, as the symptoms of pneumonia are obscure. Fever is often absent and there is no cough. A fatal epidemic of bronchitis was started in an incubator nursery in Paris from one of the wet-nurses who had caught an ordinary "cold in the head." Forty children succumbed. Infection of the gastro-intestinal tract is easy to find, since there is usually diarrhea, with sharp, irritating, green, foamy, or offensive stools, and there are often fever, tympanites, and vomiting.

The infection of the digestive tract may come from the mouth, from the air in the incubator, from the food given,

from the fingers of the attendant, and from the bottles, nipples, etc., used. The importance, therefore, of absolute and constant cleanliness needs no emphasis.

The child sometimes suffers from simple indigestion. This is nearly always the case if bottle-feeding is necessary. Even with mother's milk it may occur, being due to insufficient digestive power of the tract. The little organs are not sufficiently developed. The symptoms of indigestion are vomiting, loose bowels, with curds, but with less evidence of fermentation in the stools, and progressive loss of weight. In treating these cases one must be sure that the infant is not being overfed. A small feeding is given several times to see if the stomach will tolerate it. The milk must be properly diluted. The simple addition of "peptic salt" to the milk will often correct the condition. Peptic salt is made by mixing 1 part of finest table-salt with 9 parts of best scale pepsin: $\frac{1}{4}$ grain is given with each feeding.

Thrush or **sprue** is commoner in premature babies than in others. It is due to uncleanliness and is preventable. The treatment recommended on page 333 is practised, but the nurse uses greater gentleness not to injure the delicate mucous membrane of the mouth.

Nasal Infection.—An affection which has been observed not infrequently at the incubator station of the Maternitè in Paris, but with which we have had no experience, is an ulcerative rhinopharyngitis due to decomposition of food which the baby regurgitates into the nares. Profuse discharge from the nose, soon becoming purulent, ulceration of the mucous membrane even to the bone, with the development of "saddle-nose" similar to that of syphilis, are reported. Sometimes this infection causes a bronchopneumonia and general sepsis. The treatment is one of local cleanliness and antisepsis, which, however, is not easy to practice.

Cyanosis.—A frequent condition is what we call "cyanotic attacks" or "blue spells." The infant suddenly ceases to breathe, turns blue, and may die unless immediate action is taken. Sometimes, however, the attack passes over and the infant regains its color, but is apparently weaker. These blue spells are due to two causes, which are directly opposite in their nature; therefore it is difficult to treat the condition. First, they are the result of weakness. Dr. O. W. Holmes says, "The little waif is too tired to pull at the twenty-four oars of respiration." The babe simply forgets to breathe. The treatment of such a case is first to relieve the collapse by artificial respiration, a hot bath, and stimulation with a little coffee, a drop of whisky, or oxygen. If the nose of the child is stopped up sufficient obstruction may result as to cause death.

Since the cause of the cyanotic attacks is exhaustion, it is important that the infant receive sufficient food and that it be assimilated. The feeding must begin right after birth; food should be given in small quantities, and then in increasing amounts as the stomach will tolerate it.

The other causes of the cyanotic attacks are overfeeding and choking. If the stomach is overdistended it interferes with the heart's action. Regurgitation of food may occur, when small particles may be caught in the trachea and strangle the infant.

To cure this condition it is simply necessary to recognize the cause. To prevent the child from choking the nurse must watch it very carefully until its actions are well known, and it must be laid gently on its right side after the feeding. The child must not be left alone for a minute. In these cases the advantages of a modern incubator are apparent, as one may keep the infant under constant observation.

Should the child be found choking, the nurse must at

once hold it up by the legs, and with the little finger, protected by gauze or a soft towel, seek to remove the obstruction from the throat. If this is not successful, the chest should be squeezed from before backward, in the manner illustrated in the section devoted to instruction for resuscitating asphyxiated babies. As a rule, these means suffice, but if they do not, the tracheal catheter must be employed to free the air-passages of obstruction. Needless to add, the accident is often fatal, owing to the delay and difficulty in dislodging particles that have once gained access into the lungs.

The most fatal complication of premature infants is **atelectasis pulmonum.** This means that the lungs of the child have not unfolded; the air, therefore, cannot get into them, and the child nearly always dies of more or less rapid asphyxia.

Infants whose lungs have not unfolded do not become red or pink, but retain a blue color. They are often called "blue babies," although this term should be reserved for infants born with heart disease. The atelectatic baby does not cry with vigor, but whines, and each expiration is attended by a grunt or a light groan. It has cyanotic attacks. Unless the child can be made to cry vigorously and naturally and the healthy pink or red be brought back to the skin, it will almost inevitably die. Gradually it becomes unconscious, and dies in spite of every attempt to restore the natural breathing.

The means employed to cure the condition are the hot bath, getting the infant to cry by spankings and rubbings or electricity, artificial respiration, even forcible attempts to inflate the lungs with a catheter in the trachea.

Convulsions in incubator babies are due to asphyxia or to indigestion, with toxemia, sepsis, and the causes acting with full-term children. (See p. 358 for details of treatment.)

In conclusion, a few words about the desirability of saving these weakling additions to society, Mothers often ask if the children will grow up to be vigorous and strong, and the question may be answered in the affirmative. Many of the children nursed in the incubator system at the Chicago Lying-in Hospital are being kept under observation, and are thriving. Older statistics tell of the successful rearing of these undeveloped children, and, to emphasize all, one may recall that Victor Hugo was a premature child, and was, in his own words, "colorless, sightless, voiceless, and so poor a weakling that all despaired of him save his mother."

CHAPTER VII

INFANT FEEDING[1]

MOTHERS' milk, first and always, is the proper food for infants. The cemeteries bear witness to the truth of this statement. There is no doubt that infants nursed at the breast have a lower mortality and resist sickness better than bottle-fed babies. One would hardly believe that a healthy woman would refuse to nurse her offspring, yet it is true now and has been for centuries. Cæsar reproached the Roman women for giving their children to mercenary nurses, and moralists of all epochs have contended against the practice. Aulius Gellius, in his *Attic Nights;* Erasmus, in his *Colloquies;* Montaigne, in his *Essays*, and many others besides physicians refer to and condemn the custom. It has been said that no man became great who was raised on the bottle.

The author is glad to bear witness that the modern woman is recognizing more and more the right of her babe to her personal care and to be nourished at her own breasts. The argument of the ancient philosophers is triumphing at last. Nowadays the mother considers it little less than a calamity when she cannot nurse her infant. Unfortunately, many women have undeveloped breasts or a gland that secretes nothing, or nipples that a child cannot grasp, or her general health is so poor—from tuberculosis, for example—that nursing is

[1] This chapter was thoroughly revised by Dr. F. X. Walls.

impossible. In these cases a wet-nurse must be employed or artificial feeding be instituted.

Contraindications to Maternal Nursing.—These are: General poor health from tuberculosis; severe anemia; advanced Bright's disease; severe epilepsy, insanity; diabetes; diseases of the breasts, as abscess and mastitis; absence of nipples; inverted nipples, and when the milk does not agree with the infant.

Honest effort should be made to get the breasts into a condition satisfactory for nursing, and patience should prevail.

If the mother cannot nurse her child, the employment of a wet-nurse should be suggested. This is usually met with great disapproval or even absolute refusal, but the nurse should aid the doctor in trying to convince the family that human milk is best for the baby. Often one will have to compromise on bottle feeding for a time to see if it agrees well, with the understanding that if the child does not thrive, a wet-nurse is to be obtained. For premature infants or those that are not flourishing on bottle feeding no compromise may be made—mothers' milk must be obtained at any expenditure of effort or money.

If the mother can nurse part of the time, it is better than nothing, and prepared milk is given to complete the feeding. Mothers' milk is a living thing, not simply nourishment, and this is the reason it cannot be successfully imitated. It contains a living ferment. The author has seen tiny infants brought to the maternity starved, weak, and faint, and after even a single nursing they have revived as if strong cordial had been administered. It is often observed that when the mother's milk does not agree with the infant, or when there is an insufficient supply during the first weeks, the conditions disappear after the mother has gotten up and out-of-

doors and has gone about her usual duties. The quality of the milk seems to alter.

Sometimes the mother's milk is too rich in fats, as evidenced by the regurgitation of heavy curds and passing of undigested movements, with colic. To remedy this let the child have ½ ounce of pure water before nursing, and reduce the time of nursing to ten minutes or less. If there is too much sugar in the milk, as shown by colic, green stools, and diarrhea, the same treatment is given.

For the first condition—excessive fats—the physician may advise the patient to live on a more vegetarian diet and drink more water. She is made to take outdoor exercise, especially walking. For the excess of sugar in the milk a reduced diet with much water will also be recommended, but the patient may have some meat. If the milk is poor in fat and proteins, as shown by chemic analysis, a full diet of meat, vegetables, and cereals will be ordered. If this does not improve the quality of the milk, the child will need additional feedings.

If the mother can give but one or two nursings a day she should be urged to do so, or if a permanent wet-nurse cannot be obtained, some poor mother might be gotten to come to the house once or twice daily to feed the infant, a sort of visiting wet-nurse, or mothers' milk might be procured from a neighboring maternity.

Obtaining Milk for Analysis.—For chemic analysis of human milk at least 2 ounces are needed. This is obtained with a breast-pump which has been previously boiled in plain water. The first milk is discarded unless the amount promises to be scanty, and the last milk—the "strippings"—is not used, as it contains too much fat. The milk is poured into a clean, dry, sterile bottle, corked (not with cotton), and sent to the labora-

tory. The best test of the quality of the milk is the condition of the child.

Substitutes for Mothers' Milk.—Of these, many are vaunted, but few even come near qualifying. Cows' milk is most generally used, modified to suit the requirements of the individual child, but goats' milk and asses' milk have also been tried, both here and abroad. In chemic composition asses' milk comes nearest the human, and in Paris, at one of the maternities, the experiment of using such milk was tried, but with indifferent success.

Cows' milk must be "modified" before it is a suitable food for an infant. The term "modified milk" means milk that is altered or changed by the addition of water, sugar, etc., and these modifications are unlimited. The principles which underlie the modification of cows' milk for infant feeding are two: First, to change the cows' milk into one resembling as closely as possible human milk, and, second, to adapt the milk to the nutritive requirements and digestive possibilities of the individual infant.

It is essential that the composition of human and cows' milk be known.

TABLE OF TWO MILKS COMPARED

	Human.	*Cows'.*
Fat	4.0 per cent.	3.5 per cent.
Protein	1.5 "	4.0 "
Sugar	7.0 "	4.3 "
Salt	0.2 "	0.7 "
Water	87.3 "	87.0 "

The chief differences in these milks, chemically considered, are in the proteins, the sugars, and the salts.

The fats are in the same proportion in the two milks, though not of the same kind. In the human milk the

fats are less acid and more easily assimilated. The protein of cows' milk is nearly three times greater than that of human milk, and is also very different in its composition, containing a larger amount of casein than human milk. The sugar in cows' milk is less than that of human milk and is of the same kind, known as lactose or milk-sugar. The salts in cows' milk are three times in excess of those of human milk, and, according to recent research, the difficulty in the digestion of cows' milk is in great part dependent upon the excess of salts and their different chemic composition.

From the foregoing it may be seen that if milk were diluted with twice as much water the proportion of protein and salts would approximate the amount found in human milk, but with this dilution of milk the fats and sugars would be greatly reduced, and it would be necessary to supply these two ingredients to have the mixture resemble human milk. This may be done by adding cream and milk-sugar to the mixture. Such a mixture as the following closely resembles human milk:

Cream	1 part.
Milk	1 "
Lactose solution (5 per cent.)	4 parts.

To render the mixture alkaline an alkali is to be added, such as lime-water, 5 per cent., or bicarbonate of soda or citrate of soda, 2 grains to 1 ounce of pure milk.

Such a food might meet the first indication in the modification of cows' milk, but it might not agree with the second. No matter how closely cows' milk is made to approach human milk, there is always a great difference between them, and the digestive peculiarities of the infant may demand special modification. In practice it is important, when giving a cows' milk mixture to a

young infant or to any child for the first time, to begin with a much weaker food than the nutritive requirements of the child would indicate, and as soon as the child's tolerance for milk will permit the strength of the formula may be cautiously increased.

The mixture, when first given to an infant, should be boiled at least three to five minutes. Boiling kills all bacteria in milk and renders it easier of digestion by making impossible the formation of large curds in the baby's bowels. No attention need be paid to the reputed constipative effect of boiling milk.

There exist in most large cities laboratories for the modification of milk, of which the Walker-Gordon laboratory is a type. This laboratory bears the same relation to the physician regarding the infant's food as does the pharmacy regarding drugs. The physician writes a prescription calling for milk having certain percentages of fat, sugar, and proteins, stating the amount of each feeding and the number. The laboratory prepares, or modifies, the milk exactly according to the prescription and sends the bottles neatly sealed, in a special basket, to the patient's house. A sample prescription is here given:

℞. For Baby Johnson,
1200 Calumet Avenue.

Fat	3.0 per cent.
Sugar	6.0 "
Proteins	1.0 "
Alkalinity	5.0 "

Heat at 155° F.
Number of feedings, 7.
Amount at each feeding, 4 ounces.
June 1, 1913.

John Smith, M. D.

In the absence of a milk laboratory, or where this is prohibited on account of expense or by preference, the nurse may modify cows' milk at home with just as good success. The laboratory is convenient, but not necessary.

In practice she will need cream, milk, milk-sugar or maltose, sterile water, and sodium citrate (Fig. 199).

Bottled milk is most convenient to use for this purpose. In cities bottled milk is always obtainable. Bottled cream of a fairly constant percentage—about 16 per cent.—is also sold. In the country and in towns freshly skimmed milk may be used as fat-free milk, and the skimmed cream for the cream dilutions, as it contains about 16 per cent. of fat. If one has bottled milk, it is best to use it for all the modifications unless the exact percentage of fat in delivered cream is known.

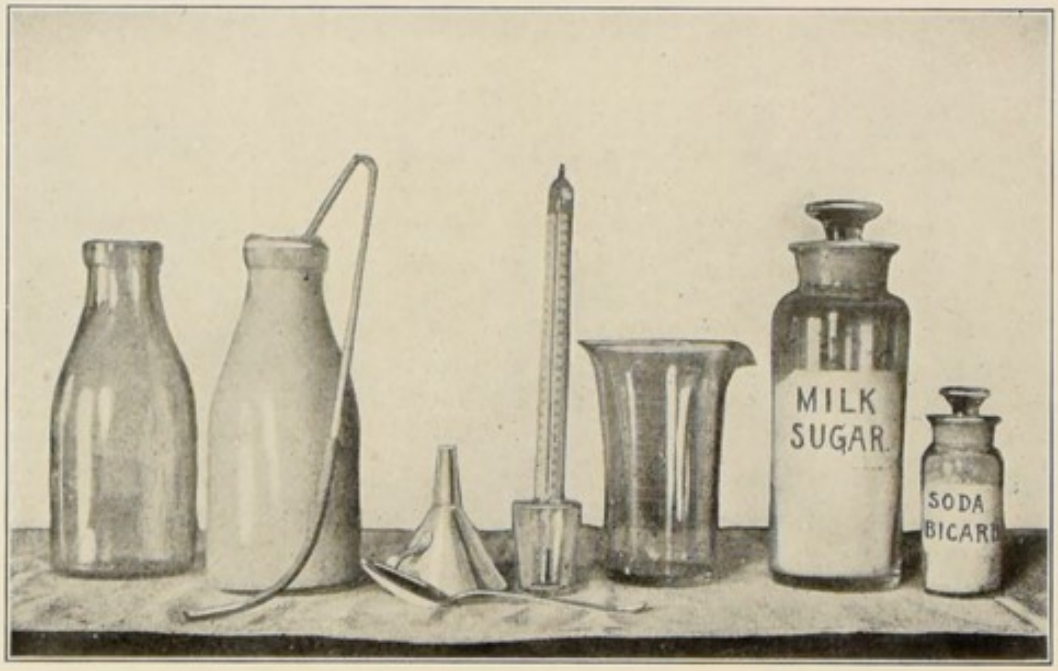


Fig. 199.—Apparatus required for milk modification.

The cream is obtained from the top of quart bottles of milk that have stood for eight hours. The upper 6 ounces contain about 16 per cent. of cream. Milk is obtained from the bottom of the same bottle. The lower 8 ounces are used as fat-free milk, being almost free from cream, and this milk furnishes a part of the proteins for the finished product. It must be remembered that cream or upper milk contains almost as much proteins as the whole milk—that is, 4 per cent. The "upper" and "lower" milk can be obtained by siphon-

age. A drinking-tube is bent V shaped, so that one limb is 4 inches and the other $8\frac{1}{4}$ inches long. A piece of rubber tubing 8 inches long is also provided. To obtain the cream or "upper milk," the rubber tube is

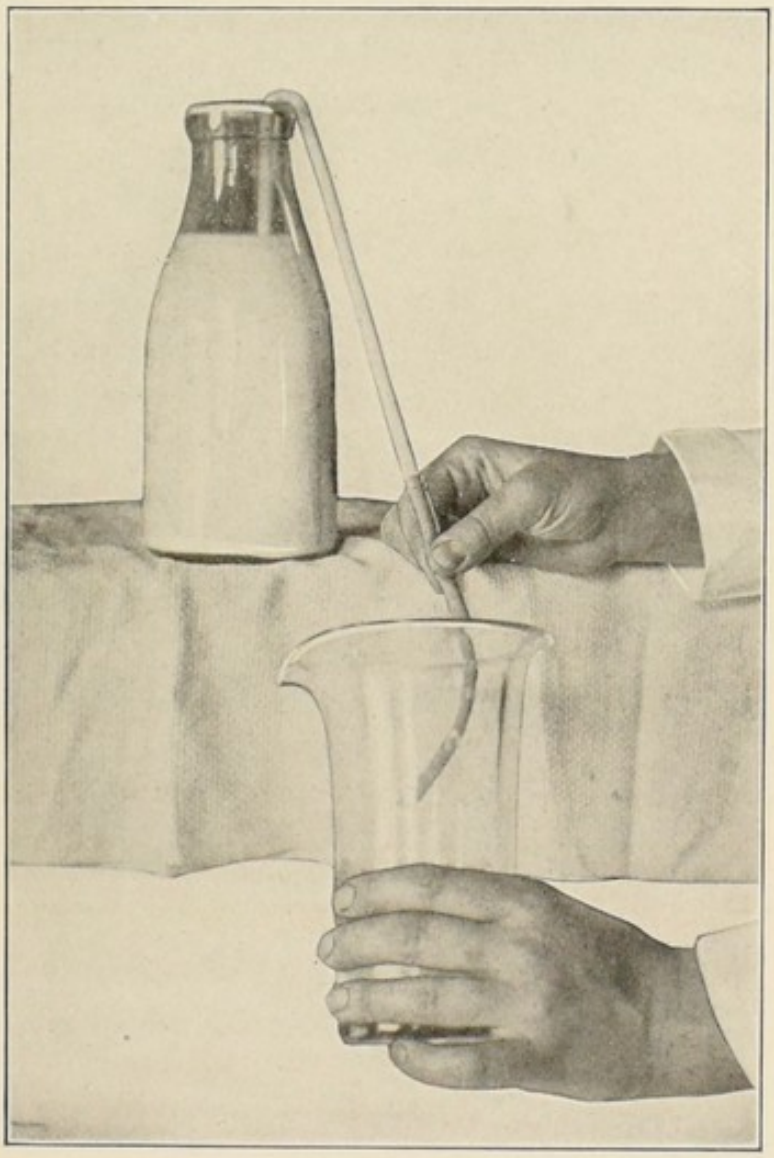


Fig. 200.—The milk siphon in action.

fastened on the long arm of the V-tube, the tube is then filled with sterile water, and the rubber clamped with the fingers. The short end is immersed in the bottle, and the cream will flow over into a graduate held underneath (Fig. 200).

To obtain the "under milk" the same tube is used, but the piece of rubber tubing is attached to the shorter limb. The tube is filled with sterile water, the end of the rubber tube is clamped by the fingers, and the long glass end is put in the bottle. Its lower opening will come close to the bottom of the bottle and fat-free milk will siphon over into the graduate. One may pour off the cream from the top of the milk, or one may dip it out with a special little dipper, but with a little practice the nurse will become dextrous with the siphon, and it is the best and cleanest way. Two of the ingredients for modified milk are now at hand—16 per cent. cream and fat-free milk As a diluent boiled water is used, though sometimes other liquids, as barley-water or oatmeal-gruel, may be preferred. Milk-sugar may be weighed or measured out in the powder. If maltose is preferred, it is obtained in one of the malted milk foods or dextri-maltose.

In practice the nurse dissolves the sugar in sterile water, adds the soda, and filters the solution through sterile absorbent cotton if it is not clear. Now the required amounts of milk and cream are added, the whole poured into the thoroughly cleansed bottles, stoppered securely, sterilized, and set away in the ice-box.

Amount of Food at a Feeding.—The amount of food will vary according to the age and individuality of the infant. A general rule might be stated, that the amount of food in twenty-four hours should equal one-sixth to one-eighth of the baby's weight. If a baby weighed 12 pounds, the amount in twenty-four hours would be between 24 and 32 ounces. In the first six months the babe might have at each feeding an amount in ounces equal to its age in months plus one.

The interval between feedings should be of such length as will permit ample time for digestion. A four-

hour interval during the first year, even from birth, is the optimum period. Many children need food oftener, therefore in practice they are fed every three hours, which is the minimum period that food should be given to a normal baby. The infant should be allowed from ten to twenty minutes to take his bottle. If the food is taken too hurriedly, indigestion may result, and if too long a time is occupied with the bottle, the interval between the feedings is encroached on.

The table presented here is for an average infant. A small infant will require less; a large one, more. The frequency of the feedings will correspond with that of the usual nursings.

Period of life.	Number of feedings.	Hours between feedings.	Night feedings.	Amount of each feeding.	Total for twenty-four hours.
3d to 7th day.....	7	3	1	1½–2 oz.	10–15 oz.
2d and 3d weeks..	7	3	1	2 –3½ oz.	15–22 oz.
4th and 5th weeks	6	3½	0	3½–4 oz.	20–24 oz.
6th week to 3d month.....	5	4	0	4 –5 oz.	24–32 oz.
3d to 6th month...	5	4	0	5 –7 oz.	30–35 oz.
6th to 9th month .	5	4	0	6½–8 oz.	32–40 oz.
9th to 12th month.	5	4	0	7 –9 oz.	35–45 oz.

For feeding infants during the first four weeks the following formulas may be used:

Sample Formulas

Formula No. I—Useful from the third day to end of second week:

The nurse will take		Approximate percentages.	
Cream (16 per cent.).....	2 ounces.	Fat.....2.0	per cent.
Milk.....	None.	Proteins.....0.5	"
Lactose (milk-sugar).....	5 drams.	Sugar.....5.0	"
Sodium citrate.....	4 grains or 7 drams of lime-water.		
Sterilized water to make...14 ounces.			
Divide into seven feedings, 2 ounces each.			

SAMPLE FORMULAS

Formula No. II—For use in the third week:

The nurse will take		Approximate percentages.	
Cream (16 per cent.)	3½ ounces.	Fat	2.5 per cent.
Milk	None.	Proteins	0.6 "
Sugar (lactose)	1 ounce.	Sugar	5.5 "
Sodium citrate	7 grains or 10 drams of lime-water		

Sterilized water to make...20 ounces.
Divide into seven feedings, 3 ounces each.

Formula No. III—For use in the fourth week:

The nurse will take		Approximate percentages.	
Cream (16 per cent.)	4 ounces.	Fat	3.0 per cent.
Milk	1 ounce.	Protein	1.0 "
Sugar (lactose)	1 "	Sugar	6.0 "
Sodium citrate	10 grains or 20 drams of lime-water.		

Sterilized water to make...21 ounces.
Divide into six feedings, 3½ ounces each.

The Caloric Method.—Experiments have proved the infant's stomach requires three to four hours for the digestion of a feeding, which is more time than is usually allowed.

It has been found that the indigestion usually laid at the door of the proteins is often due to too much fat, and the troubles ceased when whole milk was substituted for cream in the feeding mixtures.

Overfeeding, as to time, amount, and concentration, has been oftener recognized as the cause of trouble than underfeeding.

Thus the need has been felt for some check on the amount of food which the infant should receive, and Heubner, of Berlin, has suggested the caloric method. The calorie, or heat-unit, is the amount of heat required to raise the temperature of a kilogram of water 1° C. In the human these heat-units or calories are derived from the food.

An infant before the sixth month requires not more

than 45 calories per pound of weight daily, therefore a child of 10 pounds would require 450 calories in its daily food. About 30 calories per pound are used for supplying heat and energy, the balance being used for regeneration of tissue and to provide for growth.

1 gram of fat contains 9.1 calories.
1 " protein contains 4.3 calories.
1 " carbohydrate contains 4.3 calories.
1 ounce of cream (16 per cent.) contains 54 calories.
1 " milk (4 per cent.) contains 21 calories.
1 " skimmed milk contains 10 calories.
1 " whey contains 7 calories.
1 " sugar contains 120 calories.
1 " malt contains 100 calories.
1 " flour (barley, wheaten) contains 100 calories.
1 " most proprietary foods contains 100 calories.

By multiplying the number of ounces of these ingredients in the total daily amount of food by their caloric equivalent we obtain the total calories ingested, and may decide if the infant is obtaining too much food.

Filling the Bottles.—Smooth, round bottles are preferred for nursing (Fig. 201). They are thoroughly rinsed with water and cleaned out with a brush and soda if there is any scum on the glass. Then the bottles and a funnel for filling are sterilized. For convenience, the feeding bottles, funnel, siphon, graduate, and mixing bottle are all sterilized at once at the beginning of the preparation of the infant's food for the day. An Arnold sterilizer is very good for this purpose. The siphon and tube should be rinsed clear after each using. If a scum settles on the glass, a few drops of nitric acid will dissolve it. The bottles are filled with the required amount of modified milk, stoppered with plugs of non-absorbent cotton, and sterilized.

Sterilization of Milk.—Heating milk to the boiling-point (212° F.) renders it easy of digestion Some pediatrists prefer to heat the milk only to 155° F. This

has been found to render the milk sufficiently sterile, and does not alter its taste. The process is called pasteurization, after the inventor, Pasteur. A special pasteurizer is, of course, desirable, but the nurse can do very well, with a little more trouble, by using a tin pail large enough to hold the seven bottles and tall enough to allow the lid to be adjusted.

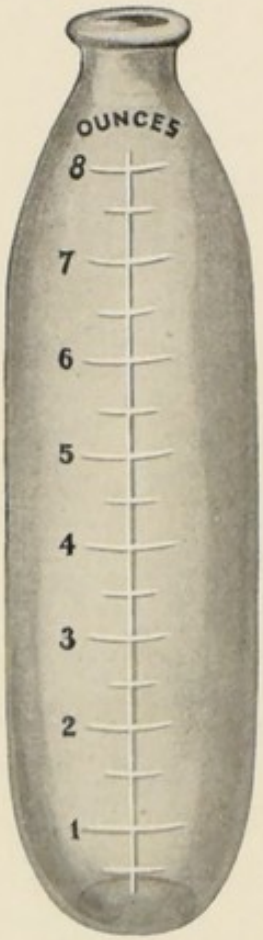


Fig. 201.—A hygienic nursing bottle.

A thick towel is laid at the bottom of the pail, the bottles set on it, the pail three-quarters filled with cold water, and quickly brought to a boil. Just before the water begins to boil the pail is removed from the stove and set in a cool place When cooled, the bottles are placed on ice (Fig. 202). The nurse may, also, bring the water up to 155° F., as shown by the thermometer, and hold it at this temperature for fifteen minutes.

Before feeding, the milk is heated to 95° F., a plain, freshly boiled rubber nipple is used, and the baby fed by hand. It is a bad practice to adjust the bottle so the infant can feed itself. The child loses the nipple or sucks air, or the milk flows around its neck, wetting the dress and bed and causing colds.

Milk not drunk at the nursing is to be thrown away. After nursing, the bottle and nipple are thoroughly rinsed inside and out and set aside in a clean place for sterilization. Milk must not be kept in a vacuum bottle, warm, ready for night feedings.

Quality of the Milk.—Milk from a herd of cows, or "mixed milk," is better than "one cow's milk," as the variations of the constituents are not so great Milk

from the fancy breeds of cows should not be chosen. Experience has shown that the hardy breeds, Durham, Ayrshire, and Holstein, give the best milk for babies.

In cities to which milk has to be transported from long distances pasteurization or sterilization is usually necessary, and always in summer. If the milk is obtained under aseptic precautions, as do the Walker-Gordon companies, the "certified milk" firms, and a few others, raw milk may often be used, though the author prefers

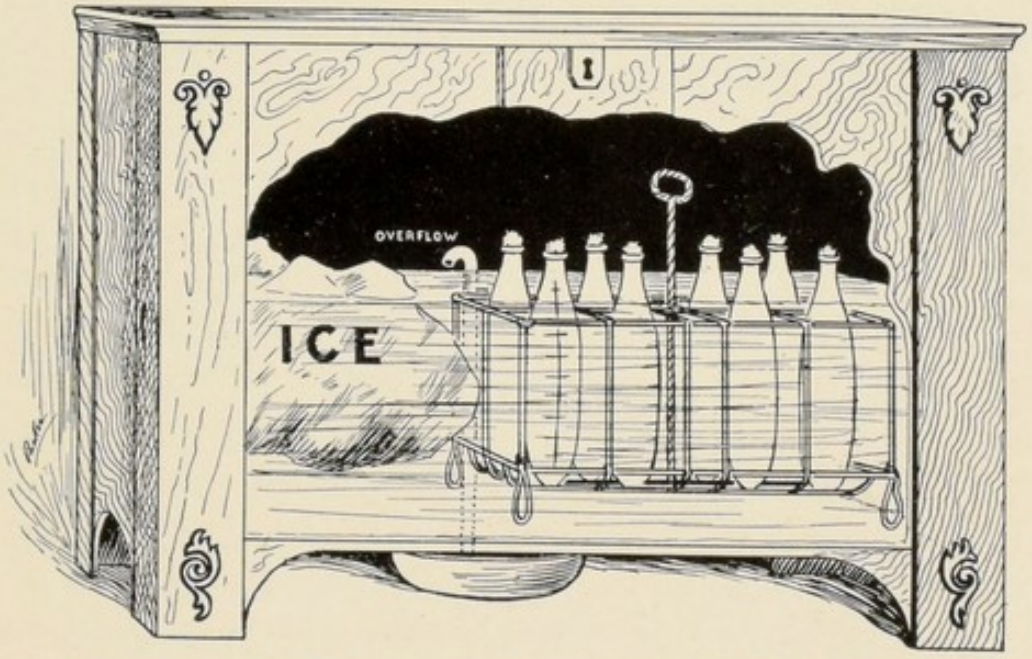


Fig. 202.—Old-fashioned ice-box with milk rack standing in ice-water.

to sterilize it in addition. "Certified milk" is a milk that comes from disease-free cattle that are properly fed and pastured, hygienically stabled and groomed before milking; a milk that is received in sterile cans through a gauze and absorbent cotton filter, quickly cooled to a temperature below 40° F. and kept at this temperature till it reaches the consumer, a period which should not exceed twenty-four hours.

For the methods of modification recommended in this chapter milk bottled on the farm is necessary.

Where bottled milk is not procurable, skimmed milk may be used for the "lower milk" and the cream that has been skimmed off used for the "upper milk." The nurse must be sure that the milk is fresh, that it is not contaminated by standing uncovered, or by being left in a refrigerator together with decaying vegetables or meat. Milk attracts the odors of other things in the refrigerator and acquires a foreign taste. A special little refrigerator ought to be used for the milk, and the bottles, if they are kept at a low temperature, should be immersed up to their necks in ice-water. Before a bottle is opened the outside should be carefully cleansed. Absolute asepsis must prevail in the handling and the modification of milk. A slight browning of the milk, heated with lime-water, is due to caramel.

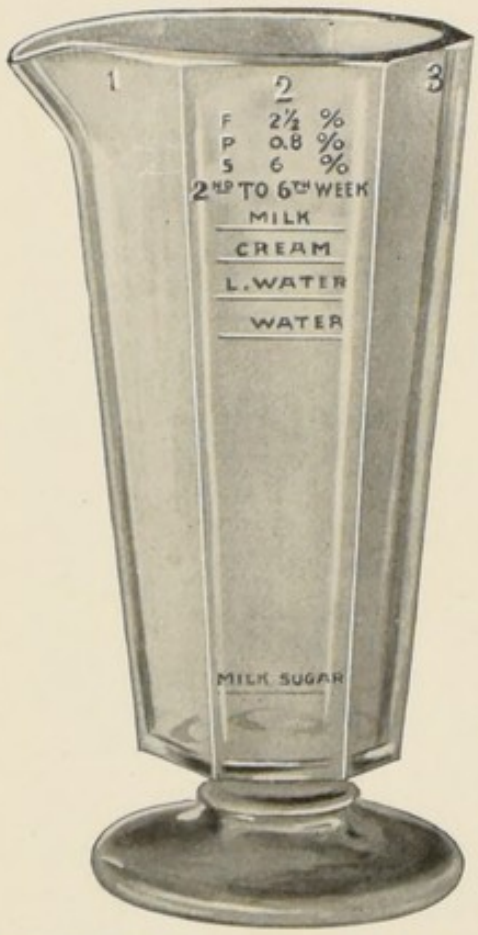


Fig. 203.—The "Materna" glass.

A convenient method for the home modification of milk is the "materna" glass (Fig. 203). This is a large paneled graduate with the amounts of the various ingredients needed for modifying milk to suit the different periods of infancy stamped in the glass on each of six panels.

Whey.—If the "lower milk" is coagulated with rennet or junket tablets or essence of pepsin and the curd strained off, the liquid remaining is the whey. To make whey, the nurse takes 1 pint of milk at body temperature

and adds ½ grain of rennet or one-half a junket tablet, dissolved in a little water. In thirty minutes the curd has formed. The mixture is strained through a napkin without too firm pressure, and then placed on ice. If it is to be added to cream, the whey must first be heated to 155° F. for ten minutes, or the cream will curdle.

Whey is a valuable food, especially in weak, premature infants, and in cases of indigestion, where human milk cannot be obtained. It contains 0.5 to 1 per cent. of proteins, 4 per cent. of sugar, and 0 to 1 per cent. of fat. It may be used instead of skimmed milk, and may be added to the various modifications given in this chapter. It will often be borne by weak stomachs when nothing else agrees. The reason for this lies in the fact that the proteins of whey are more digestible and resemble more the proteins of human milk.

Peptonized milk is sometimes used for a limited period. (See Dietary, p. 456.)

Barley-water.—Notwithstanding the theory that very young infants do not digest starches, the writer has found that many of them will exist on barley-water for several days and that digestive disturbances will subside under its use. It is also useful as a diluent instead of boiled water, and may increase the digestibility of cows' milk.

Barley-water is prepared as follows: Two tablespoonfuls of pearl barley are washed, then soaked in water for three hours or more. This water is decanted, and 1 quart of fresh water added. The mixture is allowed to boil two hours, adding water to keep up the amount—1 quart. Strain through fine cheese-cloth. A pinch of salt may be added Keep on ice.

A quicker method is practised by means of Robinson's barley flour. Twelve ounces of water are slowly stirred into an even tablespoonful of the flour in a bowl. The

mixture is then boiled fifteen minutes and strained as before.

Oatmeal-water is prepared as is barley-water. This is used where the child is costive. If diarrhea exists, barley- or rice-water is preferred.

Beef-juice.—Even very young infants may need a preparation of beef, although the occasion is rare. Beef-juice is best prepared by lightly broiling a piece of lean, tender steak and pressing out the juice with a meat-press or lemon-squeezer. A little salt is added, the required amount taken, and the balance immediately put on ice.

The Cold Method.—Meat is chopped fine, put in a Mason jar, and water (one-quarter by bulk) is added. The mixture is allowed to stand for one-half hour and then squeezed through a meat-press. Sometimes a few drops of hydrochloric acid are added or a pinch of salt.

Beef-juice may be added to modified milk, to barley-water, or given plain, well diluted.

Extract of beef is useless for infant feeding. Commercial preparations of beef—as peptonoids, beef-jelly, etc.—are seldom, if ever, needed. The writer believes that fresh meat-juice prepared at home is better than preserved stuffs.

Artificial Infant Foods.—Of these, there are a host of advertised preparations, including condensed milk. The nurse will not be called upon to recommend any given brand of food. In spite of the beautiful pictures in the advertising columns of magazines, these foods are generally harmful when used without medical supervision. The physician may prescribe this or that food when he sees that the child requires the ingredients the given food possesses, but the nurse is not expected to do this. There is no doubt that rickets,

scurvy, and other constitutional diseases and weaknesses are traceable to proprietary foods. Babies that are fat from these foods are usually not healthy babies.

Proprietary foods may be used to help out the breast nursing, to provide starch for modified milk when this is desired, when the child is weaned, and for temporary feeding at other times, all of which are decisions to be made by the medical adviser.



APPENDIX

VISITING NURSING IN OBSTETRIC PRACTICE

In many large cities eleemosynary visiting nurses' associations provide for the home care of poor women who cannot leave their families to go to a maternity for confinement. This is really a great boon for poor women, and is a long step in the direction of good obstetrics.

Care During Labor Among the Destitute.—It would seem impossible to obtain anything like aseptic results in the hovels and the country huts in which many children are born, yet, with a little trouble, by simplifying the methods, one may do as successful work in such practice as in the best maternity. This is proved by the record of the Chicago Lying-in Hospital and Dispensary, where, out of 16,000 consecutive labor cases treated exclusively by the officers of the institution in the houses of the poorest of Chicago, only 3 women have died from puerperal infection.

If visiting nurses are to help poor women at the time of labor it is necessary to provide certain aids for good work, though one can improvise everything but soap and water. The things requisite are taken to the case in a large satchel. Figure 204 shows the contents of the one used in the service of the Chicago Lying-in Hospital and Dispensary.

List of Articles in Labor Satchel

One pair rubber gloves.
One pair leggings.
One jar sterile cotton pledgets.
One jar sterile pads, and cord dressing.
Three small milk pans of graniteware.
Two brushes, one box green soap.
Two towels.
One newspaper.
One ounce fluidextract of ergot.



Fig. 204.—The labor satchel, and its contents.

One bottle boric acid solution.
One bottle lysol.
One bottle bichlorid tablets.
One bottle tape for cord (sterile).
One bottle 1 per cent. nitrate of silver, with medicine-dropper.
One pair scissors.
One artery forceps.
One baby scale.
One measuring tape.
One pelvimeter.

BRITISH MUSEUM

One tracheal catheter.

One sterile soft-rubber catheter.

One douche-can with tube and point (sterile).

One labor record, one birth return, one visiting nurse's record.

On arrival at the parturient's house, the patient is prepared by giving an enema, then shaving the pudendal hair, thorough scrubbing with soap and water from ensiform to knees, followed by a wash with 1 : 1000 bichlorid. A clean nightdress and wrapper are put on the patient and the bed prepared with clean sheets if obtainable. If not, the bed is spread with clean newspapers. The accumulated litter is removed from the bed and room, also all unnecessary furniture, bedding, children, dogs, etc.

Provision is made for good light and also a supply of *clean* newspapers. These are used under the patient during delivery, over tables, chairs carrying the solution basins, and, in the absence of sheets, may be placed over the patient to protect her from the dirty comforters or blankets often supplied. If there is time the papers are sterilized by baking.

The patient is delivered on the side, because this carries the pudenda well out of the bed, which is likely to sag deeply. The whole secret of doing aseptic obstetrics in a city hovel or country hut is to bear in mind that only the small cleansed area of the vulva is sterile, and everything else in the environment is infected. If everything that comes in contact with the vagina and this small sterilized area is aseptic (*e. g.*, hands, sponges, instruments), the woman will not be infected.

When the child is born it is laid in a clean towel, and after the cord is cut the stump is dressed antiseptically. The babe is oiled, not bathed, and wiped dry with a clean towel. It is then placed safely near the stove.

The placenta is received in a scalded plate or a folded

newspaper, the edge of which has been wet with bichlorid, or in a sterile basin if obtainable.

After delivery a clean newspaper covered with a towel is placed under the patient, or the bed is dressed with clean linen. A roller towel is applied for the binder.

Duties During the Puerperium.—The nurse visits the puerpera each morning, and spends one-half to one hour with her and the baby.

Duties at Each Visit.—The infant is to be dressed first. A full bath or inunction is given, the navel is dressed aseptically, and the rules given under sections on Care of Child carried out as fully as possible. Until the umbilicus is healed the child is not to have a full bath, because the bath-tub in such practice is anything but aseptic. Occasionally a tin dish-pan makes the best bath-tub for later use. The eyelids are cleansed with plain water, the diaper is changed, and the infant left in as comfortable a place as the house affords, away from drafty cracks or windows, secure from the attacks of flies, mosquitoes, vermin, and other household pests. The infants in this field of practice suffer much from bowel disorders, which are due to improper feeding, too frequent nursing, errors of diet of the mother, the administration of all sorts of teas, as saffron tea for jaundice, camomile, fennel tea, etc. Direct infection of the intestinal tract is encouraged by dirty bottles, nipples or fingers, flies, etc. The nurse should admonish and instruct the mother regarding these dangers and the manner of avoiding them, though her efforts may not have the desired success through the ignorance, not the unwillingness, of the people. Infants under these circumstances suffer much from skin eruptions, which are due to insects, filth, coarse and cheaply dyed garments, impure soap or oil used for inunction, wrapping the babe too warmly, and the general unhygienic surroundings.

Under such discouraging conditions it is remarkable and commendable that anything like success in treatment can be obtained, but an intelligent nurse interested in her work can really do wonders. The writer has seen evidences of this on many sides in his institutional practice.

The nurse each day takes the child's temperature and records it, with any unusual symptoms, on the record-sheet (Fig. 205).

THE CHICAGO LYING-IN HOSPITAL
AND DISPENSARY

Main Office at Hospital, 294 Ashland Boulevard

Telephone Nearest 454

NURSE'S RECORD—CHILD

Name of Patient.....Address.....Appl. No.....

Date.....A. M. / P. M.....Day. Temp.....Pulse.....Resp.....Signature.....

Stools.....Urine.....

Sleep.....Nursing.....Cry.....

Eyes.....Umbilicus.....Skin.....

Treatment.....

Date.....A. M. / P. M.....Day. Temp.....Pulse.....Resp.....Signature.....

Stools.....Urine.....

Sleep.....Nursing.....Cry.....

Eyes.....Umbilicus.....Skin.....

Treatment.....

Date.....A. M. / P. M.....Day. Temp.....Pulse.....Resp.....Signature.....

Stools.....Urine.....

Sleep.....Nursing.....Cry.....

Eyes.....Umbilicus.....Skin.....

Treatment.....

Fig. 205.—Child's record-sheet for visiting nurse ($\frac{1}{4}$ size).

After the infant has been attended to, the nurse gives the mother some care. A full bath every fourth day and daily washings of face, hands, and axillæ are sufficient. The breasts are dressed, using boric acid solution and sterile pledgets, and the binder applied. The binder may be improvised out of a roller towel. The genitals are washed with 1 per cent. lysol solution and a fresh pad adjusted. Another roller towel makes an abdominal

binder. A clean nightdress and combing the hair complete the toilet.

It is unnecessary to say that when dressing the navel of the infant, the breasts, and the genitals of the mother the nurse should scrub her hands with green soap and water and sterilize them in lysol or bichlorid solution. If the visiting nurse must do other work besides obstetric,

THE CHICAGO LYING-IN HOSPITAL
AND DISPENSARY

Main Office at Hospital, 294 Ashland Boulevard

Telephone Monroe 434.

VISITING NURSE'S RECORD—MOTHER

Name of Patient ..... Address ..... Appl. No. .....

Date ..... A. M. / P. M. ..... Day. Temp. ..... Pulse ..... Resp. ..... Signature .....

Bowels ..... Bladder ..... General Condition .....

Breasts ..... Nipples ..... Milk .....

Uterus (*height above pubis*) ..... Tenderness ..... Lochia .....

Treatment .....

Date ..... A. M. / P. M. ..... Day. Temp. ..... Pulse ..... Resp. ..... Signature .....

Bowels ..... Bladder ..... General Condition .....

Breasts ..... Nipples ..... Milk .....

Uterus (*height above pubis*) ..... Tenderness ..... Lochia .....

Treatment .....

Date ..... A. M. / P. M. ..... Day. Temp. ..... Pulse ..... Resp. ..... Signature .....

Bowels ..... Bladder ..... General Condition .....

Breasts ..... Nipples ..... Milk .....

Uterus (*height above pubis*) ..... Tenderness ..... Lochia .....

Treatment .....

Fig. 206.—Mother's record-sheet for visiting nurse (¼ size).

such as dressing ulcers, abscesses, attending pneumonia cases, the precautions she is required to take are much more rigorous. It would be better if the duties could be dissociated.

The obstetric work must be done first in the morning; the nurse should wash her hands with especial care before touching aseptic things and wounds (the navel, breasts, and genitals), and she should sterilize her hands each

time after touching an infected case. The use of rubber gloves will spare the skin many of the discomforts caused by frequent sterilizations and corroding antiseptics. Rubber gloves find their greatest usefulness in district nursing.

After dressing the patient, the bed is made as nicely as possible with the linen available, and the patient's temperature and pulse taken and recorded, together with such other items of interest as the nurse may discover. The nurse also records what services she rendered and the length of time of the visit (Fig. 206). She secures suffi-

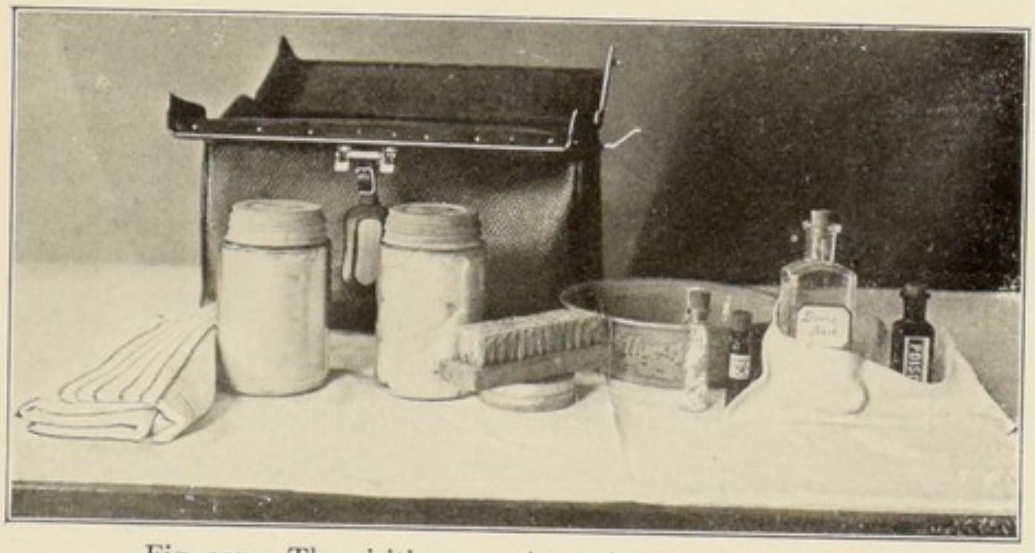


Fig. 207.—The visiting nurse's satchel and its contents.

cient ventilation in the lying-in room, if this is possible, and sees that the litter and accumulated rubbish are removed. She instructs the patient and the family as to the importance of cleanliness in these cases, and tries to obtain for the patient as comfortable and undisturbed a puerperium as the circumstances will permit.

If an enema is to be given, the nurse attends to this, or instructs some member of the family to do it. If there are sutures in the perineum, the nurse had better give it herself.

In order to do this work well, the articles needed

should be taken by the nurse to the case. Fig. 207 shows such an outfit, being the one used by the nurses of the Chicago Lying-in Hospital.

LIST OF ARTICLES IN POSTPARTUM VISITING BAG

One brush and one tin box green soap.
One pan for hand solution.
One jar of cotton or gauze pledgets.
One jar of vulval and umbilical pads.
One towel for nurse's hands.
One bottle of saturated solution of boric acid.
One bottle of sterile bobbin for retying cord if necessary.
One bottle of bichlorid tablets labeled "Poison."
One bottle of lysol labeled "Poison."
(All poisons are kept in brown bottles and plainly labeled.)
Extra history-sheets.

Visiting nursing is becoming more and more in demand by people in moderate circumstances; they are unable to employ a trained nurse, but, by having skilled service for the morning attentions, they manage to do very well the rest of the day with what help the family may render.

This is a very good plan from very many points of view. For the patient, it provides good scientific care; for the doctor, a security from uncleanly interference in his work, and it opens up a field of nursing to which those nurses who cannot stand the strain of continual service, night and day, may go. The plan is simple, the nurse going to the house in the morning and rendering such attentions as the case demands. Naturally, she will find more favorable surroundings and more things to work with than in the eleemosynary practice just referred to.

HOSPITAL *vs.* HOME NURSING

One would think that hospital and home nursing are identical, and so they are in principle, but they differ much in practice. The methods described in this book apply equally as well to hospital as to home practice. The same diligent and consistent antisepsis must be practised in the home as in the hospital. Statistics prove conclusively that more women die from infection at home than in the maternities. While formerly the maternity was a dreadful place, with a mortality of 10 per cent. or more, now a well-conducted lying-in hospital is the safest refuge for the parturient woman.

The dangers of infection are here known and avoided, while in the home the attendants work in fancied security. Some lying-in hospitals have no mortality from infection year after year. The methods of sterilization practised in hospitals and at home will be considered in the next chapter; here need be emphasized only the danger of carrying infection from one patient to another in hospitals.

Ward Care.—A large number of puerperæ should not be put in one ward, five beds being considered enough, even with free ventilation. The nurse should remember that even a healthy puerpera may infect the one in the next bed. This, of course, is especially likely if a puerpera is not well—has fever or fetid lochia. The nurse, therefore, between dressings must sterilize her hands and provide fresh antiseptic solutions and pledgets.

Should any patient have an odor to the lochia, if the vulva becomes swollen, or little gray patches appear, and especially if the puerpera begins to be feverish, the nurse must immediately notify the head nurse on the floor, who will notify the physician. The nurse at once adopts extra precautions until the patient is ordered isolated.

These are: Setting aside special basins, pitcher, and bed-pan for the use of the suspected case, and the wearing of rubber gloves when dressing her. These gloves are to be sterilized after each dressing Pads from the vulva must not be touched by the fingers, but are to be handled with dressing forceps and burnt at once. Indeed, the entire dressing may be made by means of the forceps. It is convenient to throw all pads, etc., into large paper bags or wrap them in newspapers (see Fig. 151). The bed linen is soaked one hour in 3 per cent. carbolic solution before being sent to the laundry. In this manner the spread of infection may be prevented. If, in hospital work, infection is carried from one patient to another, it is a lasting disgrace.

In the nursery the same diligent watchfulness is required to prevent infection of the eyes, mouth, navel, and intestinal canal from being carried from one baby to another. The nurse, therefore, looks for the first signs of ophthalmia, for the first spot of thrush on the tongue or gums, for the first irritation around the navel, and for the first evidence of intestinal disorder in the bowel movements. If an infant presents evidences of a beginning conjunctivitis or any other infection, it must be isolated at once and the head nurse notified.

Dresses and linen from the infant are to be soaked an hour in a 3 per cent. carbolic acid solution before being sent to the laundry; the nurse provides completely *separate utensils* for it, and does not touch any of the other children in the nursery before she has carefully disinfected her hands. As soon as the nature of the case is fully declared, the physician will give instructions regarding the further treatment.

It is hardly less of a disgrace than carrying infection, if in a nursery ophthalmia is carried from one child to another, if thrush attacks the mouths of several babies,

if a navel infection appears, or if an epidemic of intestinal disorder sickens a number of the children. Epidemics of thrush in lying-in hospitals are due to errors in sterilizing the nursing-bottles and nipples, letting several children use, without boiling, the same nipple, and carrying the infection from one mouth to another on the finger. These same causes obtain for intestinal infection. Epidemics of umbilical infection are very rare, and are always proof of grossest carelessness somewhere. An epidemic of pneumonia may start from a "cold in the head."

While there is danger of the communication of infection through the air, contact, direct or indirect, is responsible for the largest number of cases.

Recording of Symptoms.—The hospital nurse should remember to record and report to her senior every unusual symptom observed in either mother or babe. Now her duty is ended, and any oversight will not be laid at her door.

In general, the nurse should carefully and neatly chart the usual entries, as pulse, temperature, and respiration, and all unusual occurrences. A neat, accurate, and complete history-sheet is an indication of a good nurse.

Prevention of Accidents.—Every year the author hears of an accident occurring in a hospital, such as burns with hot-water bottles, overdose of medicine, bichlorid poisoning from douches, etc. Ordinarily, physicians recommend the hospital with considerable confidence, but the frequency of such accidents will do much to destroy this feeling.

Can they be prevented? Yes, in almost every case. Once in a while a combination of circumstances will occur that no human mind could foresee, but this is rare. Usually, some one has blundered, and, in the author's experience, carelessness, thoughtlessness, and

a slipshod method of work are more often to blame than ignorance. While in an institution every one is expected to do his whole duty and do it well, and do it well all the time, the nurse cannot rely implicitly on every one else, but must use her own judgment to see if those things concerning her and her work are done right. For example, if the night nurse makes carbolic solution and the day nurse sees pure acid floating at the bottom of the bottle, she will not use it for fear of burning the patient. If another nurse fills a hot-water bottle for her, she should herself test its heat before applying it to the patient.

Too much caution cannot be enjoined regarding the use of poisons. A nurse should not administer a poison unless she knows its nature, its physiologic action, and its dosage. Not knowing any one of the three, she should inform herself at the earliest moment. To avoid administering poison by mistake all bottles containing it should be of colored glass, or special poison bottles are to be used; they should be plainly labeled "poison," and the nurse should read the label once before and once after measuring off the required amount.

Orders.—A continued order is one that is kept up day after day. As such orders are often copied from one history-sheet to another, or from one medicine-slip to another, the nurse must be accurate in carrying them over. Should she notice an error, or what seems to be an error, in the copying, she should consult the head nurse before administering the dose. In hospitals continued orders are liable to be carried longer than really necessary, and in such cases the nurse is justified in asking the physician if she should continue this or that medicine.

The nurse should not accept verbal orders, but should hand the history-sheet or order book to the physician for

his entry. If the order is given by telephone she should enter it "Verbal Order, Dr. X.," giving exact time.

Relations to the Patient.—Most people dread even the word hospital, and this dread is not unfounded. If the word "hospital" could be made identical in meaning with the word "home," this dread would vanish. It is the hospital nurse's duty to make each patient feel as if she was in her own home. It is pleasantly surprising how much can be done in this direction if only the will is there. An obstetric case is more than a medical case, and, in addition to aseptic and skilful nursing, the expectant mother requires womanly sympathy. She must not be treated as "material." A hospital can be decorated and furnished very much like a home without straining the requirements of asepsis; if hospital authorities would appreciate this fact, the modern movement in favor of hospitals for the sick would receive remarkable impetus. But, finally, it is the nurse—the personality of the nurse—that makes the atmosphere around the institution, just as it is the spirit of the hostess that breathes in every object about the home.

Economy.—The hospital nurse—and the hospital doctor—must often be accused of wastefulness. Most hospitals are supported either wholly or in part by money contributed by the charitably inclined. It often requires the most strenuous efforts of a large board of managers to raise funds sufficient to meet current expenses and to provide the improvements needed. The public has a right to demand that hospital authorities expend the money intrusted to them in the most economic manner, so that the largest number may receive the benefit. Wilfully or thoughtlessly to increase the cost of conducting an institution is to limit the institution's power of doing good, and some one will suffer. Further, some one will have to give the money to make up the loss caused

by wastefulness. Wilful wastefulness is, therefore, very close to stealing.

The nurse who is extravagant with linen throws unnecessary work on the laundry. If foods are allowed to spoil, the culinary department shows a needless deficit. If gauzes, sponges, and dressings are wasted, the medical supply bills become too large. All these drains together make a burden which might prove too much for the institution. "Little wastes in great establishments, constantly occurring, may defeat the energies of a mighty capital" (Lyman Beecher).

METHODS OF STERILIZATION

Obstetric asepsis while equally as minute as surgical, is much less cumbersome. There is one fundamental difference in the technics of the two arts—the fact that the obstetrician is always working in or near an infected field. The vagina is seldom really sterile, and the rectum is so close to the field of operation that it is a constant menace. The accoucheur, therefore, cannot practice, during a labor, the nice aseptic methods of the surgeon; he must practice antisepsis. As far as dressings, sutures, etc., are concerned, the accoucheur insists on their being absolutely aseptic, as does the surgeon.

The fact that the obstetric case cannot be handled as a clean surgical case does not excuse either doctor or nurse from responsibility if the patient sickens from infection. If both doctor and nurse have conscientiously and consistently carried out the best methods of antisepsis known, and even then the patient takes ill of infection, both may feel that they are blameless in this regard—but only under the condition mentioned.

Sterilization of the Hands.—Scientifically, it is impossible to sterilize the hands. Germs may be found in the skin after all sterilizations as usually practised.

Practically, it has been found that several methods give good results.

The most important factor in being able to sterilize the hands is not to get them infected. The day has passed when a physician could dabble his fingers in pus and then feel clean after washing them.

NEVER GET ANY INFECTIOUS MATERIAL OF ANY KIND ON THE HANDS! All such things should be touched with forceps or rubber gloves, and they should not be allowed to contaminate the clothing.

Take good care of the skin, so that the epidermis is always smooth and free from cracks and fissures. The arts of the manicure may not be despised. It is not vanity that prompts the obstetric nurse to desire smooth, white hands.

1. Fürbringer's Method.—Pare finger-nails and remove subungual dirt with a dull instrument Scrub for from five to ten minutes with hot water and green soap. Soak hands in 95 per cent. alcohol for one minute. Soak in 1 : 1000 bichlorid three minutes.

Sublamin, a new mercury preparation, is now used in place of bichlorid, in the same proportions. It is said to injure the hands less and to be as strongly bactericidal.

2. Hot Water and Alcohol Method of Ahlfeld.—Pare finger-nails and remove subungual dirt Scrub with soap and hot water for from three to five minutes; 95 per cent. alcohol rubbed in three to five minutes with flannel, which wraps the hand until ready to operate. Ahlfeld claims that this method will produce perfect sterilization of the skin.

3. Halsted's Permanganate Method.—Pare finger-nails and remove subungual dirt. Scrub with soap and hot water for from five to ten minutes. Immerse hands and forearms in hot saturated solution of permanganate of potash until arms are stained deep brown. Immerse

in saturated solution of oxalic acid until skin is decolorized. Rinse in sterile water or sterile lime-water. Some surgeons use bichlorid in addition.

4. Author's Method.—Wash the street-dirt from hands and forearms, using much soap and working the soap well under the nails, which should be short. Clean under the nails with a dull metal nail-cleaner. Scrub in hot running water and green soap for ten minutes. Scrub in 1 per cent. lysol, or 1 : 1000 bichlorid or 1 : 1000 sublamin, or both, three full minutes. Scrub in 95 per cent. alcohol one minute.

When scrubbing the skin, a sterile brush made of tampico fiber should be used. These brushes may be boiled; bristle brushes stand boiling poorly The folds of the fingers and palms must be opened up so that the fibers of the brush can get into them. To get the fibers of the brush under the nails the fingers must be stretched out. This draws the finger-tip from the nail. If the finger-tips are pressed together, the brush cannot get under the nail. The whole hand and forearm must be gone over systematically, so that no portion is missed.

N. B.—After the hands are sterilized, it requires constant thoughtfulness to prevent one from infecting them by touching unsterile objects.

Rubber Gloves.—These are by all means the best method of aseptic operating, but the gloves must be perfect and sterile. Before putting on gloves the hands are to be sterilized in the usual manner. Some operators use cotton gloves and some draw them on over the rubber gloves.

Methods of Sterilizing Gloves.—(1) Boiling in plain water for twenty minutes and putting on, wet with some antiseptic solution. (2) Boiling in water for twenty minutes; drying by sterile hands; powdering with ster-

ile talcum or starch, inside and out; wrapping in sterile towels for future use.

Whenever the nurse boils gloves or rubber of any kind, as colpeurynters or douche-bags, she should wrap them securely in at least four layers of thick toweling; otherwise they will be scorched and ruined by lying



Fig. 208.—Testing rubber gloves by overfilling with very hot water.

against the hot metal. Rubber gloves do not stand frequent boiling, becoming swelled and brittle. They will last a much greater length of time if steamed in the steam sterilizer.

Author's Method of Sterilizing Rubber Gloves.—The gloves are tested for imperfections by filling them up with very hot water and drying the outside (Fig. 208).

If the water escapes, even in the smallest amount, the glove is discarded Another, but not as good, way is to

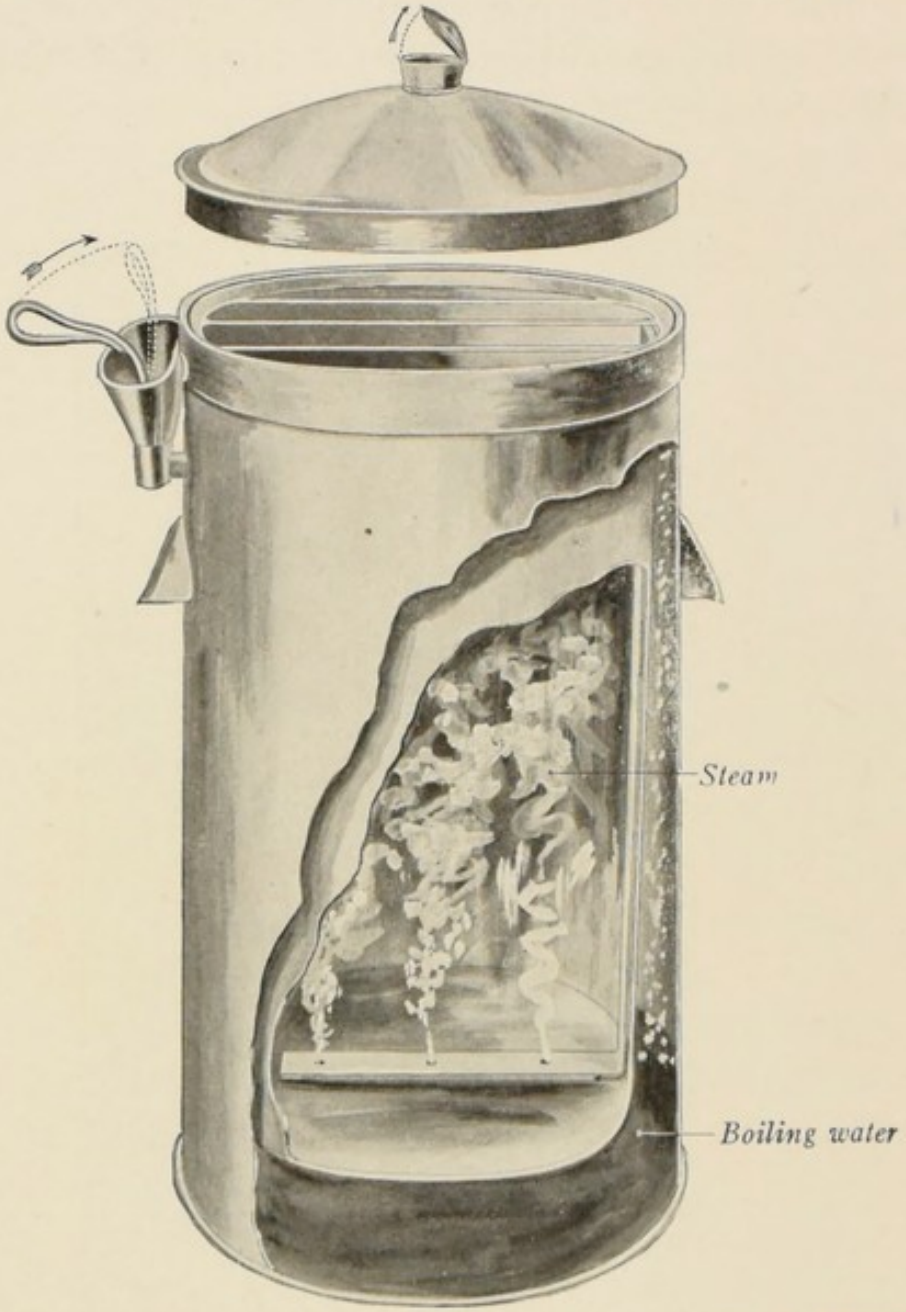


Fig. 209.—Author's glove sterilizer. The gloves are first sterilized, hanging free in the steam chamber. With sterile hands they are wrapped loosely in paper, two distinct wrappings, enclosing also a bottle of talcum or starch powder. Now they are sterilized again for forty-five minutes, dried thoroughly on the radiator, and stored in a clean box.

hold the inflated glove under water, when, if there is a puncture, a tiny stream of air-bubbles will escape from

it. The gloves are washed thoroughly inside and out with soap and water, and then with hot 1 per cent. lysol solution. They are carefully dried inside and out and then laid in a box with a good supply of talcum powder. The box is shaken briskly, covering the gloves generously

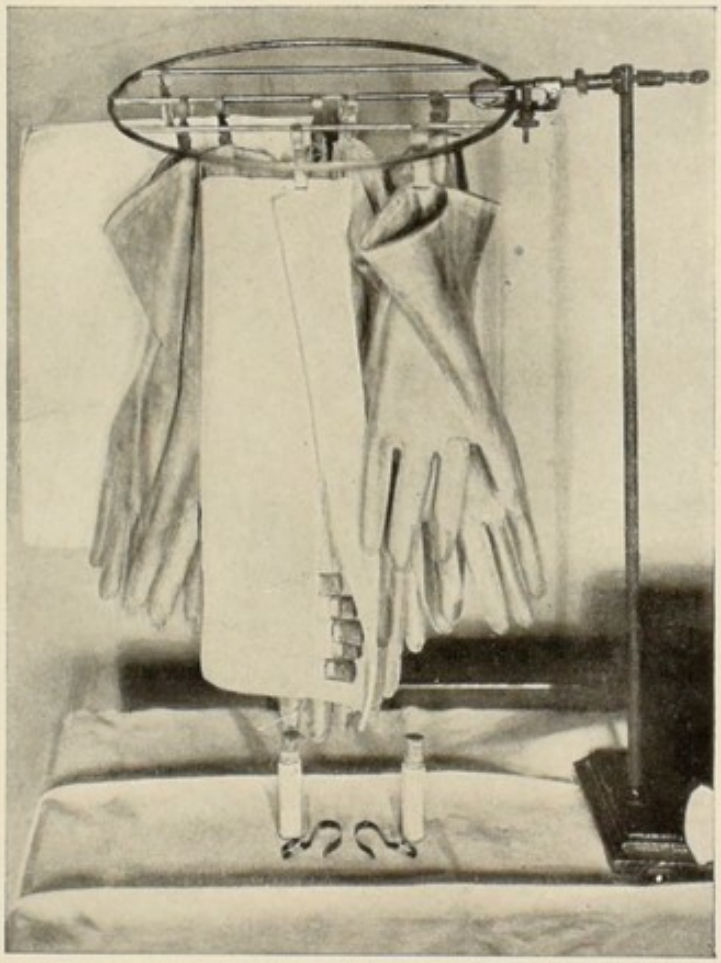


Fig. 210.—Showing how articles hang in the steam chamber. The paper to wrap the gloves in, the 2-dram vials full of talcum or starch, and the towels, on which to do the work of wrapping, are all sterilized together.

with powder. The gloves are then turned outside in and the powdering process repeated. A special glove sterilizer may be employed, or the gloves may be placed in any steam sterilizer (Figs. 209, 210). Hot air should not be turned into the sterilizer. A piece of cotton is laid inside each glove, and it is then wrapped loosely in a towel or

paper. They should be sterilized alone in the apparatus, being placed as far from the flame as possible, and the steam should flow forty-five minutes. If a high-pressure apparatus is used, thirty minutes are sufficient. When taken out, the gloves, inclosed in their sterile towels, should be wrapped in sterile paper or laid away in a clean box. Before using them the operator washes off the talcum powder with alcohol or antiseptic solution.

The author has used gloves prepared in this way for fourteen years with complete satisfaction.

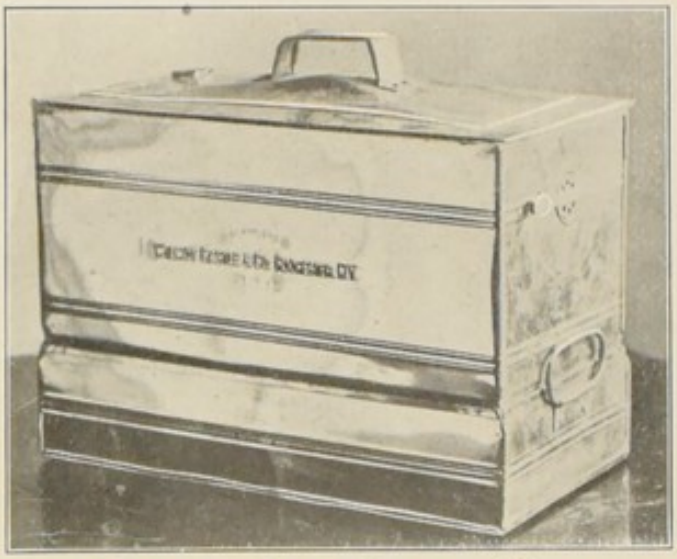


Fig 211.—The Rochester sterilizer.

Sterilizers.—For practical sterilization it is not necessary to have the majestic and expensive sterilizers used by most hospitals. Moist steam under moderate pressure will kill all germs in forty minutes. If the steam is very dry, as occurs in high-pressure sterilizers or autoclaves, the germs are not so readily killed. Low-pressure sterilizers, as the Arnold, the Rochester (Figs. 211, 212), or the Boeckman, all of which are built on the Schimmelbush plan, are very efficient because the steam is wet, and experiment and experience have shown that very reliable results are obtained with these instruments.

The obstetric nurse should possess a small portable sterilizer which she can send to the houses of her patients; there are several on the market.

In the absence of special apparatus the wash-boiler and the stove-oven render inestimable service. The objection to the wash-boiler is that the cottons, gauzes, linens, etc., steamed therein become quite damp or even moist. This objection may be overcome by drying the articles afterward in the oven of the kitchen stove, taking care that they are not burned.

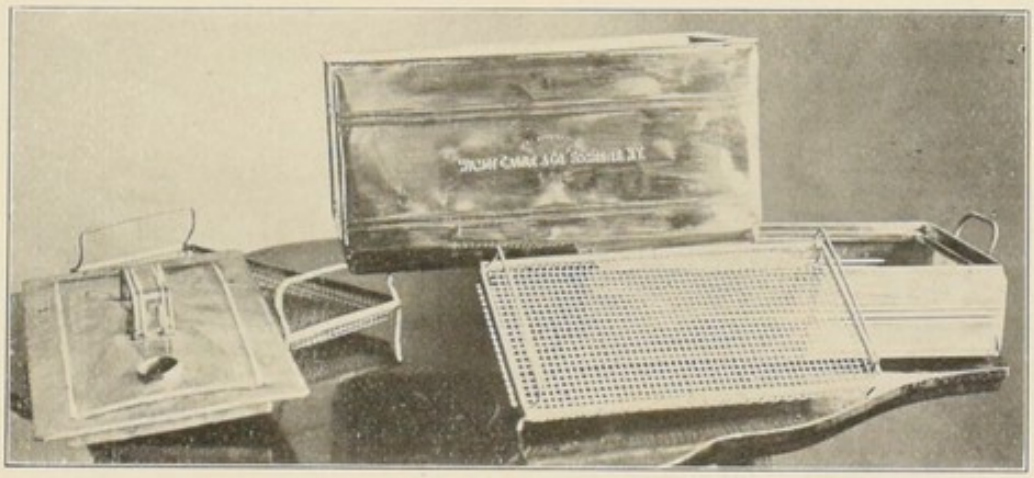


Fig. 212.—The Rochester sterilizer open.

Sterilization by Dry Heat.—The oven of the stove may be used for sterilizing all supplies save rubber and suture material. The oven should be heated to the temperature required to bake bread, and articles to be sterilized are kept in it for three hours. Newspapers should be wrapped around them, and the required heat is shown by the light browning of the paper. Great care is necessary to prevent scorching of linen and gauze. The writer has only occasionally made use of this method of sterilization.

Sterilization by means of antiseptic solution is rarely employed for dressings, gauzes, linens, etc. For tables,

beds, walls, etc., scrubbing with soap and water and then with an antiseptic solution is usually deemed sufficient, because sterile things are not supposed to touch them.

PREPARATION OF INSTRUMENTS

Obstetric instruments should be boiled in 1 per cent. soda or 1 per cent. borax solution. If no washing- or baking-soda is at hand, a little lysol or sodium hydrate will do. An alkali is necessary, because it prevents the instruments from rusting and secures better sterilization. Boiling for five minutes in such a soda solution with the vessel covered is sufficient, but if the instruments have possibly been infected, a ten-minute period is better. If instruments are to be kept aseptic for a time before being used, the soda solution should not be poured off or the cover removed. Soft-rubber goods are wrapped in at least four layers of a thick towel and boiled twenty minutes in plain water in a covered vessel. Hard-rubber instruments and tracheal catheters must not be boiled. They are disinfected by formaldehyd vapor or by immersion in strong bichlorid solution. Cystoscopes (excepting the simple tubes) are disinfected by formaldehyd vapor or by lysol or carbolic solutions, not bichlorid.

After being used, instruments are scrubbed with a brush and cold water, paying particular attention to the locks, corrugations, and crevices; then they are rinsed in a hot 1 per cent. lysol solution and dried out of the latter. Stains on the instruments are removed by scrubbing with Sapolio on a moist cloth. After use on septic cases the instruments should be boiled before being put away. Imperfections in the instruments and loss of nickel-plating are to be reported to the proper authority. If a nurse finds an instrument whose construction she

does not understand, it would be well to learn about it before taking it apart or trying to put it together, as she may do it damage.

STERILIZATION OF BRUSHES

After use on a septic case brushes are destroyed. Old brushes with very soft fibers are discarded, yet a brush must not be so stiff that it scratches the epidermis. Such scratches become lodging places for germs. They are thoroughly washed with soap and water, rinsed, and then steamed in the sterilizer for forty-five minutes. Brushes are best kept dry, wrapped in cloth containers. A brush once used is not used again by another, or for a more advanced period of the hand sterilization. Brushes should not be allowed to litter up the washstand; this is neither aseptic nor tidy. Two jars for brushes should be at hand—one filled with sterile, the other for the used brushes. Many errors of asepsis are committed in the use and care of hand-brushes in an otherwise flawless system.

PREPARATION OF DRESSINGS

Cotton coming in unsealed cartons is not sterile. For use as sponges or pledgets, pieces of suitable size are made from the roll and sterilized in a pillow-case or in glass jars. Cotton pledgets are better large than small. Gauze pledgets, as used in surgical work, would be very expensive in obstetrics, as so many are used, and they must be quite large. Cotton answers the purpose well, but if gauze is preferred, the nurse may make a pledget of cotton, covering it with one layer of gauze. These are called "covered sponges," and have all the advantages of gauze with the cheapness of cotton (Figs. 213–216). These covered sponges are packed into jars, covered with a layer of cotton, and sterilized one hour in

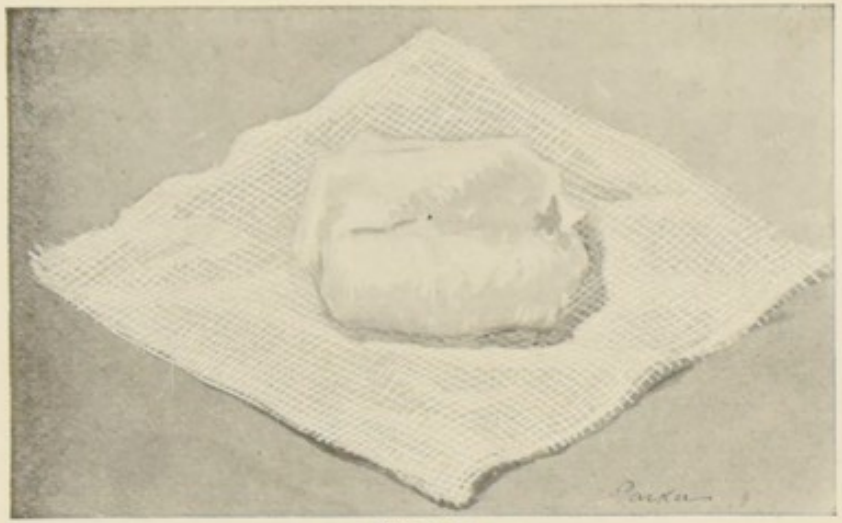


Fig. 213.

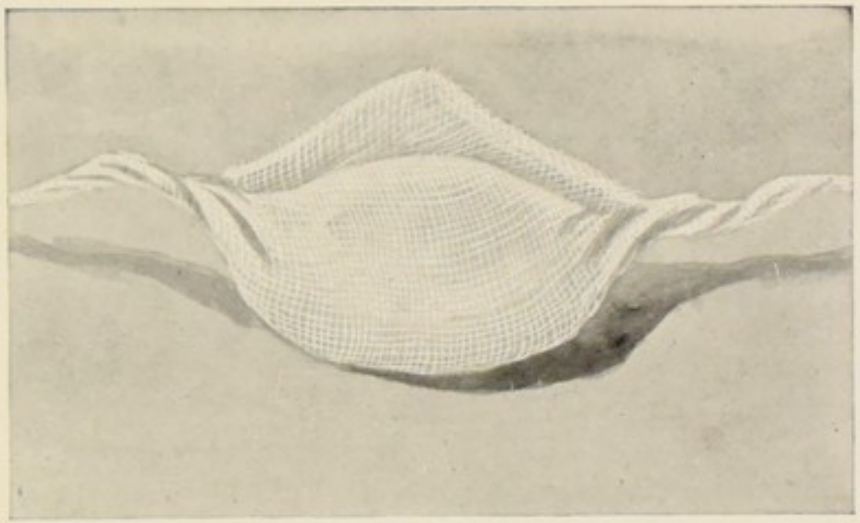


Fig. 214.

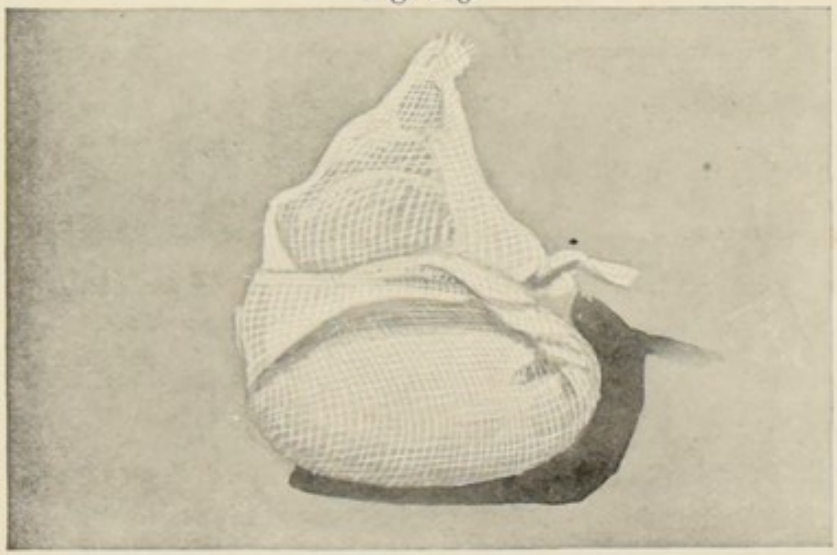


Fig. 215.

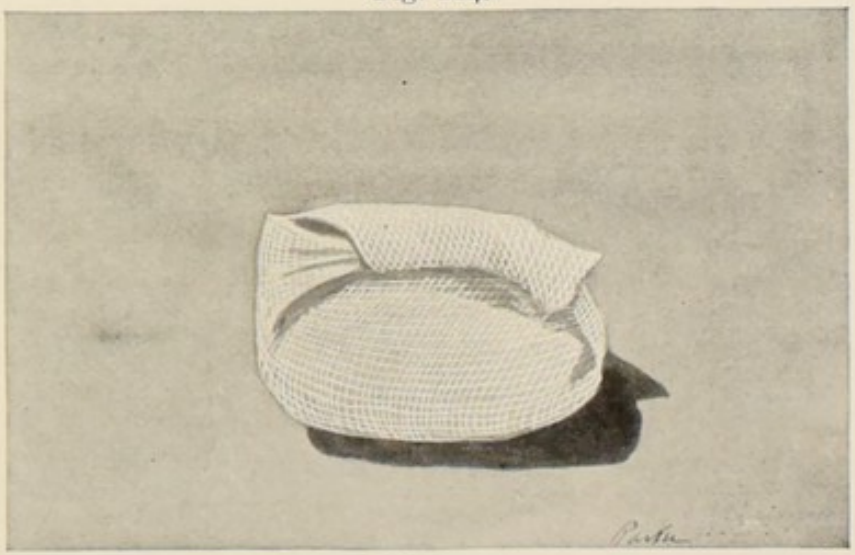


Fig. 216.

Figs. 213–216.—Making the covered cotton sponges. The opposite corners of the gauze are twisted and tied over the third corner, after which the fourth corner covers in the free ends, so that no threads of cotton appear.

flowing steam. The jars are very loosely covered during sterilization; after it, the covers are screwed down tightly.

Pads or vulvar dressings are made by folding a piece of absorbent cotton 3 x 8 inches into a piece of gauze 12 inches square, leaving the ends long. They are wrapped in towels or cotton-cloth sacks, and sterilized in flowing steam for one hour, dried in the sterilizer, and laid away in a dust-proof box.

Newspapers.—One of the handiest articles in the lying-in room is the clean newspaper. The newspaper fresh from the press is practically clean, and is very useful to receive discharges, soiled pledgets, pads, etc., which are thereupon wrapped up and burned. The nurse should, if the opportunity is given, sterilize, as she would a package of towels, a bundle of clean newspapers.

Lysol Gauze for Tamponade.—Two widths of gauze are required in packing the uterus, depending on the time of pregnancy. For use in the early months a strip about 3 inches wide is best, the gauze being cut into 5-yard lengths, and loose threads carefully removed from the edges. Woven bandages are purchasable and are preferable to cut muslin. For packing the uterus at or near full term these narrow strips would be useless.

Here the gauze is cut $\frac{1}{2}$-yard wide, into lengths of 13 yards. The selvedge and cut edge are folded in, and each length is made into a bundle. The bundles are then thoroughly rinsed in running water, wrung dry by hand, and boiled for twenty minutes in 0.5 per cent. lysol solution. A pair of rubber gloves, two sheets, and a metal clothes-wringer are now sterilized by steam or boiling. Wearing the gloves, the nurse runs the bundles through the wringer, using considerable pressure. Then the strips are packed into sterilized Mason jars

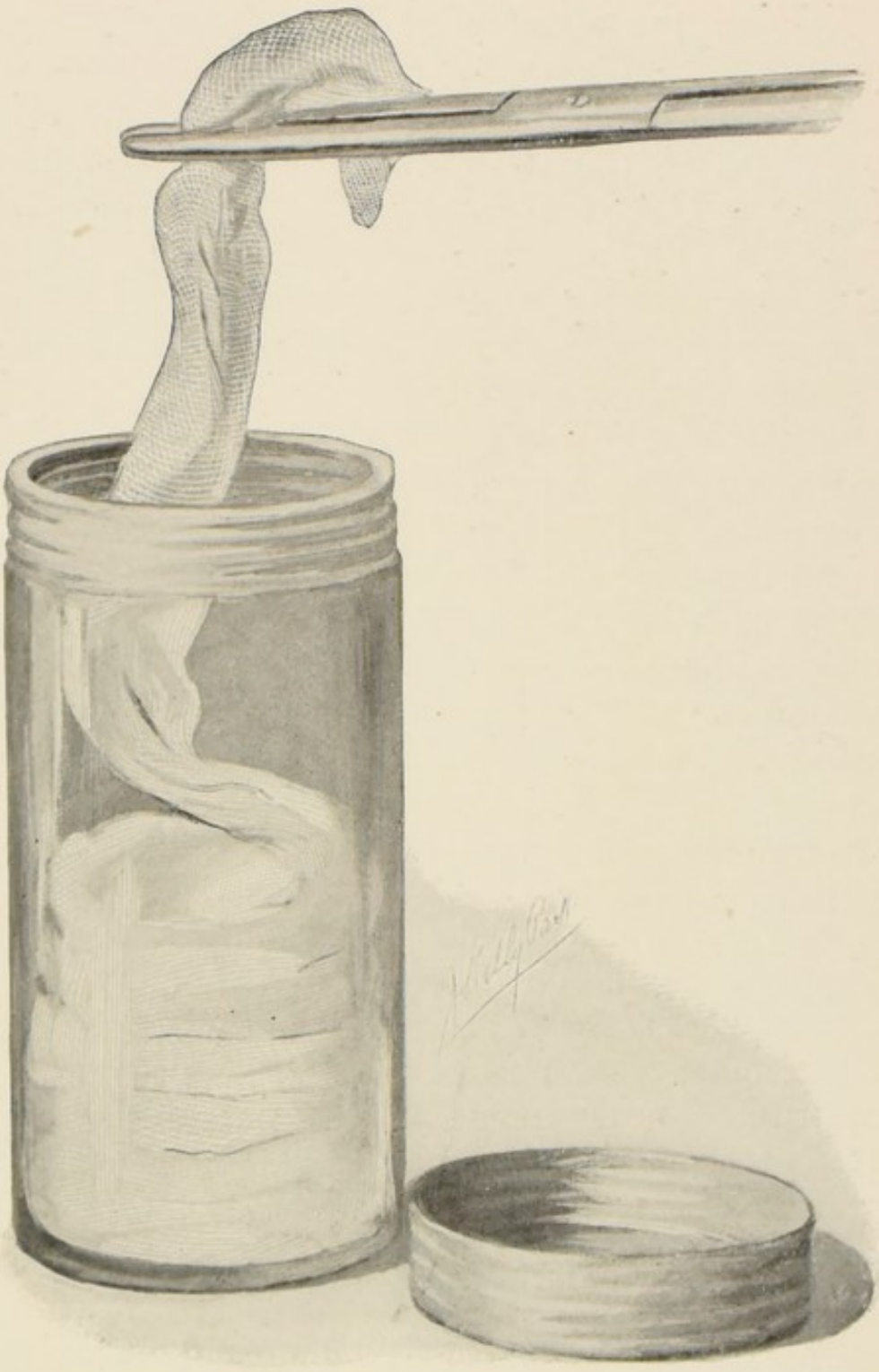


Fig. 217.—Gauze for uterine tamponade. Shows the method of packing into the jar in layers from the bottom.

or others that are large enough, packing smoothly in circles from below upward (Fig. 217). Thus the tam-

ponade can be made directly from the jar. The gauze must not be rolled and then placed in jars. The tops of the jars are filled with layers of cotton, the lids are screwed down tight, and the jars are put in the sterilizer. They are sterilized on two successive days, two hours each time. The jars are then wrapped in three layers of paper, sterilized again, and put away in a clean place. Thus prepared, gauze will keep sterile for years.

Plain sterilized gauze is prepared by cutting the gauze, as it comes from surgical supply-houses, into the requisite lengths, as just given, packing into the jars as described, and sterilizing in the steam-chamber every day for three days, two hours each time.

High-pressure sterilizers if overheated will scorch the gauze, rendering it brittle. A piece of such gauze may break off and be inadvertently left in the wound. Gauze coming from surgical supply-houses should not be trusted unless it is in sealed containers.

Iodoform gauze is very seldom used in obstetric practice, and the various methods of preparation need not be detailed here.

Other drugs are used in preparing gauze, as chinosol, vioform, boric acid, bichlorid, thymol; non-absorbent gauze is also sometimes used instead of the absorbent. From extensive experience the author can recommend the lysol gauze as prepared in the manner described.

Gelatin Gauze.—Gelatin favors coagulation of the blood, and is sometimes used to impregnate gauze introduced into the uterus for the control of postpartum hemorrhage. In emergency 2 ounces of pure French gelatin are dissolved in 20 ounces of boiling water and the mixture boiled vigorously over a very hot fire with constant stirring for at least fifteen minutes. The solution is poured over the gauze just before its introduction. In hospitals gelatin is prepared in 10 per cent. solution and

sterilized, so as to be always ready for use. Merck & Co. have put on the market a sterile and non-toxic gelatin in sealed glass bulbs, which is by far preferable.

Suture Material.—In obstetric work, without doubt, silkworm gut is the best material for suture.

Method of Preparation.—It should be washed with tincture of green soap and water, wound in little rings containing three strands each, boiled in plain water for thirty minutes, and placed with sterile forceps in sterile glass bottles containing 1 : 1000 bichlorid. The tops of the bottles are covered with cotton, and in this way the gut will keep sterile for months. Some operators, and especially those in private practice, prefer to boil the gut just before the operation or with the instruments. The nurse should see that it is thoroughly washed with soap and water first.

Catgut.—Many hospitals and most doctors in private practice buy catgut already prepared. It comes in sealed paper envelopes or in glass tubes or bottles. The sterilization of catgut is a difficult matter, and there are many methods; for example: (1) Boiling in cumol; (2) boiling in alcohol under pressure; (3) boiling in saturated solution of ammonium sulphate; (4) soaking in ether, bichlorid, alcohol, and juniper oil; (5) soaking in iodin solutions, (6) iodoform solutions, etc. The writer hardly thinks it necessary to describe all these methods, and refers the nurse to surgical text-books for the details.

Silk.—This is not much used in obstetric practice. It is best prepared by thorough washing in hot water with tincture of green soap, boiling in 1 per cent. lysol solution for thirty minutes, and rinsing thoroughly in sterile water just before use. Some physicians sterilize it in the steam sterilizer with the dressings. The preliminary washing with soap and water is not to be neglected. Silk should not be wound on glass with sharp corners.

If sterilized and kept, it deteriorates after a time, no matter what solution is used as a preservative.

Linen Suture Yarn.—This is occasionally used, and is sterilized like silk.

Linen Bobbin for Tying the Cord.—Ordinary linen bobbin $\frac{1}{8}$-inch wide is the best and cheapest material for tying the umbilical cord. It is cut into lengths of 15 inches, washed with soap and water, wrapped in gauze, boiled in 1 per cent. lysol solution, and then kept

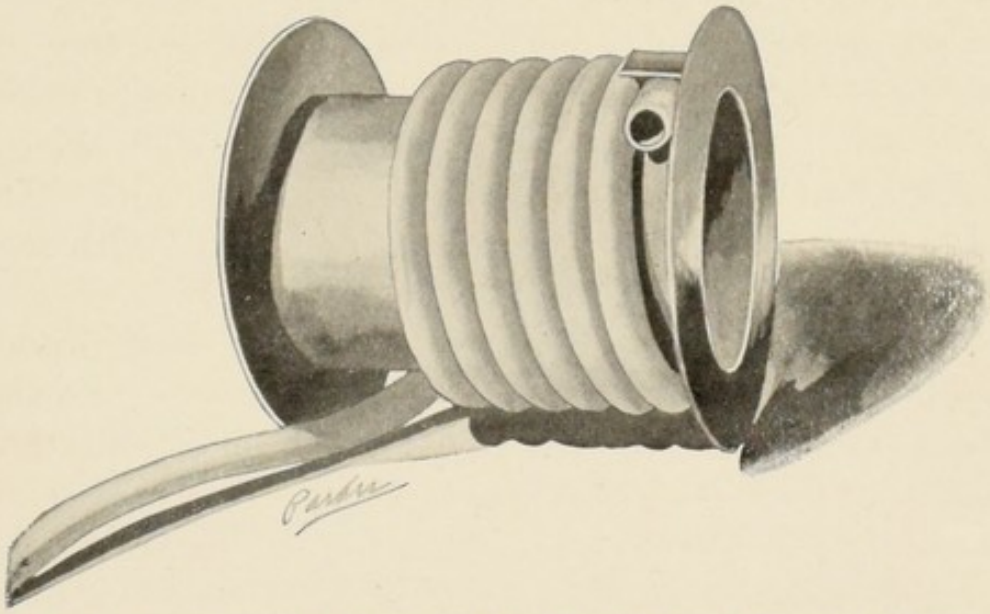


Fig. 218.—Nickel-plated reel on which the douche-can tube is sterilized, to prevent kinking.

in glass-stoppered bottles dry or in alcohol. In private practice two lengths are boiled with the scissors and kept in 1 per cent. lysol solution until needed for tying the cord.

Basins, pitchers, douche-cans, bed-pans, etc., used during a labor are all to be sterilized. In private practice they are boiled for thirty minutes in the wash-boiler with the cover on, and then wrapped in sterile pillow-slips If basins are required in a hurry, one granite basin may be inverted over another, water placed

in the lower, and boiled for twenty minutes. China bowls and pitchers may be scrubbed with Sapolio, scalded with boiling water, and rinsed with 2 per cent. lysol solution. If there is time, however, all the utensils should be boiled. In hospitals they are wrapped in special holders and sterilized in the steam sterilizer.

Rubber tubing when sterilized is liable to kink at the bends and prove useless when most urgently needed. To avoid this it should be rolled on a spool (Fig. 218).

Douche-bags of rubber are first washed out with table salt and water, using much friction to rid the interior of the sulphur and dust, then filled with gauze, and steamed or boiled. Kelly pads are not boiled, but scrubbed with soap and water, and then with strong bichlorid or lysol solution.

Gowns, aprons, leggings, towels, sheets, and **pillow-slips** for use in the confinement room are wrapped in towels or special holders, pinned securely, labeled distinctly, and sterilized by steam for forty-five minutes. They are dried in the sterilizer and placed in a clean box or closet.

Tables, chairs, bed, and **other furniture** in the confinement room are washed with a soft cloth and soap and water, then with 1 : 1000 bichlorid or 3 per cent. carbolic acid solution. In hospitals, where pus is present, this sterilization must be particularly thorough, and in all instances the tables are covered with several layers of sterile towels before operations, so that sharp-pointed needles may not pierce through.

Sterilizing Apartments.—After infectious cases the room occupied by the patient is to be disinfected. A simple and very efficient method is the following: The room is allowed to air thoroughly, all the windows being opened, the bedding scattered on chairs, closet doors left ajar, and bureau drawers drawn out. Then the room is

tightly closed, the cracks, flues, and doors being sealed with paper. It is allowed to warm up thoroughly.

Formaldehyd vapor is generated as follows:

A 2-quart milk pail is wrapped in a piece of asbestos paper and set inside a papier-mâché water pail, dry. For a room 15 feet square 5 ounces of potassium permanganate are put in the tin pail. When everything is ready the nurse places the apparatus in the center of the room to be sterilized, then pours 20 ounces of formalin on the potash, and, holding her breath, beats a hasty retreat, closing and sealing the door behind her.

After twelve hours the room is widely opened and allowed to air thoroughly for two or three days if possible. If it is desired to dissipate the fumes of formalin quickly, ammonia may be spread around. The ceiling, floor, walls, and furniture are now washed with soap and water and new linen put on the bed.

Formaldehyd lamps are sometimes used for fumigating, but they are not more efficient than the method described, which is recommended by the Illinois State Board of Health. Sulphur is seldom used now for fumigation. It ruins household articles, while formalin does not. In my opinion, the washing and airing of the room do more good than the fumigation.

PREPARATION OF SOLUTIONS

Physicians differ widely in their choice of antiseptic solutions, and the nurse will do best if she becomes thoroughly acquainted with the desires of her physician in this regard.

Sterile Water.—In hospitals this is prepared in the large sterilizers, being filtered before being boiled under pressure by steam or gas In private homes the nurse should scrub the wash-boiler thoroughly with sand-soap, rinse it, and boil about 8 gallons of water for

forty minutes, setting it to cool, well covered up. In country practice the water should be carefully strained through cotton, as it often contains foreign matter, sometimes living. A dipper should be boiled and kept, wrapped in a sterile pillow-slip, for ladling purposes, Hot sterile water may be taken from the tea-kettle, which should always be kept full and boiling on the stove. In flats or apartments in cities the nurse should remember that between 1 and 5 A. M. the heat goes down and the hot-water supply may fail. Even in cities with a known good water-supply antiseptic solutions should always be made with previously sterilized water. One should not trust the antiseptic (bichlorid, lysol, creolin) to disinfect the water. An epidemic of tetanus is said to have resulted in a hospital where such trust was imposed in creolin. In all cases, therefore, where possible, boiled water should be employed.

Bichlorid of Mercury Solutions.—In private practice the nurse will use tablets, dissolving them in hot water and adding cool to bring up the required dilution. Strengths of 1 : 1000 and 1 : 1500 are usually employed. Too much caution cannot be enjoined to exercise care to avoid poisoning with bichlorid. In making up stock solutions of bichlorid, the powder or tablets should be completely dissolved in boiling water and the solution filtered through cotton. No bits of undissolved poison should be left in the bottle.

When used for douches, the solution must be injected under low pressure and a douche of sterile water given afterward. In anemic women or in cases of kidney or intestinal disease, this poison must be used only with the greatest circumspection. Some physicians have discarded it entirely; the author uses it very little.

Sublamin is a new mercurial antiseptic, said to be as strongly bactericidal as bichlorid, but less toxic to the

patient and less irritating to the hands, even when used in concentration.

Carbolic Acid Solution.—The pure crystals are mixed with 5 per cent. of alcohol, or the 95 per cent. acid may be purchased. To make a 5 per cent. solution, the required amount is dissolved in boiling water with constant and vigorous stirring. No acid should form in globules in the bottle. After the acid is all dissolved and the solution cooled, it is filtered through cotton in a glass funnel. To make 1 gallon of 5 per cent. carbolic acid solution $6\frac{3}{4}$ ounces of the 95 per cent. solution are needed.

Lysol Solution.—Lysol is a proprietary antiseptic containing 50 per cent. of kresol, or cresylic acid and tincture of green soap Liquor cresolis compositus is the official name for the preparation, which any chemist can prepare. Only for brevity is the proprietary name used in the text. It is employed in 1, $1\frac{1}{2}$, and 2 per cent. solutions. In hospitals it is made up, as carbolic is, in 5 per cent. solution ($6\frac{1}{2}$ ounces to the gallon), and diluted with sterile water as needed. In private practice the solutions are made from the pure drug: 3 drams to 1 quart of water make a 1 per cent. solution. The nurse should always measure these drugs and not trust to guesswork.

Formalin Solution.—For douches, 30 drops of fresh formalin are mixed with 1 pint of sterile water; for the hands, 1 dram to 1 pint.

Chinosol.—This drug belongs to a rather large class of proprietary antiseptics. It is not much employed. It is a light-yellow powder and is dissolved in water, strengths of from 1 : 2000 to 1 : 500 being used.

Creolin is also used, like lysol.

Salt Solution.—For use as a wash or douche, saline solution is prepared by adding 1 dram of pure sterilized

table-salt to 1 pint of water. When used for hypodermoclysis or intravenous injection, the solution is prepared with boiling water and cooled down to the temperature desired.

A convenient way to sterilize salt is to fill 2-dram vials, cork securely, and sterilize daily for three days, one hour each day. A 2-dram vial contains just enough salt to make 1 quart of 0.6 per cent. solution. If the solution must be made in the absence of prepared salt, the boiling must be done after the salt is dissolved. (See p. 225.) Salt solution should be made fresh, just before injection. It does not keep well.

Boric Acid Solution.—Boric or boracic acid dissolves in water only to 4 per cent., and this is the strength usually employed. Two handfuls of the crystals are placed in a gallon bottle and boiling water poured in. The bottle is shaken vigorously until all the crystals are dissolved; then it is set in a cold place. When the excess of boric acid has crystallized out, the clear solution may be decanted from the top into a separate bottle. This is better than to use the bottle with the crystals at the bottom, as they often are poured out when not wanted.

THE OBSTETRIC NURSE

The author wishes that more nurses would prepare themselves for obstetric work and adopt it as a specialty. True, it is hard, but a woman in good health, who knows how to manage things, can systematize her duties so that she will get along very comfortably. If, in addition, the nurse will insist on a proper amount of sleep and opportunity for outdoor recreation being afforded her, she will enjoy long years of usefulness in this fascinating branch of medicine. Nurses often take too little rest and do not go out at all during the first week. In well-to-do fam-

ilies the nurse should be relieved at night by another, and in those less fortunate some one will be accessible for relief of the nurse by day. The nurse must not think this is selfish—on the contrary, she will do better work for both mother and babe if she is well and strong. Obstetric nurses often form most intimate and pleasant friendships with their patients, and they find they have a personal interest and satisfaction in seeing the child grow and develop. This alone should attract to this specialty the best women in the profession. To do good work, the nurse should be well prepared, and she should have her affairs so arranged that she is accessible at all times and ready for all emergencies.

She should have her satchel packed at all times when awaiting a call. She should read up her cases and do some postgraduate work occasionally to save herself from rustiness. She should take with her to the obstetric case a book on obstetric nursing and consult it when anything unusual arises.

List of Articles Needed by the Obstetric Nurse

One hypodermic syringe and needles in working order.

Two tested thermometers, one for mother and one for babe.

One razor, safety pattern.

One pair surgical scissors.

One pair tissue forceps.

One long dressing forceps for use during labor in handling sterile things (Fig. 219).

One pair rubber gloves.

One rectal tube.

One sterile douche-bag or can.

One portable sterilizer. (See Figs. 211, 212.)

One white operating gown.

It is better if the patient provides her own rubber goods, but in country practice the nurse may need them. Some nurses find a Kelly pad useful, but just as good a pad may be made with newspapers.

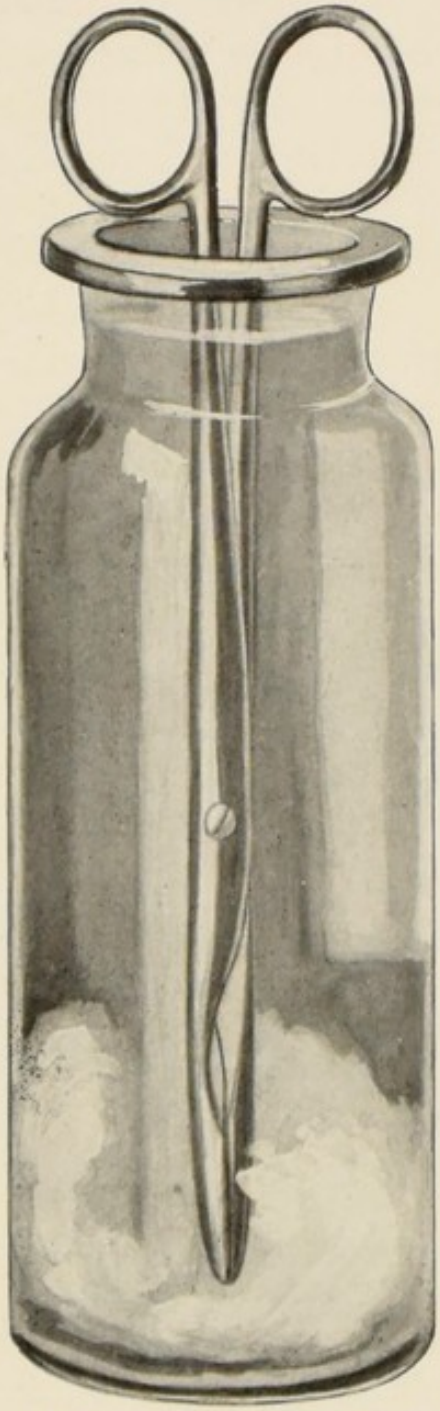


Fig. 219.—Nurse's dressing forceps in tall bottle of lysol solution.

The Nurse's Dress.—This should always be of wash material, of a quiet, restful color, and *should not be worn in the street.* This is neither good taste nor aseptic. The sleeves should be made so that they may be rolled up above the elbow, and stiff cuffs should not be worn. They rub into the infant's eyes when the child is "changed" and may injure them. It might be added that the nurse should always appear neat and clean while on duty. During the night the nurse is so frequently disturbed that some form of wrapper should be provided. Except in rare instances the nurse should never try to rest in her uniform.

Deportment.—A discussion of this point is not needed in this book, but a few bits of advice may not be out of place. Never forget the dignity of the profession of nursing; at the same time, always remember that even

menial duties are compatible with it and even may be demanded.

The rules of asepsis must never be neglected or relaxed in severity, even if the physician does not practice them or if the circumstances are difficult to control. The keenest and most constant attention to the details of asepsis alone will guarantee the puerperal woman that safety she so richly deserves.

The lying-in chamber should always be neat, temperate, and inviting, and the disturbing elements of the world outside of it should never enter.

The nurse should, under no circumstances, allow disagreements to arise between herself and the servants, and when the mother of the house is ill she should aid as much as possible in the conduct of the household affairs. She should increase the duties of the family and the servants as little as possible.

The nurse should never gossip about her cases. Family secrets are too sacred to be even hinted at or to be referred to without names. He who tells even the smallest part of a secret loses his hold on the rest. People can often draw inferences which render the information direct. This bit of advice cannot be too deeply impressed.

The nurse—and the doctor too—must abstain from the relation of bad cases or wonderful operations, etc., because the patient easily takes alarm and will imagine herself to be singled out for each accident related. The nurse must allow no complication to disturb the evenness of her mind and action, and if the doctor is to be called for some complication, the patient must not know it.

The nurse should not allow the infant to acquire bad habits, such as sucking the fingers, sucking an empty rubber nipple, water-tippling, peppermint- and sugar-

water-tippling, or even the whisky habit, or lying with its mother or other person. By gentle persistence the nurse may engender good habits of living at a very tender age, for which the individual may be grateful all his days.

VENEREAL DISEASES

Unfortunately, these affections are not uncommon in obstetric practice, although usually we see the effects only, not the disease in its florid stages.

Gonorrhea.—This is an inflammation of the urethra and vulva produced by the gonococcus of Neisser. It affects the pelvic organs slowly, one after the other, and causes chronic inflammatory changes of permanent character in them. Sterility from tubal disease or pelvic abscess may result, and if pregnancy supervenes, puerperal peritonitis may be the final outcome.

If a child is born before the disease is cured, the gonorrheal germ may obtain access to the eyes and cause an inflammation resulting in blindness. (See p. 347.) The discharges from a gonorrheal case are highly infectious. The woman may infect her own eyes, she may carry the infection to others, and cases are known where infected towels caused epidemics of gonorrheal vulvitis in schools for girls.

Thus the nurse may appreciate the importance of treating a case of gonorrhea as she would the other infectious diseases.

The symptoms of pelvic gonorrhea are pain, smarting on urination, pain and soreness in the pelvis, discharge of greenish-yellow pus, slight febrile movements, and, later, the symptoms of disease of the organ most affected, as pyosalpinx or peritonitis.

During pregnancy the disease aggravates, the discharge being very profuse and often fetid and irritating. Warty

growths may appear on the genitals, and an eczema intertrigo develop there.

Treatment.—The physician will order medicines to keep the urine in an antiseptic condition. Douches of various antiseptics may be ordered, the vulva and vagina may be painted with iodin, nitrate of silver, etc., or tampons of ichthyol inserted. Iodoform gauze packing is occasionally employed. It is wisest to get the disease well on the road to cure before the child is born, to avoid ophthalmia neonatorum and puerperal peritonitis.

During labor the vagina may have to be douched with lysol solution, and after the infant is born exceedingly rigorous precautions are observed to prevent any infection gaining access to the eyes.

Syphilis or "Specific Disease."—The latter term is used so that the laity may not understand the harsh meaning of the diagnosis. While gonorrhea is usually a local affection, syphilis is a blood disease, becoming at once a constitutional taint which is almost ineradicable, and is transmissible even to the third generation.

There are three stages in the disease: The first stage is the primary sore or the point of entrance of the infection. This is a hard ulcer and may occur on the vulva, in the vagina, or on any part of the body, as the lip, the tonsil, or the hand, as not infrequently happens to physicians in their gynecologic examinations. Syphilis is not always venereal in origin. Lues is another name for syphilis.

The second stage begins six to ten weeks after the sore appears, and is evidenced by a rose-red, fading to copper colored, general eruption, headache, falling hair, pains in the bones, and sore throat. There are superficial ulcers in the mouth and around the vulva and anus. In these two stages the disease is highly infectious.

The third or tertiary stage occurs later in life, perhaps

after many years, and shows the effects of the disease in the bones, blood-vessels, vital organs, and nervous system.

If a man marries while in the first or second stages, he transmits the affection to his wife and to the offspring. If the disease has no external signs—is latent—he transmits the poison to the offspring, the mother being infected from the child. In the former case, abortion or premature labor usually terminates the pregnancy. In the latter case, a dead and macerated or a live but syphilitic infant is born.

Signs of syphilis in the newborn child are: a general skin eruption of rose spots; blebs on the soles and palms; snuffles; cracks and superficial ulcers around the anus and mouth; marasmus, and the Wassermann blood test.

Should a nurse notice the symptoms mentioned in either the mother or child, the physician must be notified.

Prevention of Contagion.—The syphilitic patient must have her own knife, fork, dishes, etc. Discharges are collected in antiseptic dressings, which are burned. The nurse must care for her own hands with the utmost regard, using rubber gloves during necessary contact with infected parts, as sore mouth and ulcerated genitals. The same precautions are to be observed in handling a syphilitic infant. None but the mother will be allowed to nurse a syphilitic child.

Treatment.—During pregnancy the disease becomes more virulent, and at all times it requires vigorous treatment. Mercurial baths, mercurial inunctions, hypodermic injections of mercury, salvarsan ("606"), internal administration of mercury, are all employed. Iodid of potassium is given later. As these drugs are given in large and increasing doses, the nurse will watch for mercurialization (salivation, fetid breath, sore mouth,

loosening of the teeth, etc.), iodism (frontal headache, coryza, stiffness in throat, pustular eruption on the face and body), and arsenical poisoning (nausea, vomiting, diarrhea, prostration, edema). Tonic medicines are also given, as a severe form of anemia often develops.

The treatment of a syphilitic child is the same in principle as that of the adult.

General Consideration of Venereal Disease.—A nurse must never let the patient know that she has discovered such an affection.

It must not be thought that because a patient has venereal disease it must have been acquired in illicit relations. Physicians and nurses have acquired syphilis in the course of their work. Men have acquired it in the barber's chair; washwomen, from washing infected linen; patients in the dentist's chair or under operation, from infected instruments. A physician, using a eustachian catheter, infected 35 patients with syphilis!

These same possibilities exist with gonorrhea. Guarded speech, therefore, is obligatory on the nurse, as scandal is easily started and endless domestic woe may be inaugurated by the nurse dropping the merest hint regarding the nature of the malady. If she is questioned regarding the manifestations of disease, she should quietly but firmly refer the inquiry to the physician. Nor may she speak of the disease or of its symptoms to any of her friends or other physicians, as they may recognize the description and connect it with the patient.

"He who tells even the smallest part of a secret loses his hold on the rest."

DIETARY[1]

LIST OF DIETS

Absolute Milk Diet.—Milk, whey, matzoon, koumiss, buttermilk, junket, water. Three quarts of milk daily are given, a glassful every two hours.

Liquid Diet.—Water, milk, matzoon, koumiss, junket, buttermilk, whey, tea, coffee, toast-water, rice-water, egg-water, lemonade, broths, beef-tea, beef-juice, oyster-stew minus oysters.

Semisolid Diet.—All the above plus eggnog, milk-toast, cereal foods (boiled), ice-cream, corn-starch pudding, blanc-mange, soft-boiled eggs, scraped beef, cream soups, purées and soups thickened with rice, barley, or farina.

Diet for the Prevention of Overgrowth of the Child.—This diet must not be prescribed by the nurse, as it is the physician's province. It is inserted here for the sake of completion. Prochownik arranged it, and claims that the women who follow it out consistently have small but perfectly developed children. The author's results do not fully justify this claim. Frederick the Great recommended his niece, the Princess of Orania, not to overnourish her child during pregnancy, and the notion is widespread that the amount of food partaken by the mother during pregnancy affects the size of the child.

PROCHOWNIK'S DIET

Breakfast.—Small cup of coffee; two slices of toast (1 ounce).

Dinner.—Small piece of meat or fish or an egg, a little sauce, a vegetable prepared with fat, lettuce, a small piece of cheese.

[1] This section was written largely by Mrs. E. E. Koch.

Supper.—The same, with a few slices of bread and butter and a little milk.

Water, soup, potatoes, pastries, sugar, and beer are forbidden. About 1 pint of water daily is drunk. The diet should be adhered to during the last ten or twelve weeks, always, of course, under medical control.

RECIPES[1]

Albumin or Egg-water.—Stir white of one egg into a pint of water ice cold. Do not beat or shake. Sugar, salt, or powdered cinnamon to taste.

Barley-water.—Wash 2 ounces (wineglassful) of pearl barley with cold water. Boil five minutes in fresh water. Decant water. Pour on 2 quarts of boiling water; boil down to 1 quart. Flavor with thinly cut lemon-rind, add sugar or cinnamon to taste; strain.

If the mixture is allowed to boil down to 1 pint, strained, put on ice, a good barley-jelly results.

Beef-tea.—Free 1 pound of lean beef from fat, tendon, cartilage, bone, and vessels; chop fine, put into 1 pint of cold water to digest two hours. Simmer on range or stove three hours, but *do not boil*. Make up for water lost by adding cold water, so that 1 pint of beef-tea represents 1 pound of beef. Strain through cheese-cloth without pressure. Should be clear.

Beef-juice.—Cut a thin, juicy steak into pieces 1½ inches square; brown separately one and one-half minutes on each side over a hot fire; squeeze in a hot lemon-squeezer or meat-press; flavor with salt and pepper. May add to milk or pour on toast.

Beef-tea with Acid.—One and a half pounds of beef (round) cut in small pieces; same quantity of ice, broken small. Let stand in deep vessel twelve hours. Strain thoroughly and forcibly through coarse towel.

[1] Largely from Thomas' Dietary.

Boil quickly ten minutes in porcelain vessel. Let cool. Add ½ teaspoonful of acid (dilute phosphoric acid) or acid phosphate to the pint.

Cereal Extract.—Take 2 soupspoonfuls each of corn, barley, oats, rye, maize, and bran; boil in 4 quarts of water three hours; allow to cool and then strain. If necessary, add enough water to make 1 quart. A palatable yellowish fluid is obtained, which may be improved by the addition of milk or powdered cinnamon for children.

Chicken Broth.—Skin and chop fine a small chicken or half a large fowl; boil it, bones and all, with a blade of mace, a sprig of parsley, a tablespoonful of rice, and a crust of bread in 1 quart of water for an hour, skimming it from time to time. Strain through soup-strainer.

Clam Broth.—Wash thoroughly 6 large clams in shell; put in kettle with 1 cup of water; bring to boil and keep there one minute; the shells open, the water takes up the proper quantity of juice, and the broth is ready to pour off and serve hot.

Champagne Whey.—Boil ½ pint of milk; strain through cheese-cloth. Add wineglassful of champagne.

Egg Lemonade.—Beat 1 egg with 1 tablespoonful of sugar until very light; stir in 3 tablespoonfuls of cold water and juice of small lemon; fill glass with pounded ice, shake in milk-shaker for fully two minutes, pour in clean glass. Should be drunk through straw.

Eggnog.—Scald some new milk by putting it, contained in a jug, into saucepan of boiling water, but *do not allow it to boil.* When cold, beat fresh egg with a fork in a tumbler with some sugar. Beat to a froth, add a dessertspoonful of brandy, and fill tumbler with scalded milk. Serve cold. May shake with ice in milk-shaker; strain. If desired, may use sherry instead of brandy, or

omit the alcohol entirely, and grate a little nutmeg or cinnamon in glass.

Flaxseed Tea.—Flaxseed (whole), 1 ounce; white sugar, 1 ounce (heaped tablespoonful); licorice-root, ½ ounce (2 small sticks, crushed well); lemon-juice, 4 tablespoonfuls. Pour on these materials 2 pints of boiling water; let stand in a hot place four hours; strain off the liquor.

Flour-ball.—Take 1 pint of flour and pack tightly in small muslin bag; throw into boiling water and boil five or six hours; cut off the outer sodden portion; grate the hard core fine; blend thoroughly with a little milk, and stir into boiling milk to the desired thickness.

Gum-arabic Water.—Dissolve 1 ounce of gum arabic in 1 pint of boiling water; add 2 tablespoonfuls of sugar, a wineglassful of sherry, and juice of a large lemon; cool and add ice.

Junket.—Heat 1 pint of fresh milk just luke-warm; add 1 teaspoonful of essence of pepsin or half a rennet tablet; stir enough to mix. Flavor, if desired, with sugar, grated nutmeg, and brandy. Pour into custard cups; let stand in cool place until firmly curded.

Koumiss.—Take citrate of magnesia bottle with shifting cork; put in it 1 pint of milk, ⅙ cake of Fleischmann's yeast, or 1 tablespoonful of fresh lager-beer yeast (brewers'), ½ tablespoonful of white sugar, reduced to syrup; shake well and allow to stand in refrigerator two or three days, when it may be used. It will keep there indefinitely if laid on its side. Much waste can be saved by preparing the bottles with ordinary corks wired in position and drawing off the koumiss with a champagne tap.

Meat Cure.—Procure slice of steak from top of round—fresh meat without fat; cut meat into strips, removing all fat, gristle, etc., with knife. Put meat

through mincer at least twice. The pulp must then be well beaten in roomy saucepan with cold water or skimmed beef-tea to consistence of cream. The right proportion is 1 teaspoonful of liquid to 8 of pulp; add black pepper and salt to taste; stir mince briskly with wooden spoon the whole time it is cooking, over slow fire or on cool part of covered range, until hot through and through and the red color disappears. This requires about one-half hour. When done, it should be a soft, smooth, stiff purée of the consistence of a thick paste. Serve hot. Add for first few meals the softly poached white of an egg.

Meat Diet, Raw.—Scrape pulp from a good steak, season to taste, spread on thin slices of bread; sear bread slightly and serve as sandwich.

Meat-extract Ice.—Express all the juice from 1 pound of fresh beef. Add $\frac{1}{4}$ pound of sugar, 3 teaspoonfuls of fresh lemon-juice (except in dyspeptics), 1 tablespoonful of cognac, well stirred with yolks of 3 eggs. May flavor with vanilla Freeze.

Milk and Egg.—Beat milk with salt to taste; beat white of egg until stiff; add egg to milk and stir. Flavor with grated nutmeg or cinnamon.

Milk Digested with Acid.—Add 20 drops of dilute hydrochloric acid to 1 pint of water; stir, add the acidulated water to 1 quart of fresh milk, stirring as it is added. If the milk is not alkaline, make it so before adding the water by adding lime-water until litmus-paper shows the proper reaction; boil twenty minutes on a slow fire in narrow-necked vessel to prevent too much evaporation. The proportions of milk and water may be modified to suit the case.

Milk, Peptonized: Cold Process.—In a clean quart bottle put 1 peptonizing powder (extract of pancreas, 5 grains; bicarbonate of soda, 15 grains) or the contents

of one peptonizing tube (Fairchild); add 1 teacup of cold water; shake; add 1 pint of fresh cold milk; shake the mixture again. Place on ice; use when required without subjecting to heat.

Warm Process.—Mix peptonizing powder with water and milk as described above; place bottle in water so hot that the whole hand can be held in it for a minute without discomfort; keep the bottle there ten minutes; then put on ice to check further digestion. Do not peptonize long enough to render milk bitter.

Milk-toast, Peptonized.—Over 2 slices of toast pour 1 gill of peptonized milk (cold process); let stand on back of stove for thirty minutes. Serve warm, or strain and serve fluid portion alone. Plain light sponge-cake may be similarly given.

Milk, Sterilized.—Put the required amount of milk in clean bottles (if for infants, each bottle holding enough for one feeding). Plug mouths lightly with rubber stoppers or non-absorbent cotton; immerse to shoulders in kettle of cold water; boil twenty minutes or, better, steam thirty minutes in ordinary steamer; push stoppers in firmly; cool bottles rapidly and keep in refrigerator. Warm each bottle just before using.

Milk-shake.—White of 1 egg, 1 dram of sugar, 2 tablespoonfuls of chipped ice, 1 ounce of cream. Shake in milk-shaker two minutes. Add cold milk to fill glass; flavor with vanilla or lemon.

Mutton Broth.—Lean loin of mutton, $1\frac{1}{2}$ pounds, including bone; water, 3 pints. Boil gently until tender, throwing in a little salt and onion, according to taste. Pour broth into saucepan; when cold, skim off fat. Warm up as wanted.

Nutritious Coffee.—Dissolve a little isinglass or gelatin (Knox) in water; put $\frac{1}{2}$ ounce of freshly ground coffee into saucepan with 1 pint of new milk, which

should be nearly boiling before the coffee is added; boil both together for three minutes. Clear it by pouring some of it into a cup and dashing it back again; add the isinglass, and leave it to settle on back of stove for a few minutes. Beat an egg in a breakfast-cup and pour the coffee upon it; if preferred, drink without the egg.

Rice-water.—Pick over and wash 2 tablespoonfuls of rice; put into granite saucepan with 1 quart of boiling water; simmer two hours, when rice should be softened and partially dissolved; strain; add saltspoonful of salt; serve warm or cold. May add 2 tablespoonfuls of sherry or port.

Rum Punch.—White sugar, 2 teaspoonfuls; 1 egg, stirred and beaten; warm milk, 1 large wineglassful; Jamaica rum, 2 to 4 teaspoonfuls; nutmeg.

Toast-water.—Toast 3 slices of stale bread to dark brown, but do not burn; put into a pitcher; pour over them 1 quart of boiling water; cover closely and let stand on ice until cold; strain. May add wine and sugar.

Whey.—Boil 1 pint of milk with 1 or 2 teaspoonfuls of lemon-juice; strain in muslin, expressing all fluid from the curd. Break the curd up first, and much fat and some finely divided casein will be expressed with the whey. For infants, use rennet tablet or junket tablet, $\frac{1}{2}$ grain to 1 pint, and keep warm ten minutes. If no fat is wanted, strain gently through fine napkin.

Wine Whey.—Put 2 pints of new milk in saucepan and stir over clear fire until nearly boiling; then add 1 gill (2 wineglassfuls) of sherry and simmer one-quarter of an hour, skimming curd as it rises. Add 1 tablespoonful more sherry, and skim again for a few minutes; strain through coarse muslin. May use 2 tablespoonfuls of lemon-juice instead of wine.

RECTAL FEEDING

General Rules.—Cleanse the rectum morning and evening with an enema of 10 ounces of sterile saline solution (0.6 per cent.). Arrange time so that cleansing comes one hour before the nutritive enema. Inject high into the sigmoid flexure, using the soft-rubber rectal tube for adults and the soft velvet-eye No. 12 or 14 catheter for children. Use sweet oil or vaselin as a lubricant, but not glycerin. Expel all air from the tube. Inject slowly from 2 to 8 ounces of the prepared food, warmed to body temperature. Do not inject oftener than once in six hours, except in emergencies. Aid retention of food by placing patient on the left side, the hips elevated by a pillow, a soft compress retained against the anus for twenty to thirty minutes. If the rectum becomes irritable, notify the physician; he may prescribe from 5 to 20 drops of tincture of opium with the nutrient enema, or the same amount of tincture, or $\frac{1}{2}$ to 1 grain of extract of opium, one-half hour before the enema. This dosage must not be often repeated. Apply 2 per cent. cocain solution to painful hemorrhoids, but by order only.

Salt solution is often given postpartum in the treatment of anemia from severe hemorrhage. If the uterus and vagina are tamponed, the lower bowel will sometimes hold a quart. The anus should be supported by firm pressure through a folded towel. Later, saline solution is administered in smaller doses, 8 ounces every four hours, or by the drop method.

Peptonized Milk.—In this case the milk is thoroughly peptonized, requiring two hours. From 6 to 8 ounces are injected every six or eight hours.

Peptonized Milk with Egg.—While peptonizing milk, add 2 eggs to each pint. Peptonize two hours at body temperature and set on ice.

This food is also readily absorbed—3 eggs, a teaspoonful of salt, 1 ounce of starch, and ½ pint of milk.

Digested Beef.—To 1 tablespoonful of minced lean beef add 4 tablespoonfuls of cold water; gradually heat to boiling. Rub through a fine sieve, and, when lukewarm, add one peptonizing tube (Fairchild) or an equivalent amount of liquid pancreatin (P. D. & Co.). Inject at once. May be diluted more if necessary.

Any combination of eggs, milk, and meat may be peptonized and injected, or mixed with peptonizing powder and injected at once, the digestion or peptonization to go on in the rectum.

Liquid peptonoids, peptones, somatose, etc., are sometimes used, but the author recommends the freshly prepared foods.

Dextrin is sometimes given per rectum. Formula: Dextrin, 50; 9 to 10 per cent. salt solution, 250 grams.

Grape-sugar, 60 grams (2 ounces), milk, 250 c.c. (8 ounces), may be given, or the same amount of cornstarch in milk or malted milk plain.

Alcohol is sometimes used, but the rectum soon becomes intolerant of all feeding, and more harm than good is accomplished. Glucose is absorbed in moderate quantities by the rectum, and also emulsified animal oils.

Under all methods of rectal feeding the patient does not obtain sufficient calories or heat-units to maintain a proper balance of nutrition.

FEEDING THROUGH THE SKIN

One may introduce a small amount of nourishment through the skin by inunctions of lard. This is especially valuable in babies with wasting diseases.

Hypodermically, salt solution may be injected in large quantities—up to 2 quarts daily—to replace liquid losses from profuse diarrhea or constant vomiting, as in hyper-

emesis gravidarum. It has also been suggested to add soluble foods to the hypodermic injection, but practical results are not yet published. Our attempts are as yet experimental.

NASAL FEEDING

In unconscious patients it is sometimes possible to introduce liquids, food, and medicine through a tube passed into the nose and thence into the upper esophagus. A stomach-tube of small size (about No. 16, American scale) is oiled and passed gently along the floor of the nose (not upward toward the eye) until it reaches half-way to the stomach (about 12 inches). The nurse makes sure that the tube is not in the windpipe by putting her ear to the open end; if air rushes in and out, the tube is in the trachea. It is taken out and reinserted, bending the head slightly on the chest while so doing. After the tube is passed and there is no doubt about its being in the esophagus, the liquid is slowly poured into the funnel and the tube quickly withdrawn.

The nurse must take care that the stomach is not overfilled by too frequent and too copious feedings.



GLOSSARY

[The American Illustrated Medical Dictionary has been largely used in the preparation of this glossary. The numbers at the end of the definition indicate the page in the text describing the subject.]

A.

Abactus venter (ab-ak′tus ven′-ter) [L.]. Induced abortion.

Abdomen (ab-do′men). The belly; that portion of the body which lies between the thorax and the pelvis.

Abdominal (ab-dom′in-al). Pertaining to the abdomen. **A. delivery,** delivery of the child through an incision in the abdomen; *Cesarean section* **A. gestation,** pregnancy occurring outside of the uterus in the free abdominal cavity. **A. pregnancy,** same as *Abdominal gestation.* **A. section,** cutting through the abdominal wall into the abdominal cavity; *Cesarean section; celiotomy; laparotomy.*

Ablactation (ab-lak-ta′shun). The weaning of a child; cessation of the secretion of milk. p. 326

Abnormal (ab-nor′mal). Unnatural; contrary to the usual structure or condition.

Abortifacient (ab-or-tif-a′shent). 1. Causing abortion. 2. A drug capable of producing abortion or miscarriage.

Abortion (ab-or′shun). The expulsion of the fetus during first 28 weeks of pregnancy, or before it is viable. p. 55.

Abrasion (ab-ra′zhun). A rubbing-off of a portion of skin or mucous membrane. A spot from which the skin or mucous membrane has been rubbed.

Abruptio placentæ. Premature detachment of the normally implanted placenta. p. 251.

Abscess (ab′ses). A collection of pus in a cavity.

Absorbent (ab-sor′bent). 1. Taking up by suction. 2. A dressing or medicine which takes up moisture.

Accouchement (ah-koosh-maw′) [Fr.]. Delivery; the act of being delivered. **A. forcé** (for-sa′), rapid artificial delivery. Done in case of placenta prævia or eclampsia.

Accoucheur (ah-koosh-er′) [Fr.]. An obstetrician.

Accoucheuse (ah-koosh-ez′) [Fr.]. A midwife.

Acid (as′id). 1. Sour; having properties opposed to those of the alkalis. 2. A chemical compound which has the power of uniting with an alkali to form a new compound called a salt. **A. reaction,** the turning of litmus-paper red; a test for the presence of acids.

Acinus (as′in-us), pl., *a′cini.* 1. Any one of the smallest lobules of a compound gland, like the liver. 2. One of the small air-sacs of the lungs.

Acme (ak′me). The crisis or critical stage of a disease.

Acrid (ak′rid). Pungent; irritating.

Acute (ak-ūt′). 1. Sharp-pointed. 2. severe. The term is applied to diseases which have severe symptoms but are of short duration.

Adnexa (ad-nek′sah) [L. pl.]. Appendages or adjunct parts; especially those of the uterus—the ovaries and tubes. **Uterine a.,** the ovaries and Fallopian tubes. Fig. 15.

After-birth (af′ter-berth). The placenta, with the membranes and umbilical cord. pp. 41–46.

After-care (af′ter-kār). The care or nursing of convalescents.

After-pains (af′ter-pānz). Pains due to the contraction of the uterus

after the placenta has been expelled. pp. 61, 299.

Agalactia (ah-gal-ak'she-ah). Absence of the milk secretion. p. 321.

Albolene (al'bo-lēn). An oily white substance made from petroleum. The solid resembles vaselin, and is used in making ointments. The liquid is used for spraying the nose and throat.

Albuminuria (al-bu-min-u're-ah). The presence of albumin in the urine. p. 86.

Alimentation (al-im-en-ta'shun). The act of taking nourishment.

Alkaline (al'kal-īn). Having the properties of an alkali. **A. reaction,** the turning of litmus-paper blue.

Alvine (al'vin). Pertaining to the stomach or bowels. **A. dejections,** the feces.

Amenorrhea (am-en-or-re'ah). Absence of the menstrual flow.

Amnii, Liquor (am'ne-i li'kwor). The water surrounding the fetus in the uterus. p. 42.

Amnion (am'ne-on). The most internal membrane containing the waters which surround the fetus in the uterus. p. 42.

Amniotic (am-ne-ot'ik). Pertaining to the amnion. **A. sac,** the membranes surrounding the fetus in the uterus.

Anemia (an-e'me-ah). 1. Deficiency in the quantity or quality of the blood: it may be general or local. 2. Deficiency in the number of red blood-corpuscles.

Anemic (an-em'ik). Having anemia.

Anemoscope (a-nem'o-skōp). 1. An instrument to indicate the direction of air-currents. 2. The little wheel in the outlet flue of an incubator. p. 375.

Anencephalus (an-en-sef'al-us). A single monster born without cranium or brain.

Anesthesia (an-es-the'zhe-ah). Loss of feeling or perception; it may be general or local.

Anesthetic (an-es-thet'ik). 1. Having no preception or sense of touch. 2. A drug capable of producing anesthesia. p. 120.

Anesthetist (an-es'thet-ist). A person skilled in administering anesthetics.

Ankyloglossia (ang-kil-o-glos'se-ah). Tongue-tie. p. 357.

Ankylosis (ang-kil-o'sis). Stiffening of joints. A joint which has become immovable.

Annular (an'u-lar). In the form of a ring.

Anorexia (an-o-rek'se-ah). Loss of appetite for food.

Anteflexion (an-te-flek'shun). A bending forward, as of the uterus.

Ante partum (an-te par'tum) [L.]. Before the birth of a child.

Anterior (an-te're-or). Situated in front of.

Anthelmintic (an-thel-min'tik). 1. Destroying worms. 2. A remedy for intestinal worms.

Antiseptic (an-te-sep'tik). Preventing sepsis, pus-formation, or putrefaction. Among the best common antiseptics are alcohol, creasote, carbolic acid, corrosive sublimate (bichlorid of mercury), chlorin, charcoal, boric acid, tannic acid, lysol. **A. dressing,** a surgical dressing containing an antiseptic. **A. surgery,** surgery with proper use of antiseptics.

Anus (a'nus) [L.]. The external opening of the rectum. pp. 31–34.

Apathetic (ap-a-thet'ik). Without emotion. Indifferent to surroundings.

Aphthæ (af'the). Small whitish erosions on the mucous membrane of the mouth. See *Bednar's a.* p. 334.

Areola (ar-e-o'lah). The pigmented ring around the nipple. **Secondary a.,** a slightly pigmented ring just outside the areola, sometimes observed after the fifth month of pregnancy. p. 36.

Argyrol (ar'jir-ol). A drug; a preparation of silver.

Arterial (ar-te're-al). Pertaining to an artery. **A. blood,** the bright red blood in the arteries, which has been aërated, or charged with oxygen in the lungs. **A. hemorrhage,** hemorrhage from an artery.

Artery (ar'ter-e). One of the vessels carrying blood from the heart; so called because the ancients thought they contained air.

Articular (ar-tik'u-lar). Pertaining to a joint.

Articulation (ar-tik-u-la′shun). A joint; the junction of two bones.

Ascites (as-si′tēz). An accumulation of serous fluid in the free abdominal cavity. *Dropsy* of the abdomen.

Asepsis (ah-sep′sis). Without sepsis; freedom from infection; surgical cleanliness.

Aseptic (ah-sep′tik). In a surgically clean manner.

Asphyxia (as-fix′e-ah). Suspended animation; interrupted respiration; that state in which there is complete suspension of the powers of mind and body. **A. neonato′rum,** asphyxia of the new-born. p. 360.

Aspirating needle (as-pir-a′ting ne′dl). A hollow needle attached to a suction syringe: used for withdrawing fluids from the body.

Assimilate (as-sim′i-late). To convert food into chyle and blood; to change food into a substance like the living body.

Astringent (as-trin′jent). Having the power to diminish excessive discharges.

Atelectasis (at-el-ek′tas-is). 1. Imperfect expansion of the lungs at birth. 2. Partial collapse of the lungs. p. 337.

Atony (at′on-e). Lack of normal tone or strength.

Atrophic (at-rof′ik). Not properly nourished; showing atrophy.

Atrophied (at′ro-fēd). Wasted; having atrophy.

Atrophy (at′ro-fē). Wasting or emaciation with loss of strength, but without fever.

Autoclave (aw′to-klāv). A high pressure steam-sterilizer.

Autoinfection. Infection from germs living in the vagina not introduced from without. p. 283.

Autotransfusion (aw″to-trans-fu′-zhun). The forcing of blood into the vital parts of the body by bandaging or elevating the limbs.

Avicenna (av-i-sen′ah). Mohammedan physician. Born 980; died 1037.

Axilla (ak-sil′lah). The arm-pit.

Axis-traction (ak′sis-trak′shun). Pulling or drawing on the head of the child during delivery, in the directions normally followed by the head during birth—*i. e.*, in the axis of the pelvis. **A.-t. forceps,** obstetric forceps with an attachment for producing axis-traction. p. 191.

B.

Bacteria (bak-te′re-ah) [L.]. Plural of *Bacterium*. Vegetable microorganism.

Bag of Waters. The membranes enclosing the liquor amnii and the fetus. Sometimes applied to that portion of the membranes which protrude into the os. p. 59.

Ballottement (bal-ōt-maw′). The diagnosis of pregnancy by pushing up the uterus by a finger inserted into the vagina, so as to cause the fetus to rise and fall again like a heavy body in water.

Barnes' bags (barnz). Rubber bags used to dilate the cervix uteri. p. 231.

Basiotribe (ba′se-o-trīb). An instrument for crushing the base of the fetal skull.

Basiotripsy (ba′se-o-trip-se). Crushing the fetal skull with a basiotribe.

Baudelocque (bo-del-ok′). A famous French obstetrician. Born 1746; died 1810. **B.'s diameter,** the external conjugate diameter of the pelvis, measured from the last lumbar spine behind to the top of the pubic bone in front.

Bednar's aphthæ (bed-nars′ af′-thē). Shallow ulcers in the back part of the mouth of the new-born. They are caused by badly shaped rubber nipples, or by force in cleansing the mouth. p. 334.

Bimanual (bi-man′u-al). Performed with both hands. **B. palpation,** examination of the pelvic organs of a woman with one hand on the abdomen and two fingers of the other hand in the vagina.

Binder (bīn′der). A broad band passed tightly around the abdomen after childbirth. pp. 92, 308.

Birth (berth). 1. The delivery of a child. 2. That which is born. **B.-mark,** "mother's mark"; "maternal mark." A blemish on the skin found at birth. p. 83.

Bistoury (bis'too-re). A small knife for surgical purposes.

Blennorrhea (blen-nor-re'ah). An excessive secretion of the mucous glands of any mucous membrane.

Borborygmus (bor-bo-rig'mus), pl., *borborygmi* [L.]. A rumbling noise made by gases in the bowels.

Bougie (boo-zhe') [Fr.]. A slender instrument for introduction into the urethra, esophagus, uterus, vagina, or rectum.

Breast-pump (brest-pump). An instrument for drawing the milk out of the breast. p. 163.

Breech (brēch). The buttocks. **B. delivery,** labor in which the breech presents and is delivered first. p. 177.

Brim (brim). The upper edge of the pelvis; the inlet, or superior strait. Figs. 1, 5, 9.

C

Calorie (kal'o-re). The amount of heat which the combustion of a given material will develop in raising one kilogram of water from 0° to 1° C. p. 402.

Capillary (kap'il-la-re). 1. Resembling hair in size. 2. One of the minute blood-vessels which form a network between the minute arteries and veins.

Caput (ka'put), pl., *cap'ita* [L.]. The head, including the skull and face. **C. incunia'tum,** impaction of the fetal head during labor. **C. succeda'neum,** a dropsical swelling on the presenting part of the head during labor, due to lack of pressure on that part. p. 356.

Carbohydrate (kar-bo-hi'drāt). One of a group of chemical compounds of which sugar, starches, and gums are the most important.

Carbon dioxid (kar'bon di-ox'id). Carbonic acid gas.

Caries (ka're-ēz). Decay of the bones or teeth.

Carminative (kar-min'at-iv). A drug. A remedy for flatulence, tending to relieve same.

Cartilage (kar'til-ej). Gristle; a pearly white, glistening substance formed at the articular surfaces of bones. **Ensiform c.,** the cartilage at the lower extremity of the breast-bone.

Casein (ka'se-in). The principal proteid of milk and the basis of cheese.

Caseo'sa, Ver'nix. The greasy, whitish substance which covers the skin of the fetus. p. 69.

Cast (kast). A model of a hollow organ, especially one of the tubules of the kidney, and found in the urine.

Carminative. A remedy which aids the expulsion of gas in the bowels or stomach. p. 288.

Cathartic (kath-ar'tik). 1. Purgative or purging. 2. A drug that increases evacuation from the bowels.

Catheter (kath'et-er). A slender tubular instrument for withdrawing fluids from a cavity of the body or for distending a passage. **Tracheal c.,** a woven catheter used for aspirating foreign substances from the windpipe of the child, and for blowing air into the lungs. p. 360.

Caul (kawl). A portion of the amniotic membrane which sometimes covers the child's head at birth.

Celiotomy (se-le-ot'o-me). Abdominal section; laparotomy; opening the abdomen.

Cell (sel). 1. Any one of the minute masses of protoplasm of which organized tissue is composed. 2. One of the chambers holding the fluids of a galvanic battery. 3. A small, partly closed space, as an air-cell.

Cellulitis (sel-u-li'tis). Inflammation of cellular tissue; especially purulent inflammation of the loose subcutaneous tissue.

Cephalhematoma (sef''al-he-mat-o'mah). A blood-tumor occurring on the head of the new-born infant. p. 356.

Cephalic (sef-al'ik). Pertaining to the head. **C. pole,** the head of the fetus. **C. presentation,** the presentation of any part of the head of the fetus in delivery. p. 169.

Cephalotomy (sef-al-ot'o-me). The operation of cutting or breaking down the fetal head; craniotomy.

Cephalotribe (sef'al-o-trib). An instrument for crushing the fetal head.

Cephalotripsy (sef'al-o-trip-se). The operation of crushing the fetal

skull with the cephalotribe. See *Craniotomy*.

Cerebrospinal (ser''e-bro-spi'nal). Relating to the brain and spinal cord. **C. fluid,** the clear fluid in the ventricles of the brain and in the central canal of the spinal cord.

Cervix (ser'vix) [L.]. The neck or any neck-like part, especially the back part. **C. u'teri,** the neck or narrow lower end of the uterus.

Cesarean section (se-za're-an). The operation of cutting through the abdominal walls and through the walls of the uterus, and delivering the child through these incisions. p. 201.

Chafe (chāf). 1. To fret and wear by rubbing. 2. The reddened, irritated skin in the folds of fat babies. p. 159.

Chloasma (klo-az'mah). An affection of the skin in which there are patches with a yellowish or brownish discoloration. **C. gravid'arum,** chloasma which occurs during pregnancy. **C. uteri'num,** the mask of pregnancy. p. 52, Fig. 71.

Chorea (ko-re'ah). St. Vitus' dance; a nervous disease in which there are convulsive movements.

Chorion (ko're-on). The more external of the fetal membranes.

Chromicized catgut (kro'mis-izd kat'gut). Catgut treated with chromic acid. It is used for sutures and ligatures.

Chronic (kron'ik). Long-continued; the opposite of acute.

Cicatricial (sik-at-rish'al). Relating to a cicatrix or scar.

Cicatrix (sik-a'trix or sik'at-rix), pl., *cica'trices* [L., "scar"]. A scar. The mark left by a sore or wound.

Cilia (sil'e-ah). The eyelashes.

Circulatory (sir'ku-la-to-re). Relating to the circulation. **C. system,** the heart, arteries, veins, and capillaries, taken as a whole.

Circumcision (ser-kum-sizh'un). The removal of all or a part of the foreskin, or prepuce. p. 338.

Cleft palate (kleft pal-at). A congenital split in the roof of the mouth, so that the nose and mouth form one cavity. p. 356.

Climacteric (kli-mak-ter'ik). The cessation of menstruation in women.

Clitoris (klit'o-ris). A small, elongated, erectile body, situated at the anterior part of the vulva.

Clonic spasms (klon-ik). Spasms in which the contractions and relaxations alternate, as in eclampsia.

Clyster (klis'ter). An enema.

Coagulated (ko-ag'u-lāt-ed). Clotted.

Coaptation (ko-ap-ta'shun). The fitting together of displaced parts, as the ends of a fractured bone.

Collapse (kol-laps'). 1. To fall in. 2. Extreme depression or complete prostration of the vital powers, with failure of circulation.

Collyrium (kol-ir'e-um). An eye-wash or salve for the eyes.

Colostrum (ko-los'trum) [L.]. The first fluid secreted by the mammary glands after delivery. It contains less casein and more albumin than the ordinary milk, as well as numerous fatty globules. **C.-corpuscles,** the granular cells found in colostrum. p. 65.

Colpeurynter (kol'pu-rin-ter). A dilatable bag used to distend the vagina. p. 231.

Colpeurysis (kol-pu'ris-is). Dilatation of the vagina by means of the colpeurynter.

Coma (ko'mah) [L.]. Profound stupor or drowsiness occurring in the course of certain diseases, as eclampsia, or after severe injury.

Comatose (ko'mat-ōs). Affected with coma.

Comedo (kom-e'do), pl., *comedo'nes*. "Black-heads." The dried plugs of sebaceous matter sometimes found in the pores of the skin. In the newborn they are white.

Conception (kon-sep'shun). The impregnation of the ovum by the spermatozoid. The beginning of pregnancy. p. 40.

Condy's fluid (kon'dēz). An antiseptic preparation of permanganate of potash.

Congenital (kon-jen'it-al). Existing at or before birth.

Congestion (kon-jest'yun). Excessive accumulation of blood in a part.

Conjugata vera (kon-ju-gā'ta ve'ra) [L.]. The internal pelvic diam-

eter measured from the promontory of the sacrum to the upper margin of the pubic joint.

Conjunctiva (kon-junk-ti'vah) [L.]. The mucous membrane which lines the eyelids and covers the eyeball.

Conjunctival (kon-junk'tiv-al). Relating to the conjunctiva.

Conjunctivitis (kon-junk-tiv-i'tis). Inflammation of the conjunctiva.

Contraindiction (kon''tra-in-di-ka'shun). A condition that renders some particular line of treatment improper or undesirable.

Convalescence (kon-val-es'ens). The stage of recovery.

Convalescent (kon-val-es'ent). Regaining health after illness. **C. diet,** any simple, easily digested food suitable for a convalescent patient.

Convulsion (kon-vul'shun). A spasm; a series of violent involuntary contractions of a muscle or set of muscles.

Coprostasis (kop-ros'tas-is). Costiveness; constipation; undue retention of feces in the bowels.

Cornea (kor'ne-ah). The transparent, convex, and nearly circular anterior portion of the eyeball.

Coronal (kor'o-nal). Relating to the crown of the head. **C.** or **coronary suture,** the suture formed by the junction of the frontal with the parietal bones.

Coryza (ko-ri'zah). Cold in the head; an acute catarrh of the nasal mucous membrane.

Couveuse (koo-vez') [Fr.]. An incubator. p. 368.

Cranioclasis (kra-ne-ok'las-is). The crushing of the fetal skull. See *Craniotomy*. p. 198.

Cranioclast (kra'ne-o-klast). An instrument for crushing the fetal skull. p. 198.

Craniotomy (kra-ne-ot'o-me). The operation of cutting or breaking down the fetal head. **C. scissors,** an S-shaped scissors for performing craniotomy. p. 199.

Credé's method for preventing ophthalmia (kreh-days'). The application of a drop 2 per cent. silver nitrate solution to the eye of the newborn, followed by normal salt solution. **C.'s method of expelling placenta,** a method of expelling the placenta. The operator grasps the fundus of the uterus (through the abdominal wall) and with moderate pressure squeezes out the placenta, "as the seed of a ripe cherry compressed between the fingers."

Crenasol (kren'as-ol). A disinfectant.

Crotchet (krot'chet). A curved, hook-like instrument for extracting the fetus after craniotomy; it is no longer used.

Curd (kurd). The coagulum of milk. It is mostly casein.

Curet (ku-ret') [Fr.]. A kind of scraper or spoon for removing growths or other materials from the walls of cavities.

Curetment (ku-ret'ment). Same as *Curettage*. p. 224.

Curettage (ku-ret-tazh'). Treatment by the curet. p. 224.

Cutaneous (ku-ta'ne-us). Pertaining to the skin.

Cutis (ku'tis). 1. The skin. 2. The true skin, or cutis vera.

Cyanosis (si-an-o'sis), Blueness of the skin caused by deficient amount of oxygen in the blood. p. 337.

Cyanotic (si-an-ot'ik). Affected with cyanosis.

Cystitis (sis-ti'tis). Inflammation of the bladder. p. 303.

Cystoscope (sis'to-skōp). An instrument for examining the interior of the bladder. **To cystoscope:** to look into the bladder.

D.

Debility (de-bil'it-e). Weakness; loss of power.

Decapitation (de-kap-it-a'shun). The removal of the head of the fetus in embryotomy. p. 197.

Decidua (de-sid'u-ah). The membranous structure produced during pregnancy and thrown off after parturition. It is composed of the greatly changed mucous membrane of the uterus. **D. reflex'a,** that portion of the decidua which is reflected over the ovum, surrounding it. **D. serot'ina,** that part of the decidua which lies under the maternal portion of the

placenta. **D. ve'ra**, that portion of the decidua which lines the uterus.

Decomposition (de''kom-po-zish'-un). 1. The separation of compound substances into their constituent parts. 2. Putrefaction or decay.

Decubitus (de-ku'bit-us). 1. The act of lying down. 2. A bed-sore. p. 242.

Defecation (def-ek-a'shun). Evacuation of the bowels.

Delirium (de-lir'e-um). Derangement of the mind, characterized by wandering speech, wakefulness, and excitement.

Delivery (de-liv'er-e). 1. The expulsion or extraction of the child at birth. 2. Removal of a part from the body—*e. g.*, the placenta.

Denudation (den-u-da'shun). 1. The act of laying bare. 2. The removal of the epithelium.

Denuded (de-nu'ded). Laid bare.

Desquamation (des-kwa-ma'shun). The peeling off of skin in flakes.

Detritus (de-tri'tus). Broken-down material, waste.

Diagnosis (di-ag-no'sis). The art or science of distinguishing one disease from another by means of signs and symptoms.

Diagnostic (di-ag-nos'tik). Distinctive; indicating the nature of a disease; furnishing a diagnosis.

Diaphoresis (di''af-o-re'sis). Perspiration, especially profuse perspiration.

Diaphoretic (di'af-o-re'tik). 1. Causing diaphoresis. 2. A drug that causes sweating.

Diaphragm (di'af-ram). The musculomembranous partition between the chest and abdomen, and the most important muscle of respiration.

Diathesis (di-ath'es-is). Natural predisposition to a certain disease.

Diet (di'et). 1. Victuals; habitual food. 2. Course of food selected with reference to a particular state of health. **D. sheet**, a written or printed diet-list.

Dietary (di'et-a-re). A regular or systematic scheme of diet.

Dietetic (di-et-et'ik). Pertaining to diet. **D. treatment**, treatment of disease by means of a regulation of diet.

Differential (dif-fer-en'shal). Discriminating; showing a difference. **D. diagnosis**, discriminating between two diseases which present a similar group of symptoms.

Dilute (di-lewt'). 1. To make thin. 2. To diminish the strength, flavor, or color of. 3. To become thin or attenuated.

Disintegration (dis-in-te-gra'-shun). Decay. The separation of a substance into its component parts.

Diuresis (di-u-re'sis). Increased secretion of urine.

Diuretic (di-u-ret'ik). 1. Producing diuresis. 2. A drug that causes increased flow of urine.

Douche (doosh). A stream of water directed against a part or into a cavity. p. 222.

Dropsy (drop'se). The abnormal accumulation of serous fluid in the tissues or cavities of the body.

Duct (dukt). A passage with well-defined walls; especially, a tube for the passage of a secretion or fluid.

Ductus (duk'tus). A duct. **D. arterio'sus**, a blood-vessel in the fetus communicating directly between the pulmonary artery and the aorta. **D. veno'sus**, a blood-vessel in the fetus communicating directly between the umbilical vein and the descending vena cava.

Dysmenorrhea (dis''men-or-re'-ah). Painful or difficult menstruation.

Dyspnea (disp-ne'ah). Difficult or labored breathing.

Dystocia, Dystokia (dis-to'se-ah, dis-to'ke-ah). Painful, slow, or difficult labor. **Fetal d.**, dystocia due to malposition or malformation of the fetus. **Maternal d.**, dystocia due to some deformity on the part of the mother. **Placental d.**, difficulty in removing the placenta.

E.

Ecchymosis (ek-ke-mo'sis). An extravasation of blood under the skin or mucous membrane.

Eclampsia (ek-klamp'se-ah). A sudden attack of convulsions occurring during pregnancy, labor, or just after labor. p. 256.

Ectopic (ek-top'ik). Out of the normal place. **E. gestation,** pregnancy in which the fetus is not in the uterus. See *Extra-uterine pregnancy*. **E. pregnancy,** same as *Ectopic gestation*. **E. sac,** the amniotic sac and its coverings in ectopic gestation. p. 252.

Eczema (ek'ze-mah). A non-contagious skin disease whose prominent manifestations are the formation of small vesicles closely crowded together, and an intolerable itching and burning of the affected part. **E. intertri'go,** an eczematous condition in the folds of fat babies; chafe. p. 343.

Eczematous (ek-zem'at-ous). Affected with eczema.

Eliminate (e-lim'in-āt). To expel; to throw off waste matter.

Elimination (e-lim-in-a'shun). The act of throwing off waste matter.

Emaciation (e-ma-she-a'shun). A wasted condition of the body. Loss of flesh.

Embolism (em'bol-izm). The plugging of a blood-vessel by a clot or other obstruction which has been carried to this place by the blood current. **Air e.,** passage of air in injurious quantities to the heart and circulation. p. 128.

Embolus (em'bo-lus). A clot or other obstruction of a blood-vessel which has been carried from a distant vessel and lodged in a smaller one, obstructing the circulation.

Embryo (em'bre-o). The fetus before the end of the third month of development.

Embryotomy (em-bre-ot'o-me). The destruction of the fetus in the uterus. p. 198.

Emetic (e-met'ik). 1. Causing vomiting. 2. A drug which causes vomiting.

Emmenagogue (em-men'ag-og). 1. A drug having the power to stimulate the menstrual flow. 2. Aiding the function of menstruation.

Emprosthotonos (em-pros-thot'o-nos). Spasm causing the body to bend forward.

Emulsion (e-mul'shun). A milk-like mixture prepared by uniting oil and water by means of another substance, usually a mucilage.

Emunctory (e-munk'to-re). 1. Excretory. 2. An excretory duct.

Enema (en'e-mah). A medicine or fluid injected into the rectum, either to procure an evacuation or for nourishment.

Enervation (en-er-va'shun). Languor; weakness; lack of nervous energy.

Engagement (en-gāj'-ment). The entrance of the fetal head into the superior strait of the pelvis.

Ensiform (en'si-form). Sword-shaped. **E. appen'dix, E. car'tilage, E. pro'cess,** the lower extremity of the breast-bone.

Enteritis (en-ter-i'tis). Inflammation of the small intestine.

Epidemic (ep-id-em'ik). 1. A disease which is widely prevalent. 2. The season of prevalence of an epidemic disease.

Epilepsy (ep'il-ep-se). The falling sickness; a chronic nervous disease characterized by convulsions or fits, and in which there is loss of consciousness.

Epileptic (ep-e-lep'tik). 1. Pertaining to epilepsy. 2. A person affected with epilepsy.

Epileptiform (ep-e-lep'te-form). Resembling epilepsy. See *Eclampsia*.

Episiotomy (ep-iz-e-ot'o-me). An incision of the vulvar orifice, to permit the fetus to pass. p. 61.

Epithelium (ep-ith-e'le-um). Cuticle, the covering of the true skin and mucous membrane.

Ergot (er'got). A drug having the power to stimulate uterine contraction. It is used to check hemorrhage after labor, and to arrest hemorrhages from any organ; to relieve congestion of the brain and spinal cord. Dose, 15–60 minims (1–4 c.c.).

Ergotin (er'go-tin). The active principle of ergot. Dose, $\frac{1}{15}$–$\frac{1}{2}$ grain (0.0042–0.033 gm.).

Erosion (e-ro'zhun). An eating or gnawing away; a kind of ulceration.

Erysipelas (er-is-ip'el-as). An acute contagious disease caused by a germ, *Streptococ'cus erysipel'atis*, and characterized by chill, high fever, and

intense local redness and swelling of the skin and mucous membrane.

Eustachian tube (u-sta'ke-an tūb). The canal extending from the pharynx to the middle ear, or tympanum. **E. valve,** a semilunar valve in the heart at the opening of the inferior vena cava.

Eutocia, Eutokia (u-to'she-ah, u-to'ke-ah). Normal labor.

Evacuation (e-vak-u-a'shun). 1. The act of moving the bowels. 2. The discharge from the bowels.

Evisceration (e-vis-er-a'shun). Removal of the bowels or viscera from the body. **Obstetric e.,** removal of viscera of the fetus in embryotomy.

Exacerbation (ex-as-er-ba'shun). 1. Increase in severity of the symptoms of a disease. 2. The stage of periodic increase in the severity of symptoms.

Excoriation (ex-ko-re-a'shun). A superficial loss of substance. p. 342.

Excrement (ex'kre-ment). Feces. That which is excreted by the bowels.

Excrete (ex-krēt). To throw off, as waste matter, by a normal discharge.

Excretion (ex-kre'shun). 1. The process of excreting. 2. The material which has been excreted.

Exostosis (ex-os-to'sis). A bony growth on the surface of a bone or tooth.

Expiration (ex-pi-ra'shun). The act of expelling air from the lungs.

Expiratory (ex-pīr'a-to-re). Pertaining to expiration.

Expire (ex-pīr'). 1. To expel the breath. 2. To die.

Expulsive (ex-pul'siv). Driving or forcing out. **E. pains,** those occurring during the second stage of labor. **E. stage,** the second stage of labor. p. 118.

Exsanguination (ex-sang-gwin-a'shun). The condition of being without blood. p. 277.

Extension (ex-ten'shun). A term applied to that stage in the delivery of the fetal head when the chin is no longer flexed on the chest. The opposite of flexion.

Extra-uterine (ex-trah-u'ter-in). Outside the uterus. **E. life,** life after birth. **E. pregnancy,** pregnancy in which the fetus is not contained in the uterus, but in some organ outside the uterus. Ectopic gestation. p. 252.

Extravasation (ex-trav-as-a'shun). The escape of a fluid from its normal vessel or cavity into the surrounding tissues.

Exudation (ek-su-da'shun). Oozing; slow escape of liquid.

F.

Facial (fa'shal). Pertaining to the face. p. 354.

Fæces (fe'sez). See *Feces.*

Fallopian (fal-lo'pe-an) **pregnancy.** Pregnancy occurring in the Fallopian tubes; same as tubal pregnancy. **F. tubes,** the oviducts: two canals leading from the ovaries to the body of the uterus. Fig. 15.

Farinaceous (far-in-a'shus). Containing flour: said of certain diets.

Fauces (faw'ses). The back part of the mouth leading into the pharynx.

Febrile (feb'ril). Pertaining to fever. Feverish.

Fecal (fe'kal). Pertaining to feces; containing feces.

Feces (fe'sēz). The excrement or undigested residue of the food discharged from the bowels.

Fecundation (fe-kun-da'shun). The fertilization of the ovum by means of the spermatozoid. p. 40.

Fenestrated (fen'es-tra-ted). Having openings, or fenestra.

Fetus (fe'tus) [L.]. The child *in utero* from the end of the third month of development till birth.

Fillet (fil'let). A loop of tape used for making traction.

Finger cot (fing'ger kot). A thin rubber covering for the finger. Occasionally used as a dressing for a wound of the finger.

Fissure (fish'ūr). A crack or narrow opening. p. 313.

Flex (flex). To bend, as a joint.

Flexion (flex'shun). 1. The act of bending. 2. The state or condition of being bent. **F. stage,** that stage in labor in which the chin of the fetus is pressed against its breast.

Flocculus (flok'u-lus), pl., *floc'culi*

[L.]. A small shred or flake, usually floating in a liquid.

Fontanel, Fontanelle (fon-tan-el′). The quadrangular space at the junction of the frontal with the two parietal bones in infants. "The soft spot." The other junctions of the cranial bones are also called fontanels. p. 43.

Foramen (for-a′men), pl., *foram′ina* [L.]. A hole or opening, especially through bone. **F. ova′le,** an opening in the partition between the auricles in the fetus.

Forceps (for′seps). A two-bladed instrument for grasping and holding that to which it is applied. **Obstetric f.,** the instrument used to extract the child's head. p. 190.

Formaldehyd (for-mal′de-hīd). 1. A powerful disinfectant gas. 2. An aqueous solution of the gas is used as a surgical antiseptic and preservative for specimens. p. 443.

Formula (for′mu-lah). 1. A prescribed method for preparing a medicine. 2. A combination of symbols used to express the chemical constitution of a substance.

Fornix (for′nix). Arch or vault. **F. of the vagina,** the hollow places between the cervix and the anterior, posterior, and lateral walls of the vagina.

Fourchet (foor-shet′) [Fr.]. The fold of mucous membrane at the posterior junction of the labia majora.

Friable (fri′ab-l). Easily pulverized.

Function (funk′shun). The special office of an organ.

Fundus (fun′dus) [L.]. The base or part of a hollow organ remotest from its mouth. **F. u′teri,** the part of the uterus which is most remote from the cervix or os.

Funis (fu′nis). The umbilical cord.

Furunculus (fu-rung′ku-lus). A boil.

G.

Galactagogue (gal-ak′tag-og). 1. Increasing the secretion of milk. 2. A drug having the power to increase the flow of milk. p. 322.

Galactorrhea (gal-ak-tor-rhe′ah). Excessive secretion of milk. p. 321.

Galactostasis. Cessation or stagnation of the milk-secretion.

Gastric (gas′trik). Pertaining to the stomach.

Gavage (gah-vazh′) [Fr.]. 1. Feeding by the stomach-tube. 2. The employment of a very full diet. p. 381.

Genital (jen′it-al). Pertaining to generation, or to the organs of generation. p. 31.

Genupectoral (je-nu-pek′tor-al). Relating to the knees and chest. **G. position,** "knee-chest position." That posture in which the patient rests on the knees and chest, the thighs extending upward, the buttocks being as high as possible. p. 238.

Germicidal (jer-mis-i′dal). Destructive to germs.

Germicide (jer′mis-īd). An agent having the power to destroy germs.

Gestation (jes-ta′shun). Pregnancy. p. 49.

Gland (gland). An organ which separates a fluid from the blood.

Glandular (gland′u-lar). 1. Having the nature of a gland. 2. Furnished with glands.

Glans (glanz), pl., *glan′des.* Latin for *Gland.* The distal end or head of the penis or clitoris. p. 339.

Graafian follicle (grah′fe-an fol′lik-l). Small spherical bodies in the ovary, each containing an ovum.

Granulation (gran-u-la′shun). The formation in wounds of small, rounded, fleshy masses; also a mass so formed.

Gravid uterus (grav′id u′ter-us). Pregnant uterus.

Gravida (grav′id-ah) [L.]. A pregnant woman.

Gravidity (grav-id′it-e). Pregnancy.

Gum, red (gum). Strophulus, a reddish eruption on the skin of the new-born. **White g.,** strophulus albus; a whitish eruption on the skin of the new-born. p. 342.

Gynecic (jin-e′sik). Relating to women.

Gynecologist (jin-e-kol′o-jist). One who is skilled in gynecology.

Gynecology (jin-e-kol′o-je). That branch of medicine which treats of women's constitution and diseases.

H.

Harelip (hār'lip). A congenital slit in the upper lip, sometimes double. p. 356.

Hebosteotomy. Section of the bone at the side of the pubic symphysis,—pubiotomy.

Hematoma An accumulation of blood in the tissues.

Hematemesis (hem-at-em'es-is). The vomiting of blood.

Hematosalpinx (hem''at-o-sal'-pinx). Distention of the Fallopian tube with blood.

Hemorrhage (hem'or-rej). The escape of blood from its natural channels. p. 272.

Hemorrhoid (hem'or-roid). A pile; a vascular tumor of the mucous membrane of the rectum. **External h.,** appearing external to the anus. **Internal h.,** within the anus. p. 34.

Hernia (her'ne-ah) [L.]. The protrusion of an organ, or part of an organ, through an abnormal opening; rupture. p. 358.

Heterogeneous (het''er-o-je'ne-us). Of dissimilar nature.

High forceps (hī for'seps). The application of the forceps to the fetal head as it enters the brim of the pelvis. p. 193.

Hirsute (her'sūt). Covered with hair.

Homogeneous (ho-mo-je'ne-us). Of a similar nature.

Hydragogue (hi'dra-gog). A drug having the power to increase the glandular secretions, and producing profuse watery discharges from the bowels.

Hydrometer (hi-drom'et-er). An instrument for measuring the specific gravity of fluids.

Hygiene (hi-jēn'). The science of health and its preservation.

Hygienic (hi-je-en'ik). Pertaining to hygiene or to health.

Hygrometer (hi-grom'et-er). An instrument for measuring the moisture of the atmosphere. p. 372.

Hymen (hi'men). The membranous fold which partly closes the entrance to the vagina, especially in the virgin.

Hyperemesis (hi-per-em'e-sis). Excessive vomiting. p. 238.

Hypersecretion (hi''per-se-kre'-shun). Excessive secretion.

Hypertrophy (hi-per'tro-fe). The unnatural overgrowth of an organ or part.

Hypodermatic, Hypodermic (hi''-po-der-mat'ik, hi-po-der'mik). 1. Pertaining to the application of medicine under the skin. 2. A medicine introduced under the skin. **H. injection,** the injection of medicine or nutrient solutions under the skin. **H. needle,** the hollow needle of a hypodermic syringe. **H. syringe,** a small syringe for injecting fluid under the skin.

Hypodermoclysis (hi''po-der-mok'lis-is). Introduction into the subcutaneous tissue of fluids in large quantity. p. 225.

Hypogastric arteries (hi-po-gas'-trik). The umbilical arteries. They form part of the umbilical cord.

Hysteria (his-te're-ah). A nervous disease, mainly of young women, characterized by lack of control over acts and emotions.

Hysterotomy (his-ter-ot'o-me). Cesarean section. p. 201.

I.

Icterus neonatorum (ik'ter-us ne-o-na'tor-um). The jaundice sometimes seen in the new-born. pp. 69, 341.

Iliac (il'e-ak). Pertaining to the ilium or flank. **I. artery,** one of the two branches of the abdominal aorta. **I. fossa,** the broad, shallow cavity at the upper part of the inner surface of the ilium.

Ilium (il'e-um), pl., *il'ia* [L.]. The broad, flat, upper part of the innominate bone.

Impregnation (im-preg-na'shun). The act of making pregnant; fecundation. p. 40.

Impression, maternal (im-presh'-un, mat-er'nal). The effect produced on the fetus *in utero* by the mental and other experiences of the mother during pregnancy. p. 82.

Inanition fever (in-an-ish'un fe'-ver). A fever in infants, due to wasting of the body from lack of nourishment. p. 333.

Incise (in-siz′). To cut in or into, as with a knife.

Incised wound (in-sizd′ woond). A wound made with a sharp knife.

Incision (in-sizh′un). A wound made by cutting; a cut.

Incontinentia paradoxa (in-kon-tin-en′she-ah par-ad-oks′ah). Filling of the bladder with urine, overflow and dribbling away of urine. pp. 67, 248.

Incubator (in′ku-ba-tor). An apparatus for rearing prematurely born children; a couveuse. p. 368.

Indurated (in′du-ra-ted). Hardened; rendered hard.

Induration (in-du-ra′shun). An abnormally hard spot or place.

Infection (in-fek′shun). 1. The communication of disease from one person to another. 2. The agent by which a disease is conveyed. **Septic i.,** infection caused by pus-producing germs. p. 279.

Infectious (in-fek′shus). Liable to be communicated by infection.

Inflammation (in-flam-ma′shun). A diseased condition characterized by heat, pain, redness, and swelling, with or without fever.

Infusion (in-fu′zhun). 1. The steeping of a substance in water to obtain its medicinal properties. 2. The injection of a hot normal salt solution, 0.6 per cent., into a blood-vessel or subcutaneous tissue. **Arterial i.,** infusion into an artery. **Subcutaneous i.,** injection of the salt solution into the loose subcutaneous tissue. The usual locations are under the breast and over the shoulder-blades. **Venous i.,** infusion into a vein. Fig. 118.

Ingesta (in-jes′tah). Food taken into the stomach.

Ingestion (in-jest′shun). The act of taking food into the stomach.

Inhalation (in-hal-a′shun). 1. The drawing of air or other vapor into the lungs. 2. A substance to be inhaled as a vapor.

Inlet (in′let). The upper limit of the cavity of the pelvis. Fig. 5.

Innominate (in-nom′in-āt). Not having a name; nameless. **I. bone,** the hip-bone; it consists of the ilium, the ischium, and the os pubis.

Innominatum (in-nom-in-ā′tum). The innominate bone. Fig. 4.

Insomnia (in-som′ne-ah). Inability to sleep; abnormal wakefulness. p. 306.

Inspiration (in-spi-ra′shun). The act of drawing air into the lungs.

Inspiratory (in′spir-a-to-re). Pertaining to inspiration. **I. muscles,** those muscles which, by their contraction, assist in inspiration.

Intertrigo (in-ter-tri′go). A chafing of the skin in moist situations, as about the anus and vulva, and in the arm-pits; chafe. p. 343.

Intestine (in-tes′tin). The bowel. The long membranous tube that extends from the stomach to the anus.

Introitus. (in-tro-i-tus). The entrance to the vagina.

Inunction (in-unk′shun). The act of applying an ointment with friction.

In utero (in u′ter-o). Inside the uterus.

Inversion (in-ver′shun). Turning inside out or upside down. **I. of the uterus,** the turning inside out of the uterus. It may be due to pulling on the cord, a heavy placenta, or to the violent efforts of the patient.

Involution (in-vo-lu′shun). The return of the uterus to its normal size after labor. p. 64.

Irrigation (ir-ig-a′shun). 1. Washing by a stream of water or other lotion. 2. The liquid used for irrigation.

Ischium (is′ke-um), pl., *is′chia* [L.]. The lower, posterior part of the innominate bone. It is separate from it in fetal life and infancy.

Ischuria (is-ku′re-ah). Difficult urination. **I. paradox′a,** overflow of the full bladder. See *Incontinentia paradoxa.* pp. 67, 248.

J.

Jactitation (jak-tit-a′shun). The tossing and restlessness of a patient in acute disease.

Jaundice (jawn′dis) [L., *ic′terus*]. Yellowness of the skin, eyes, and secretions, due to the presence of bile-pigments in the blood. Icterus. pp. 69, 341.

Jelly of Wharton (jel′e). The soft pulpy tissue of the umbilical cord.

K.

Kleptomania (klep-to-ma′ne-ah). A nervous affection characterized by a desire to steal.

Knee-chest position (nē-chest po-zish′un). That position in which the patient rests flat on the chest and knees, with the hips elevated as high as possible, and the thighs extending vertically; same as *genu-pectoral*. p. 238.

Kumiss (koo′mis). A nutritive food prepared originally from mare's milk, now from cow's milk.

Kyphosis (ki-fo′sis). Hump-backed curvature of the spine.

L.

Labia (la′be-ah) [L.]. The plural of *la′bium*. Lips, or parts resembling lips. **L. majo′ra**, the folds of skin and fat which form each side of the vulva. **L. mino′ra**, the folds of mucous membrane inside the labia majora; the nymphæ.

Labor (la′bor). Parturition. The expulsion of the fetus from the uterus. **Dry l.**, labor in which there is a lack of amniotic fluid. **Induced l.**, labor artificially brought on. **Missed l.**, retention of the dead fetus in the uterus beyond the normal period of pregnancy. **Precipitate l.**, labor of abnormally short duration. **Premature l.**, labor occurring before the normal time. **Spontaneous l.**, labor without artificial aid.

Laceration (las-er-a′shun). 1. The act of tearing. 2. A wound made by tearing; in obstetrics, referring to the perineum. pp. 131, 139.

Lactation (lak-ta′shun). 1. The secretion of milk. 2. The period of milk-secretion. 3. The suckling of the infant. p. 65.

Lacteal (lak′te-al). 1. Pertaining to milk. 2. One of the intestinal lymphatics that take up chyle. **L. calculus**, a concretion of thickened milk in one of the milk-ducts. **L. swelling**, a swelling of the breast from an accumulation of milk.

Lactiferous (lak-tif′er-us). Producing or conveying milk. pp. 35, 65.

Lactometer (lak-tom′e-ter). An instrument for finding the specific gravity of milk.

Lambdoid, Lambdoidal (lam′-doid, lam-doi′dal). Shaped like the Greek letter Λ or λ. **L. suture**, the suture between the occipital and the two parietal bones. p. 44.

Lanugo (lan-u′go) [L.]. 1. The fine hair on the body of the fetus. 2. The fine hair found on nearly all the body except the palms and soles. p. 365.

Laparotomy (lap-ar-ot′o-me). 1. Surgical incision through the flank; celiotomy. 2. Abdominal section at any point.

Larynx (lar′inx). The organ of voice; the upper part of the trachea or wind-pipe.

Laxative (lak′sat-iv). Slightly purgative; a medicine which is mildly cathartic.

Layette (lā-et′) [Fr.]. Infant's wardrobe. p. 97.

Lesion (le′zhun). 1. Any hurt, wound, or local degeneration. 2. A diseased condition of a tissue.

Lethargic (le-thar′jik). In a state of lethargy.

Lethargy (leth′ar-je). Stupor or coma. Marked drowsiness.

Leukorrhea, Leucorrhea (lu-kor-re′ah). A whitish discharge from the vagina and uterus; the whites.

Ligature (lig′at-ūr). A thread or wire for tying a blood-vessel or strangulating a part.

Lightening (līt′en-ing). The sinking of the head into the pelvis in the last weeks of pregnancy. p. 55.

Linea (lin′e-ah). Latin for *Line*. A line. **L. al′ba** [L. "white line"]. The central tendinous line extending from the sternum to the pubic bone. **Lineæ albican′tes**, "striæ gravidarum." Shining, whitish, and purplish lines on the abdomen of pregnant women and those who have borne children. They are sometimes due to distention from other causes. pp. 51, 52.

Liquor (li′kwor), pl., *liquo′res* [L.]. A fluid or liquid. **L. am′nii**, the fluid contained in the amniotic sac, and surrounding the child. p. 42.

Lithopedion (lith-o-pe′de-on).

"Stone-child." A fetus that has died and become changed into a hard mass of calcareous matter.

Lithotomy (lith-ot'o-me). The removal of a stone by cutting into the bladder; cystotomy. **L. position,** the patient lies on the back, with the legs and thighs well flexed, the knees widely separated, and hips well over the edge of the table. pp. 185, 186.

Lochia (lo'ke-ah). The vaginal and uterine discharge occurring for several days after delivery. **L. al'ba,** the whitish discharge normal after the first ten days of the puerperal state. **L. cruen'ta, L. ru'bra,** the blood-stained discharge occurring the first week after delivery. **L. sanguinolen'ta,** the watery bloody discharge from the third to sixth day. **L. serosa,** the pinkish or serous discharge after the first ten days. pp. 63, 64.

Lochial (lo'ke-al). Pertaining to the lochia.

Low forceps (lō for'seps). Forceps applied to the fetal head at the outlet of the pelvis. p. 190.

Lues. Syphilis. p. 449.

Lying-in (li-ing-in'). The puerperal state. **L.-i. fever,** puerperal fever. **L.-i. hospital,** a hospital for the care of women during pregnancy and labor and after confinement: a maternity.

Lysis (li'sis). Gradual decline of fever.

M.

Macerated (mas'er-a-ted). Softened and broken up by long-continued action of a fluid or by a digestive process.

Malaise (mal-āz') [Fr.]. Discomfort or uneasiness; indisposition.

Malposition (mal-po-zish'un). Abnormal position.

Malpractice (mal-prak'tis). Improper or injurious practice; unskilful or injurious medical or surgical treatment.

Mamma (mam'mah). The breast; the mammary gland. p. 65.

Mammary (mam'ar-e). Pertaining to the breast.

Mania (ma'ne-ah). A form of insanity in which there are excitement, delusions, and tendency to violence. p. 304.

Maniacal (ma-ni'ak-al). Affected with mania.

Manual (man'u-al). Pertaining to the hands; performed by the hands.

Marantic (mah-ran'tik). Having the nature of marasmus. p. 334.

Marasmus (mar-az'mus). A disease of young children in which there are progressive wasting and emaciation. p. 334.

Massage (mas-sazh'). The systematic employment of friction, kneading, and stroking of the body as a treatment for disease. pp. 148, 309.

Mastitis (mas-ti'tis). Inflammation of the breast. p. 315.

Maternal (mat-urn'al). Pertaining to the mother; derived from the mother. **M. impression,** the effect produced on the fetus *in utero* by the mental and other experiences of the mother during pregnancy. p. 82.

Maternity (mat-er'nit-e). 1. Motherhood. 2. A lying-in hospital. **M. nurse,** an obstetric nurse.

Mauriceau (maw-re-so'). A famous French obstetrician who lived in the eighteenth century.

Meatus (me-a'tus), pl., *mea'ti* [L. for "passage"]. A passage or opening. **M. urina'rius,** the external opening of the urethra. pp. 31, 33.

Meconium (me-ko'ne-um) [L.]. The dark-green substance found in the large intestine of the fetus, and evacuated during the first days. p. 70.

Median, Mesial (me'de-an, me'-she-al). Middle.

Melancholia (mel-an-ko'le-ah). A form of insanity with depression of spirits and gloomy forebodings. pp. 249, 304.

Melena (mel-e'nah). 1. The passage of dark, pitchy feces, stained with blood-pigments, or containing blood. 2. The vomiting of altered blood; black vomit. p. 333.

Membrane (mem'brān). A thin layer of tissue covering a surface or dividing a space. **Mucous m.,** lining of cavities which communicate with the external air. **Serous m.,** the lining of one of the great body cavities.

Membranes (mem′brānz). A term to indicate the amniotic sac. p. 59.

Menopause (men′o-pawz). "Change of life." The period at which menstruation ceases.

Menses (men′sēz). The normal monthly flow of blood from the uterus. pp. 38, 73, 345.

Menstrual (men′stru-al). Relating to the menses.

Menstruate (men′stru-āt). To have the monthly flow.

Menstruation (men-stru-a′shun). The monthly flow; the menses; the function of menstruating. p. 38.

Mento-anterior (men″to-an-te′re-or). Having the chin directed forward. p. 173.

Mentoposterior (men″to-pos-te′re-or). Having the chin directed backward. p. 173.

Microscopic (mi-kro-skop′ik). Visible only with the aid of a microscope.

Micturition (mik-tu-rish′un). Urination.

Midwife (mid′wīf). A woman who attends women in labor.

Miscarriage (mis-kar′rij). A term used by the laity to describe the expulsion of the fetus at any time during pregnancy. p. 55.

Modification (mod″if-ik-ā′shun). An alteration; a change of form or condition. p. 397.

Mole (mōl). A fleshy mass formed in the uterus by the degeneration of an ovum in the early months of pregnancy.

Mons veneris. The large pad of fat over the pubes. p. 32.

Monster (mon′ster). A fetus formed with an excess, a deficiency, or a malposition of parts.

Monstrosity (mon-stros′it-e). A monster.

Montgomery's glands (montgom′er-ēz). Sebaceous glands in the areola around the nipple. p. 36.

Monthlies (month′lēz). The menses. p. 38.

Morbid (mor′bid). Diseased; pertaining to disease.

Morbidity (mor-bid′it-e). 1. The condition or state of being diseased. 2. The sick rate or proportion of disease to health in a community.

Mother's mark (muth′erz). Birth-mark; nevus.

Mucosa (mu-ko′sah). Mucous membrane.

Mucous (mu′kus). Pertaining to or resembling mucus. **M. membrane,** the membranous lining of all cavities of the body which communicate with the external air.

Mucus (mu′kus). The viscid watery secretion of the mucous glands.

Multigravida (mul-te-grav′id-ah). A woman who has been pregnant several times.

Multipara (mul-tip′ar-ah). A woman who has borne several children.

Mummification (mum″mif-ik-a′shun). The drying and shriveling up of the fetus.

N.

Narcotic (nar-kot′ik). 1. Producing sleep or stupor. 2. A drug capable of producing sleep and relieving pain.

Nates (na′tēz). The buttocks.

Nausea (naw′se-ah). Tendency to vomit. Sickness at the stomach.

Navel (na′vel). The umbilicus. **N.-string,** the umbilical cord.

Neonatorum (ne-o-na-to′rum). Of the new-born.

Neonatus (ne-o-na′tus). The new-born. p. 68.

Nephritis (nef-ri′tis). Inflammation of the kidney.

Neurotic (nu-rot′ik). Nervous. Affected with a nervous disease.

Neutral (nu′tral). Indifferent. Not decided nor pronounced. **N. reaction,** a reaction that is neither acid nor alkaline; not turning litmus-paper either red or blue.

Nevus (ne′vus). 1. A birth-mark. 2. A spot on the skin, either congenital or acquired after birth.

Nitrogenous (ni-troj′en-us). Containing nitrogen.

Nodular (nod′u-lar). Like a nodule; having nodules.

Nodule (nod′ūl). A small rounded mass; a small node.

Normal (nor′mal). Natural; according to rule.

Nutrient (nu′tre-ent). 1. Nourish-

ing. 2. A nutritious substance. **N. enema,** an injection into the rectum of easily digested food in liquid form. p. 459.

Nutriment (nu'trim-ent). Nourishment.

Nutrition (nu-trish'un). 1. The process of assimilating food. 2. Nourishment.

Nutritious (nu-trish'us). Nourishing.

Nutritive (nu'trit-iv). Same as nutrient. **N. enema,** nutrient enema. p. 459.

Nymphæ (nim'fe). The labia minora. p. 32.

O.

Obstetric, Obstetrical (ob-stet'-rik, ob-stet'rik-al). Pertaining to midwifery or obstetrics.

Obstetrician (ob-stet-rish'un). An accoucheur; one who is skilled in the delivery of women in labor.

Obstetrics (ob-stet'riks). The science and art of assisting women through pregnancy and labor and during the puerperium; midwifery.

Occiput (ok'sip-ut) [L.]. The back part of the head. p. 171.

Oleum ricini (o'le-um ris'in-i). Castor oil. Dose, 3–8 drams. p. 144.

Oligohydramnios (ol" ig-o-hi-dram'ne-os). Scarcity of the amniotic fluid.

Opacity (o-pas'it-e). An opaque spot; inability to transmit the rays of light.

Ophthalmia (of-thal'me-ah). Inflammation of the eye or of the mucous membrane lining the eyelids. **O. neonato'rum,** ophthalmia of the new-born. p. 347.

Organ (or'gan). Any part of the body having a special function.

Os (os). Latin for *mouth.* **O. u'teri,** the mouth of the uterus. **O. u'teri exter'num,** the external opening of the canal of the cervix. **O. u'teri inter'num,** the internal opening of the canal of the cervix. p. 28.

Os (os). Latin for *bone.* **O. innomina'tum,** innominate bone.

Osmosis (os-mo'sis). The passage of a fluid or of salts through a membrane.

Outlet (out'let). The lower limit of the cavity of the pelvis. Figs. 6, 8.

Ovarian (o-va're-an). Pertaining to the ovary.

Ovary (o'va-re). The female sexual gland in which the ova are developed. The ovaries are situated in the pelvis, on either side of the uterus. p. 31. Fig. 15.

Oviduct (o'vid-ukt). The Fallopian tube, which carries the ovum from the ovary to the uterus. Fig. 15.

Ovisac (o'vis-ak). Graafian follicle, which see.

Ovulation (o-vu-la'shun). The formation and discharge of the unimpregnated ovum from the ovary. p. 37.

Ovule (o'vūl). The ovum within the Graafian follicle.

Ovum (o'vum). 1. An egg. 2. The female reproductive cell. The human ovum is about $\frac{1}{120}$ inch in diameter. p. 37.

Oxytocic (oks-e-to'sik). 1. Hastening delivery. 2. A drug which hastens delivery.

Ozena (o-ze'nah). A disease of the nose with an offensive discharge.

P.

Pack the uterus. To tampon the uterus. p. 220.

Pallor (pal'lor). Paleness; lack of color. pp. 273, 277.

Palpation (pal-pa'shun). Examination by the hand or by the sense of touch. **Obstetric p.,** palpation of the abdomen of the pregnant woman, to learn the size, position, and presentation of the fetus. p. 173.

Palpitation (pal-pit-a'shun). Unduly rapid action of the heart.

Paraplegia (par-ah-ple'je-ah). Paralysis affecting the lower half of the body. Paralysis of both legs. Usually associated with paralysis of the lower half of the trunk.

Paregoric (par-e-gor'ik). Camphorated tincture of opium. An anodyne. Dose, 5–75 min. for an adult.

Parietal (par-i'et-al). Pertaining to the walls of a cavity or organ. **P. bones,** the two large bones forming the sides and top of the skull. p. 44.

Paroxysm (par'oks-izm). A sudden recurrence or increased severity of symptoms. A periodic attack of symptoms.

Paroxysmal (par-oks-iz'mal). Having paroxysms.

Parturient (par-tu're-ent). Childbearing. Giving birth. **P. canal,** the uterus and vagina considered as one canal. **P. woman,** a woman in labor.

Parturition (par-tu-rish'un). The process of giving birth to a child.

Pasteur (pas-ter'). A noted French physician; born, 1822; died, 1899.

Pasteurization (pas''tur-iz-a'shun). The checking of fermentation (especially in milk) by heating to a temperature of from 155° to 170° Fahrenheit for thirty minutes.

Paternal (pa-ter'nal). Relating to or derived from the father.

Pathologic, Pathological (path-o-loj'ik, path-o-loj'ik-al). Morbid; diseased.

Pathology (path-ol'o-je). The science which treats of the nature of disease and the changes in the body caused by disease.

Pedunculated (pe-dung'ku-la-ted). Having a peduncle or stem.

Pellicle (pel'ik-l). A thin skin or film. A film on the surface of a liquid.

Pelvimeter (pel-vim'e-ter). An instrument for measuring the diameters of the pelvis. p. 111.

Pelvimetry (pel-vim'et-re). The measurement of the pelvis. **External p.,** external measurements. **Internal p.,** internal measurements. p. 111.

Pelvis (pel'vis). The basin-shaped ring of bone at the lower extremity of the trunk. It is formed in front and at the sides by the innominate bones, and behind by the sacrum and coccyx. pp. 21, 26.

Pemphigus (pem'fig-us). An eruption on the skin consisting of large flat blebs filled with serum or pus.

Pepsin (pep'sin). 1. A ferment of the gastric juice which digests proteids. 2. That used as a medicine is derived from the stomach of pigs. Dose, 10-15 grains.

Peptic salt (pep'tik sawlt). A combination of table salt and scale pepsin. p. 388.

Perforator (per'fo-ra-tor). An instrument for piercing the bones of the fetal head. Fig. 100.

Perineorrhaphy (per''e-ne-or'ra-fe). The operation of suturing a tear or laceration of the perineum. pp. 129, 218.

Perineum (per-e-ne'um). The tissue between the anus and vulva. p. 32.

Periphery (per-if'er-e). The circumference; the portion farthest from the center.

Peristalsis (per-is-tal'sis). The worm-like movements by which the stomach and bowels propel their contents. It is produced by the contraction of the circular and longitudinal muscular fibers of these organs.

Peristaltic (per-is-tal'tik). Pertaining to peristalsis.

Peritoneal (per''it-o-ne'al). Pertaining to the peritoneum.

Peritoneum (per''it-o-ne'um). A serous membrane which lines the abdominal walls and covers all the organs contained in the abdomen.

Peritonitis (per''it-o-ni'tis). Inflammation of the peritoneum.

Pernicious (per-nish'us). Dangerous; tending toward a fatal result.

Perspiration (per-spir-a'shun). 1. Sweat. 2. The function of sweating.

Pessary (pes'sar-e). An instrument placed in the vagina to act as a support to the uterus.

Phantom (fan'tum). An effigy of a child or mother used to illustrate the mechanism of labor. **P. pregnancy,** pseudocyesis; a peculiar enlargement of the abdomen sometimes occurring in hysterical women and resembling the abdomen of a pregnant woman. **P. tumor,** a tumor of the abdomen due to flatus or the contraction of the muscles of the abdomen; phantom pregnancy.

Pharmacopeia (far''mak-o-pe'ah). A book containing directions for preparing medicines. Published by authority in the United States every ten years.

Phenomenon (fe-nom'en-on), pl.,

phenom'ena. Any remarkable appearance. Any sign or symptom.

Phimosis (fi-mo'sis). A tightness of the foreskin so that it cannot be drawn back to uncover the glans of the penis.

Phlegmasia alba dolens (fleg-ma'zhe-ah al'ba do'lens). "Milk leg." Inflammation of the femoral vein occasionally following labor and typhoid fever. It is characterized by a painful swelling of the leg without redness. p. 297.

Phlegmatic (fleg-mat'ik). Sluggish, heavy, dull.

Phlegmon (fleg'mon). Inflammation of connective tissue with the formation of an abscess.

Physical (fiz'ik-al). Pertaining to nature or to the body.

Physiologic (fiz''e-o-loj'ik). Pertaining to physioiogy; normal.

Physiology (fiz-e-ol'o-je). The science which treats of the living body and its parts and functions.

Physique (fi-zēk'). Natural constitution; physical structure of a person.

Physometra (fi-so-me'trah). Distention of the uterus with gas or air.

Pigment (pig'ment). 1. Coloring-matter found in organs and tissues of the body. 2. A dye or paint. A paint-like medicinal preparation to be applied to the skin.

Pigmentary (pig'men-ta-re). Pertaining to pigment.

Pigmentation (pig-men-ta'shun). The deposit of pigment in a part. The discoloration of a part by pigment. See *Chloasma.* p. 52.

Pipet (pi-pet') [Fr.]. A slender glass tube used for transferring liquids.

Placenta (pla-sen'tah). The afterbirth; the round flat organ in the pregnant uterus which establishes communication between mother and child. pp. 42, 46. **P. præ'via,** a placenta which is situated over the internal os. It may cause fatal hemorrhage. p. 250.

Pledget (pled'jet). A plug; a sponge; a small compress or tuft. p. 433.

Plethora (pleth'o-rah, pleth-o'rah). A condition in which there is an excess of blood in the vessels. It is attended by a feeling of fulness in the head, florid complexion, and a tendency to nose-bleed.

Plethoric (pleth-or'ik, pleth'or-ik). Full-blooded.

Pleura (plu'rah). The serous membrane that lines the cavities of the chest and covers the lungs.

Pleural (plu'ral). Pertaining to the pleura.

Podalic (po-dal'ik). Relating to, or by means of, the feet. **P. ver'sion,** the turning of the child in the uterus so that the feet are made to present.

Pole (pōl). Either extremity of any axis.

Polyhydramnios (pol''e-hi-dram'ne-os). Excessive amount of liquor amnii.

Polyuria (pol-e-u're-ah). Increased urination. p. 66.

Position (po-zish'un). 1. The attitude of a patient. 2. The attitude of the fetus in the uterus; the relation which the head of the child bears to the mother's pelvis. If the child's occiput is pointing toward the left side of the mother, it is a left position. p. 169.

Posterior (pos-te're-or). Situated behind or to the rear.

Postnatal (post-na'tal). Occurring after birth.

Postpartum (post-par'tum). Occurring after delivery. **P-p. chill,** a chill lasting several minutes which often follows delivery. **P-p. hemorrhage,** hemorrhage following delivery. p. 272. **P-p. shock,** the exhaustion following labor.

Postpuerperal (post-pu-er'per-al). Occurring after child-birth.

Precordia (pre-kor'de-ah). The fore part of the thorax; the region in front of the heart.

Precordial (pre-kor'de-al). Pertaining to the precordia.

Pregnancy (preg'nan-se). Gestation; the condition of being with child. The duration of pregnancy is about 280 days. p. 49.

Pregnant (preg'nant). With child; gravid.

Premature (pre-mat-ūr'). Occurring before the proper time. **P. in-**

fant, an infant born of a premature labor. **P. labor,** labor occurring from the twenty-eighth to the thirty-eighth week of pregnancy. **P. respiration,** respiration of the child before it is completely born.

Premonitory (pre-mon'it-o-re). Serving as a warning. **P. pains,** uterine pains occurring before the beginning of true labor.

Prepuce (pre'pūs). The foreskin; the fold of skin which covers the glans penis. **P. of the clitoris,** the fold of mucous membrane which covers the glans of the clitoris.

Presentation (pre-zen-ta'shun). That portion of the fetus which occupies the lower segment of the uterus and first enters the birth-canal. p. 169.

Primigravida (prim-ig-rav'id-ah). A woman pregnant for the first time.

Primipara (pri-mip'-ah-rah). A woman who is giving or who has given birth to her first child.

Prognosis (prog-no'sis). A forecast as to the probable result of a disease.

Prognostic symptom (prog-nos'-tik simp'tum). A symptom from which a prognosis may be made.

Prognosticate (prog-nos'tik-āt). To make a prognosis.

Prolapse (pro'laps). A falling down of an organ. **P. of the cord,** the descent of the umbilical cord along with or ahead of the presenting part of the fetus. p. 270. **P. of the uterus,** "falling of the womb."

Promontory (prom'on-to-re). A projection or prominence. **P. of the sacrum,** the upper projecting part of the sacrum. Fig. 1.

Prophylactic (pro-fil-ak'tik). Pertaining to prophylaxis; preventive.

Prophylaxis (pro-fil-ax'is). The prevention of disease; preventive treatment.

Protargol (pro-tar'gol). A soluble yellowish powder; a preparation of silver. It is a germicide used in gonorrhea and sore eyes and wounds. p. 351.

Protein (pro'te-in). An important class of organic compounds, including albumin, casein, gluten, and fibrin, forming the important part of the tissues of the body. p. 395.

Pruritus (pru-ri'tus). Intense itching. p. 245.

Pseudocyesis (su''do-si-e'sis). False pregnancy; phantom tumor. p. 74.

Psychic, Psychical (si'kik, si'kik-al). Pertaining to the mind.

Psychosis (si-ko'sis). Any disease or disorder of the mind.

Ptyalism (ti'al-izm). Excessive secretion of saliva. p. 52.

Puberty (pu'ber-te). The age at which the organs of reproduction become functionally active. p. 37.

Pubes, Pubis (pu'bēs, pu'bis). 1. The os pubis; the pubic bone. It is the anterior portion of the os innominatum, but in fetal life it is a separate bone. 2. The external part of the generative region, which is more or less covered with hair after puberty. p. 26.

Pubic (pu'bik). Pertaining to the pubes. p. 26.

Pubiotomy (pu-be-ot'o-me). Section of the os pubis at one side of the symphysis for the purpose of enlarging the pelvis. p. 211.

Pudenda (pu-den'dah). Plural of *Pudendum.* p. 31.

Pudendum (pu-den'dum). The external genitals, especially of the female. p. 31.

Puerpera (pu-er'pe-rah). A woman in child-bed. p. 61.

Puerperal (pu-er'per-al). Relating to child-bed. **P. convulsions,** those occurring during or immediately after labor. **P. eclampsia,** same as puerperal convulsions. See *Eclampsia.* **P. fever,** fever due to infection during or immediately after labor; puerperal infection. **P. insanity, P. mania,** insanity developing in the latest period of pregnancy or just after labor. **P. state,** the condition of a woman during the ten days after labor or during the period of convalescence after labor. p. 61.

Puerperium (pu-er-pe're-um). The period or state of confinement after labor. p. 61.

Pulmonary (pul'mo-na-re). Pertaining to the lungs.

Pulsation (pul-sa'shun). A throb or rhythmic beat, as of the heart.

Purpura (pur'pu-rah). A disease

in which there are purple patches on the skin and mucous membrane, due to hemorrhage under the skin. There may or may not be fever present.

Purpuric (pur-pur′ik). Relating to purpura.

Purulent (pu′ru-lent). Consisting of or containing pus.

Pus (pus). A liquid, the product of inflammation, made up of white blood-cells and a thin fluid, which is found in abscesses and on the surface of sores; matter; corruption.

Pyosalpinx (pi-o-sal′pinks). A collection of pus in the Fallopian tube.

Pyromania (pi-ro-ma′ne-ah). A nervous affection characterized by a desire to set fire to things.

Q.

Quickening. First perception by the mother of the movements of the child in utero. "Feeling life" occurs from the fifteenth to twentieth week.

R.

Racemose (ras′em-ōs). Resembling a bunch of grapes. p. 35.

Rachitic (rak-it′ik). Affected with rickets. **R. pelvis,** a pelvis deformed by rickets. p. 27.

Rachitis (rak-i′tis). Rickets.

Ramus (ra′mus), pl., *ra′mi*. The arms of the innominate bones which unite and form the pubes.

Rational (rash′un-al). 1. Reasonable. 2. Based on reasoning. **R. symptoms,** subjective symptoms—those given by the patient.

Reaction (re-ak′shun). 1. Response to stimulation. 2. The phenomena caused by chemicals acting upon one another.

Rectal (rek′tal). Pertaining to the rectum. **R. alimentation,** the administration of food by injecting it into the rectum. p. 459.

Rectum (rek′tum). The lower part of the large intestine lying in the pelvis and terminating at the anus. p. 31.

Reflex (re′flex). 1. Reflected. 2. A term applied to certain involuntary movements.

Regurgitation (re-ger-jit-a′shun) 1. A flowing back. 2. The passive vomiting of infants. 3. The return of food to the mouth unaccompanied by nausea.

Relaxation (re-lak-sa′shun). 1. Lack of muscular tone and strength. 2. A lessening of tension.

Remission (re-mish′un). An abatement of symptoms.

Renal (re′nal). Pertaining to the kidney.

Respiration (res-pir-a′shun). The act of breathing, including inspiration and expiration.

Restitution (res-tit-u′shun). The rotation of the presenting part of the fetus, outside the birth-canal, so that it looks in the same direction that it did before entering the pelvis.

Resuscitation (res-us-it-a′shun). The restoration to consciousness of one who is apparently dead. p. 362.

Retained placenta (re-tānd′). A placenta not expelled by the uterus after labor.

Retention (re-ten′shun). The persistent keeping within the body of matters that should normally be excreted. **R. of urine,** a condition in which the urine cannot be voluntarily discharged. p. 66.

Rhinitis (rin′i-tis). Inflammation of the mucous membrane of the nose.

Rickets (rik′ets). A constitutional disease of infants and young children in which there is lack of earthy salts in the bones. It results in deformities and curvatures of the bones. It is frequently due to bad air and food.

Rotation (ro-ta′shun). The act of turning round on an axis. **R. stage of labor,** a movement in labor by which the occiput turns to the front or rear. pp. 24, 25.

Rupture (rup′tūr). 1. A forcible tearing of a part. 2. A hernia. p. 358.

S.

Saccharum lactis (sak′ar-um lak-tis). Sugar of milk. p. 397.

Sacro-anterior (sa″kro-an-te′re-

or). Having the sacrum pointing to the front. pp. 171, 172.

Sacro-posterior (sa″kro-pōs-te′re-or). Having the sacrum pointing to the back. pp. 171, 172.

Sacrum (sa′krum). The triangular bone which forms the back of the pelvis. Above, it articulates with the spinal column, and below with the coccyx. It is formed by the fusion of the five sacral vertebræ. p. 22.

Sagittal (saj′it-tal). Shaped like an arrow. **S. suture,** the suture between the two parietal bones. pp. 43, 44.

Saliva (sal-i′vah). Spittle; the clear, viscid, alkaline digestive fluid secreted by the salivary glands in the mouth. It contains a ferment, ptyalin, which converts starch into maltose.

Salivation (sal-iv-a′shun). An excessive flow of saliva; ptyalism. pp. 52, 450.

Saturated solution (satsh′er-ated). A solution which will not contain any more of a given substance.

Scalpel (skal′pel). A small straight knife with a convex cutting edge.

Scapula (skap′u-lah). The shoulder-blade.

Scopolamin (sko-pol-am′in). A new drug derived from the scopolomina japonica, often used in combination with morphine for the production of anesthesia. p. 120.

Scrotum (skro′tum). The pouch which contains the testicles.

Sebaceous (se-ba′shus). 1. Pertaining to sebum or fat. 2. Secreting a greasy substance or sebum.

Sebum (se′bum). A thick, semiliquid substance, composed of fat and broken-down epithelial cells, which is discharged upon the skin.

Secretion (se-kre′shun). 1. The process of separating various substances from the blood. 2. Any secreted substance.

Secundines (se-kun′dinz). The after-birth and membranes. pp. 40, 46.

Segmentation (seg-men-ta′shun). The division into parts, more or less similar, especially that which takes place in the fertilized ovum.

Semen (se′men). 1. A seed. 2. The fluid secreted by the male generative organs.

Semilunar (sem-il-u′nar). Shaped like a crescent.

Sepsis (sep′sis). Infection by bacteria. p. 279.

Septic (sep′tik). Produced by or due to infection.

Serous (se′rus). Having the nature of serum.

Serum (se′rum). The clear, straw-colored liquid which, in the clotting of blood, separates from the clot and corpuscles.

Shock (shok). Sudden depression of the vital powers due to an injury or powerful emotion. That due to injury is *surgical* shock; that due to emotion is *mental* shock.

Show (sho). 1. The blood-tinged discharge of mucus from the cervix preceding labor. p. 57. 2. The vaginal discharge of menstruation.

Sigmundine, Justine (sig-mun′dēn). A midwife who lived in the seventeenth century.

Sims, J. Marion (simz). A noted American gynecologist who lived in the nineteenth century. **S. position,** the patient lies on the left side, and the chest, the right knee, and thigh well drawn up, the left arm along the back or over the edge of the table. p. 270. **S's speculum,** a vaginal speculum or retractor.

Siphon, Syphon (si′fon). A bent tube by which liquid may be transferred from one vessel to another over an intervening elevation. Fig. 199.

Skim milk (skim milk). Milk from which the cream has been removed; it contains from 1 to 2 per cent. fat. p. 398.

Smegma (smeg′mah). The secretion of the sebaceous glands under the prepuce and around the labia minora. p. 109. **S. embryo′num,** vernix caseosa. (Rare.)

Soda-bicarbonate. Baking soda. Dose, 5–30 grains. p. 432.

Soda-carbonate. Washing soda.

Solution (so-lu′shun). 1. The process of dissolving. 2. A liquid containing dissolved matter.

Sordes (sor′dez). The foul matter which collects on the lips and teeth in typhoid and other fevers and conditions.

Sound (sownd). An instrument to

be introduced into a cavity to detect a foreign body or dilate a stricture.

Spastic (spas'tik). A term applied to muscle that is rigidly contracted.

Specific (spe-sif'ik). 1. Pertaining to species. 2. Produced by a single kind of organism. 3. A remedy which has a peculiar efficiency in a certain disease. **S. disease.** 1. A disease produced by a specific cause. 2. The term is sometimes restricted to syphilis. p. 449. **S. gravity,** the weight of a substance compared with an equal volume of another substance taken as a standard. Hydrogen is the standard for gases and distilled water for liquids.

Spermatozoid (sper-mat-o-zo'id). Same as *Spermatozoön.*

Spermatozoön (sper-mat-o-zo'on). pl., *spermatozoa.* The motile, microscopic, sexual element of the semen —the male element of fertilization.

Spir'itus Æ'theris Nitro'si. Sweet spirits of niter; dose, ℥½–℥½. **S. frumen'ti,** whisky.

Sprue (sproo). Thrush; a sore mouth of infants, with the formation of whitish patches and superficial ulcers. p. 333.

Stasis (sta'sis). Stagnation; non-movement: usually applied to fluids.

Sterile (ster'il). 1. Barren. 2. Not containing micro-organisms; aseptic; surgically clean.

Sterility (ster-il'it-e). The condition of being barren. Inability to become pregnant.

Sterilization (ster-il-iz-a'shun). The process of rendering an object free from germs. p. 92.

Sterilizer (ster'il-i-zer). An apparatus for sterilizing. p. 430.

Still-born. Born dead. p. 360.

Stimulant (stim'u-lant). 1. Stimulating. 2. A medicine which produces stimulation.

Stimulate (stim'u-lāt). To excite to functional activity.

Stimulus (stim'u-lus). An agent that excites to functional activity.

Stool (stool). The feces discharged from the bowels.

Streptococcus (strep-to-kok'us). A variety of micro-organisms. It causes the severest child-bed infections.

Stria (stri'ah), pl., *stri'æ.* A streak or line. **S. gravida'rum,** the striæ seen on the abdomen of women who are or have been pregnant. See *Linea albicantes.* pp. 51, 52.

Strophulus (strof'u-lus). An eruption of infants called "tooth-rash" or "gum-rash." p. 342.

Stupor (stu'por). Unconsciousness, partial or complete.

Styptic (stip'tik). 1. Astringent. 2. A remedy that is markedly astringent and hemostatic.

Subcutaneous (sub-ku-ta'ne-us). Under the skin. **S. injection.** See *Hypodermic injection.*

Succedaneum (suk-se-da'ne-um). A medicine that may be substituted for another of like properties. **Caput s.,** a dropsical swelling on the presenting part of the fetal head during labor, due to lack of pressure on the part and pressure on the surrounding area. p. 356.

Superior strait (su-pe're-or). The upper border of the true pelvis; the inlet; the brim. p. 24.

Suppository (sup-oz'it-o-re). An easily fusible medicated mass introduced into the rectum, urethra, or vagina.

Suppuration (sup-u-ra'shun). The formation of pus.

Suppurative (sup'u-ra-tiv). Producing or discharging pus.

Suture (su'tur). 1. A surgical stitch or seam. p. 129. 2. The material used for a suture. 3. The line of union between two bones of the head or face. pp. 43, 44.

Symphysiotomy (sim-fiz-e-ot'o-me). The operation of severing the ligaments and cartilage forming the pubic joint or symphysis. Done in difficult labor. p. 211.

Symphysis (sim'fiz-is). 1. A kind of firm joint. 2. The term is used to refer to the *symphysis pubis* or union between the two pubic bones. p. 26.

Synchondrosis (sin-kon-dro'sis). The union of bones by means of elastic cartilage.

Syncope (sin'ko-pe). Fainting; a swoon; a more or less complete sudden failure of respiration and heart action. p. 273.

Syphilis (sif'il-is). An infectious

disease, usually venereal in origin, very chronic and obstinate in nature. p. 449.

T.

Tampon (tam′pon). 1. A plug of cotton, gauze, or other material, placed in a cavity to stop a hemorrhage or absorb secretions. 2. To place a tampon. p. 220.

Tamponade, Tamponage (tam′-pon-ād, tam′pon-āj). The use of the tampon. p. 220.

Tamponing (tam′pon-ing). The act of using the tampon. p. 220.

T-bandage. A bandage shaped like the letter T; used to retain dressings of the vulva in place. p. 92.

Tenaculum (ten-ak′u-lum). A hook-shaped instrument; a hook. **T. forceps**, a forceps armed with hooks; a volsella. p. 195.

Tenesmus (ten-es′mus). Straining; ineffectual straining at stool or at urination; a feeling of desire to strain at stool, etc.

Testicle (tes′tik-l). One of the two male organs in the scrotum, analogous to the ovary in women.

Tetanus (tet′an-us). Lockjaw; a disease caused by the bacillus of tetanus, and in which there are tonic spasms of some of the voluntary muscles, first noticed in the muscles of jaw and throat.

Thermostat (ther′mo-stat). An apparatus for automatically regulating heat. p. 368.

Thoracic (tho-ras′ik). Pertaining to the thorax.

Thorax (tho′raks). The part of the body above the diaphragm. It contains the heart and lungs.

Thrombosis (throm′bo-sis). The formation of a thrombus or clot in a vessel. p. 297.

Thrombotic (throm-bot′ik). Pertaining to or of the nature of a thrombus. p. 297.

Thrombus (throm′bus). A clot in a blood-vessel remaining at the point of its formation.

Thrush (thrush). Sore mouth; sprue. Caused by a vegetable fungus called Monilia albicans. pp. 333, 388.

Tissue (tish′u). An aggregation of cells forming a structure with a definite function.

Torsion (tor′shun). Twisting. **T. of the umbilical cord**, the spontaneous twisting of the cord *in utero*.

Toxemia (tok-se′me-ah). A condition due to the presence of toxins in the blood. These toxins may be the product of bacterial action, or they may be effete matter which should be excreted. pp. 87, 242.

Trachea (tra′ke-ah). The windpipe; the air-tube leading from the larynx to the bronchi.

Tracheal catheter (tra′ke-al). A slender tube or catheter for drawing mucus and fluids from the trachea in case of asphyxiation, and blowing air into the lungs. p. 360.

Traction (trak′shun). The act of drawing or pulling.

Transfusion (trans-fu′shun). 1. The transfer of blood from one person to another. 2. The introduction into the blood-vessels of any liquid, as salt solution. p. 225.

Trendelenburg position (tren′-del-en-berg). The patient lies flat on the back. The end of the table is elevated so that the hips are raised to an angle of 45°. The legs hang over the end of the table. Used in abdominal operations and in the treatment of prolapse of the cord. p. 271.

Tubercle (tu′ber-kl). A rounded nodule or elevation.

Tuberculosis (tu-ber-ku-lo′sis). An infectious disease caused by tubercle bacilli, and characterized by the formation of tubercles. In the lungs it is called consumption.

Tumor (tu′mor). 1. A swelling. 2. A new growth; a tissue which grows independent of surrounding structures and has no physiologic use. A tumor which tends to recur after removal is *malignant*; one which does not is *benign*.

Tympanites (tim-pan-i′tez). Distention of the bowels or peritoneal cavity with air or gases. p. 299. **Uterine t.**, distention of the uterus with gas. Physometra.

Typhoid fever (ti′foid). A specific fever due to the Bacillus typhosus, and following a particular course. **T. state**, a condition of great physical

exhaustion, with stupor and delirium, resembling that found about the close of the second week of typhoid. It may occur in toxemia and puerperal infection.

U.

Ulcer (ul'ser). An open sore.

Ulcerate (ul'ser-āt). To form an ulcer; to be affected with ulcers.

Umbilical (um-bil'ik-al). Pertaining to the umbilicus or navel. **U. arteries,** the arteries forming part of the umbilical cord. **U. cord,** the cord connecting the placenta with the umbilicus of the fetus. It is made up of the umbilical arteries and veins and a jelly-like substance called "Wharton's jelly." p. 43. **U. hernia,** hernia at the navel. **U. veins,** the veins of the umbilical cord.

Umbilicus (um-bil-i'kus). The navel; the site of entrance of the umbilical vessels into the abdomen. p. 346.

Urea (u-re'ah). The principal solid of the urine; it carries off most of the waste nitrogenous products of the body.

Uremia (u-re'me-ah). The toxic condition produced by the presence of urinary constituents in the blood. It is due to diminution of excretion by way of the urine and is marked by nausea, vomiting, dizziness, headache, and coma.

Uremic (u-re'mik). Affected with uremia.

Urethra (u-re'thrah). The membranous canal leading from the bladder to the surface of the body. p. 31.

Urethral (u-re'thral). Pertaining to the urethra. p. 31.

Uric acid (u'rik). A crystallizable acid found in urine. It is nearly insoluble, and when retained in the system is thought to produce gout and rheumatism.

Urinal (u'rin-al). A vessel to receive urine.

Urinalysis (u-rin-al'is-is). The analysis of urine.

Urinary (u'rin-a-re). Pertaining to urine.

Urinate (u'rin-āt). To pass urine from the bladder.

Urination (u-rin-a'shun). The act of passing the urine from the bladder.

Urine (u'rin). The fluid secreted by the kidneys, stored in the bladder, and discharged through the urethra. **Incontinence of u.,** inability to retain urine in the bladder, so that it escapes involuntarily; incontinentia paradoxa, filling of the bladder, with overflow and dribbling away of urine. **Retention of u.,** inability to pass the urine. **Suppression of u.,** arrested secretion of urine by the kidneys.

Urinometer (u-rin-om'et-er). An instrument for determining the specific gravity of urine.

Uterine (u'ter-in). Pertaining to the uterus or womb. **U. appendages,** the Fallopian tubes and the ovaries. **U. atony,** weakness of the uterine muscle; term used during and after labor. **U. colic,** pains in the uterus from any cause except labor pains. **U. gestation,** normal pregnancy. **U. inertia,** lack of contractile power of the uterus during labor: "weak pains"; atony. **U. involution,** the process by which the uterus regains its ordinary size and shape after labor. **U. mole,** a mass in the uterus consisting of a dead fetus and its envelopes. **U. phlebitis,** a form of puerperal fever. **U. pregnancy,** normal pregnancy. **U. probe,** a long, flexible probe for exploring the uterus. **U. sinuses,** the veins of the uterus enlarged by pregnancy. **U. sound,** a uterine probe. **U. tubes,** Fallopian tubes. **U. wound,** the area from which the placenta has been removed.

Uterus (u'ter-us). The womb; the hollow muscular organ in which the fetus is normally developed. p. 28.

V.

Vagina (vaj-i'nah). The curved canal extending from the cervix of the uterus to the vulva. pp. 29, 64.

Vaginal (vaj'in-al). Pertaining to the vagina. **V. examination,** examination of the pelvic organs by means of the finger introduced into the vagina. **V. speculum,** an instrument for holding the vagina open in order that its interior may be inspected.

Valance (val'anz). Hanging drapery about a bedstead. p. 107.

Varicose (var'ik-ōs). 1. Unnaturally swollen or dilated; a term applied to veins. 2. Pertaining to a varix. p. 243.

Varicosity (var-ik-os'it-e). 1. A varicose condition of the veins. 2. A varix. p. 243.

Varix (va'rix). An enlarged tortuous vein. p. 243.

Vascular (vas'ku-lar). Having blood-vessels; full of blood-vessels.

Vascularity (vas-ku-lar'it-e). The condition of being vascular.

Vectis (vek'tis). A curved lever for making traction on the fetal head during labor; almost obsolete now.

Vein (vān). A blood-vessel carrying blood to the heart.

Venous (ve'nus). 1. Pertaining to the veins. 2. Contained in the veins. **V. blood,** the dark-colored blood collected from the tissues and carried by the veins to the heart. It is dark from the lack of oxygen and the presence of carbon dioxid. **V. circulation,** the circulation of blood through the veins. **V. congestion,** the engorgement of an organ with venous blood, due to an obstruction to its return to the heart.

Vernix caseosa (ver'nix ka-se-o'-sah). "Cheesy varnish." The greasy substance which covers the skin of the fetus. p. 69.

Version (ver'shun). 1. The act of turning. 2. The turning of the fetus *in utero* by the obstetrician to facilitate delivery. p. 197.

Vertebra (ver'te-brah). Any one of the thirty-three bones of the spinal column.

Vertex (ver'tex). 1. Head. 2. The crown of the head. **V. presentation,** the presentation of the top of the fetal head in labor. pp. 171, 172.

Vertigo (ver'tig-o). Dizziness; giddiness; "swimming of the head."

Vesical (ves'ik-al). Pertaining to the bladder.

Vesicle (ves'ik-l). 1. A small bladder or sac containing liquid. 2. A small blister on the skin or mucous membrane. p. 342.

Vesicular (ves-ik'u-lar). 1. Composed of small, sac-like bodies. 2. Composed of vesicles or blisters on the skin. p. 342.

Vestibule (ves'tib-ūl). 1. The oval cavity of the internal ear. 2. The space between the labia minora, below the clitoris, just above the entrance to the vagina. p. 33.

Viability (vi-ab-il'it-e). Ability to live. p. 365.

Viable (vi'ab-l). Able or likely to live outside the uterus. Said of a fetus that is sufficiently developed to live outside the uterus. p. 365.

Villus (vil'us), pl., *vil'li*. 1. One of the small vascular projections of the placenta which help attach it to the wall of the uterus and through which the nourishment of the child is provided. pp. 41, 46. 2. One of the club-shaped projections from the mucous membrane of the intestines.

Virulent (vir'u-lent). Exceedingly poisonous or harmful; having the nature of virus.

Virus (vi'rus). 1. Any animal poison. 2. Especially that poison which is produced by and able to impart disease. The poison is due to the presence of disease-producing organisms or fluids.

Viscus (vis'kus), pl., *vis'cera*. Any organ contained within the cavities of the body, especially the abdomen.

Visual (viz'u-al). Pertaining to vision or sight.

Vital (vi'tal). Essential to life. Pertaining to life.

Vitality (vi-tal'it-e). The vital principle. The vital power.

Volsella, Volsellum, (vol-sel'ah, vol-sel'um). A forceps the ends of whose blades are furnished with sharp hooks. p. 195.

Vulsella, Vulsellum (vul-sel'ah). Same as *Volsella*. p. 195.

Vulva (vul'vah). The external genitals of the female. pp. 29, 32.

W.

Walcher's position (val'tsher). The patient lies on her back with the buttocks raised and well over the table, the legs hanging down. In this position the true conjugate diameter of the pelvis is increased nearly half an inch. p. 195.

Wassermann reaction. A test of the blood which shows the presence of syphilis. p. 450.

Wet-nurse (wet-nurs). A woman who suckles the child of another. p. 326.

Wharton's gelatin, Wharton's jelly (whar′tonz). The jelly-like tissue which makes up the greater part of the umbilical cord.

Whites (whitz). Leukorrhea.

Winckel's disease (wink′lz). An extremely fatal disease in the new-born, marked by jaundice, bloody urine, hemorrhage, and cyanosis. Malignant jaundice.

Witches' milk (witsh′ez). The milky fluid secreted by the breast of the new-born. p. 344.

Womb (woom). The uterus. p. 28.



INDEX

Abdomen, pains in, in pregnancy, 247
pendulous, in pregnancy, 246
Abdominal supporter in pregnancy, 76
Kabo, 77
Ablactation, 326
Abnormal milk, 325
Abnormalities of nipples, 312
Abortion, 55, 249
instruments for treatment of, 234
therapeutic, 234
Abruptio placentæ, 251
Abscess, submammary, 316
Accidents, prevention of, 421
Acid, boric, solution of, 444
carbolic, solution of, 443
uric, in urine, 338
Acini of breast, 35
After-birth. See *Placenta.*
After-pains, 61, 299
Agalactia, 321
Bier's treatment in, 323
causes, 322
electricity in, 324
massage of breasts in, 323
pituitrin in, 322
symptoms, 322
thyroid extract in, 322
treatment, 322
Ahlfeld's method of sterilization of hands, 425
Air pessary, 231
Air-embolism, 128
in third stage of labor, 128
Albumin, 453
Albuminuria, 86
Alcohol in pregnancy, 81
Ambulance, incubator, 372, 373
Anesthesia, 188
in second stage of labor, 123
Anesthetic in cesarean section, 207
Ankyloglossia, 357
Anus, 31, 34
imperforate, 357
occlusion of, 357
Apartments, sterilization of, 440
Aphthæ, Bednar's, 334
Applicators, 95, 135
Aprons, sterilization of, 440
Areola of pregnancy, 36
Areolar signs in diagnosis of pregnancy, 73
Argyrol in prevention of ophthalmia neonatorum, 133
Artificial infant foods, 408
respiration, 362
Byrd's method, 362
De Lee's modification, 362, 363
Sylvester's method, 363
Asepsis of breasts during puerperium, 286
of nurse during puerperium, 285
Asphyxia livida, 360
neonatorum, 360

Asphyxia neonatorum, treatment, 360
pallida, 360
Atelectasis, 189, 337
pulmonum, 68
of premature infants, 390
Auto-infection, 283
Auvard incubator, 368
Axis-traction forceps, 191

Bag of waters, 59
Balloon dilators, 231
Bands, infant's, 97
Baptism of child, 200
Barley-water, 407, 453
Barnes' bag, 231
Basins, sterilization of, 439
Bath, Winckel's permanent, for premature infants, 367
Bathing infant, 151
in pregnancy, 87
in puerperium, 147
of premature infant, 384
Bearing-down pains, 59
Bed of incubator, 375
of newborn infant, 100
preparation of, for first stage of labor, 107
symphysiotomy, 216
Bed-frame, symphysiotomy, 215
Bednar's aphthæ, 334
Bed-pans, sterilization of, 439
Bed-sores, prevention of, in pregnancy, 242
Beef, digested, by rectum, 460
Beef-juice, 408, 453
Beef-tea, 453
with acid, 453
Belt, Momburg's, 276
Bichlorid of mercury solutions, preparation of, 442
Bier's method of treating mastitis, 320
treatment in agalactia, 323
Bifid nipple, 312
Binder, breast-, 93
applied, 308
long, 138
T-, 92
Birth certificate, 134
Birth-mark, 83
Bladder, 31
anatomy of, 31
in puerperium, 145
inflammation of, in puerperium, 303
Blankets, infant's, 97
Blisters of nipple, 313
water-, 342
Blood in pregnancy, 50
Blue babies, 68, 367, 390
spells of premature infants, 389
Bones, innominate, 23
Borborygmus, 157, 328
Boric acid solution, 444
Bottle, nursing, for premature infants, 380
Bottles, filling of, 403
Bowels in pregnancy, 84
in puerperium, 67, 144
of newborn infant, 70, 156
Brain, injuries to, in birth, 355
Braun's colpeurynter, 231
cranioclast, 198
decapitation hook, 198
Breast, acini of, 35
anatomy of, 35
asepsis of, during puerperium, 286
care of, during puerperium, 135
diseases of, 307
engorgement of, in puerperium 65, 145, 307

Breast, enlargement of, as sign of pregnancy, 73
in newborn, 344
in pregnancy, 50
care of, 77, 89
in puerperium, 65
inflammation of, 315
massage of, 309–231
in agalactia, 323
tray and contents, 137
Breast-binder, 93
applied, 308
Breast-pump, 163
Breech delivery, forceps in, 196
mechanism of, 177
presentation, 177, 269
Brim of pelvis, 24
Broad ligaments, 31
Bronchitis, 336
Broth, chicken, 454
clam, 454
mutton, 457
Brushes, sterilization of, 433
Bumm's pubiotomy needle, 212
Byrd's method of artificial respiration, 362
De Lee's modification, 362, 363

Caloric method of feeding, 402
Cannula, glass, for intravenous transfusion, 226
Caput succedaneum, 356
Carbolic acid solution, 443
Castor oil, administration of, 144
Catgut, sterilization of, 439
Catheter, tracheal, 360
Catheterization after pubiotomy, 217
in puerperium, 146
Caul, 60
Cephalhematoma, 356
Cephalotripsy, 198
Cereal extract, 454
Certified milk, 405
Cervix uteri, 28
Cesarean section, 201
after-care, 209
arrangement of room, 204
convalescence, 210
instruments for, 206
light, heat, and anesthetic, 207
list of supplies needed for, 205
operation, 208
preparation for, 203
steps of, 203, 209
vaginal, 210
Chafe, 159
Chafing, 343
treatment, 343
Champagne whey, 454
Champetier de Ribes' bag, 231
Chicago Lying-in Hospital, diet table at, 378
incubator station, 369
Chicken broth, 454
Child, care of, 151
overgrowth of, diet for prevention of, 452
Chinosol, 443
Chloral in second stage of labor, 120
Circumcision, 338
Clam broth, 454
Cleft palate, 356
nipple for babies with, 356
Clitoris, 32
Coccyx, 22
Coffee, nutritious, 457
Colic, 329
Colostrum, 50, 65
Colpeurynter, Braun's, 231
Composition of milk, 395
Conception, 40
Congenital deformities, 356

Conjunctivitis in infant, treatment of, 155
Constipation in infant, 156, 330
in pregnancy, 54
in puerperium, 300
Contracted pelvis, 27
Convulsions, 358
in pregnancy, 256
in premature infant, 390
Cord. See *Umbilical cord.*
Coronary suture, 43
Corsets after delivery, 150
in pregnancy, 76
high stomach from, 75
Coryza, 336
Couveuse, 368. See also *Incubator.*
Covered sponges, 433
Cracks of nipple, 313
Cramp in leg during second stage of labor, 119
Cranioclasis, 198
Cranioclast, Braun's, 198
Craniotomy, 198
Credè's method for prevention of ophthalmia neonatorum, 132
Creolin, 443
Cross-birth, 177, 197
Curettage, uterine, 224
Cyanosis, 337
in premature infants, 389
Cystitis in puerperium, 303

De Lee's glove sterilizer, 428
long uterine packing forceps, 220
method of sterilization of hands, 426
of rubber gloves, 427
modification of Byrd's method of artificial respiration, 362, 363
needle for hypodermoclysis, 225
Decapitation, 197
Decapitation hook, Braun's, 198
Decubitus in pregnancy, prevention of, 242
Deformed pelves, 27
Deformities, congenital, 356
Delayed separation of cord, 345
urination, 337
Deportment of nurse, 446
Destitute, care during labor among, 411
Detachment, premature, of placenta, 251
Dextrin by rectum, 460
Diaper, 159
changing of, 157
Diapers, 99
Diarrhea in infants, 331
Diet for infants, 164
for prevention of overgrowth of child, 452
for wet-nurse, 327
in first stage of labor, 113
in incubator, 378
in pregnancy, 80
in puerperium, 141
liquid, 452
list of, 452
milk, 452
Prochownik's, 452
raw meat, 456
semisolid, 452
Dietary, 452
Diet-table in Chicago Lying-in Hospital, 378
Difficulty in nursing, 330
Digested beef by rectum, 460
Digestive organs of child, affections of, 328
Dilatation in phimosis, 341
Dilators, balloon, 231
Hegar's, 235
Diplococcus of Neisser, 348

Disinfection in puerperal infection, 296
Disorders of first weeks of life, 328
Doctor, preparation for, in first stage of labor, 110
when to summon, 117
Döderlein's pubiotomy needle, 212
Dolores, 58
Douche, 222
uterine, 224
vaginal, 223
Douche-cans, sterilization of, 439
Douleurs, 58
Dress in pregnancy, 75
of infant, 98
of nurse, 446
Dressings, sterilization of, 433
Drinking glass, ideal, 240
Drop method of giving salt solution by rectum, 289, 290
Dropper, feeding-, 380
Dropping, 56
Dry heat, sterilization by, 431
labor, 57, 60
Drying up milk, 326

Eclampsia, 256
symptoms, 256
treatment, 257
Economy in hospital work, 423
Ectopic pregnancy, 252. See also *Extra-uterine pregnancy.*
Eczema intertrigo, 159, 343
treatment, 344
Edema of extremities in pregnancy, 243
of lungs, treatment, 260
Egg and milk, 456
lemonade, 454
Eggnog, 454
Egg-water, 453
Electricity in agalactia, 324
Elevated Sims' position, 270
Embolism, air-, 128
in third stage of labor, 128
puerperal, 297
Embryotomy, 198
instruments for, 201
Enema, ox-gall, 300
Engorgement of breasts in puerperium, 145, 307
Enlargement of breasts as sign of pregnancy, 73
in newborn, 344
Enteroptosis after pregnancy, 76
Episiotomy, 61
Eruptions on skin in infants, 342
vesicular, in infants, 342
Ether, administering of, in second stage of labor, 123
Examination, obstetric, preparation for, 217
Excess of milk, 321
Exercise in pregnancy, 81
Extra-uterine pregnancy, 252
duties of nurse, 255
symptoms, 254
Eyes, application of ice to, 349
infant's, care of, 155
infection of, 347
irrigation of, 349, 351
of newborn infant, care of, 132
of premature infant, care of, 385

Facial paralysis after forceps delivery, 353, 354
Fainting in pregnancy, 248
Fallopian tubes, 29
fimbriæ of, 30
False pains of labor, 56. 103
pelvis, 22, 23
Feces, green, 332
Fecundation, 40
Feeding, infant, 392

Feeding, infant, amount of food, 400
caloric method, 402
nasal, 461
premature infant, method of, 380
rectal, 459
through skin, 460
Feeding-dropper, 380
Feeling life as sign of pregnancy, 74
Feet, keeping warm, in incubator, 377
Femoral hernia, 358
Fertilization, 40
Fetus, head of, in pregnancy, 43
hiccup of, 48
in diagnosis of pregnancy, 74
in uterus, physiology of, 46
liver of, 47
Fever, inanition, 333
milk-, 307
starvation, 164, 358
thirst, 164
Filling of bottles, 403
Fimbriæ, 30
Fingers, supernumerary, 358
Fissures of nipple, 313
Fistula, rectovaginal, in puerperium, 301
vesicovaginal, in puerperium, 301
Flannel shirts, infant's, 97
Flat nipple, 312
pelvis, 27
Flaxseed tea, 455
Flour-ball, 455
Fontanels, 43
anterior or large, 43
posterior or small, 43
Foods, artificial infant, 408
to be avoided in puerperium, 143
Forceps, axis-traction, 191
De Lee's long uterine packing, 220
Forceps in breech extraction, 196
operation, 190
duties of nurse, 193
list of instruments for, 193
Walcher position, 197
Simpson's, 191
Tarnier's axis-traction, 191
vulsellum, 195
Forceps-delivery, injuries in, 353
Forceps-marks, 353, 354
Formaldehyd vapor, generation of, 441
Formalin solution, 443
Fossa navicularis, 33
Fourchet, 33
Frontal suture, 43
Fundus uteri, 28
Fürbringer's method of sterilization of hands, 425
Furniture, sterilization of, 440

Galactorrhea, 321
Gauze, gelatin, 437
iodoform, 437
lysol, 435
packer, tubular, 233
plain sterilized, 437
Gavage, Tarnier's method of, in premature infants, 381
Gelatin gauze, 437
Generative organs, anatomy of, 21
Genital crease, 32
Genitals, care of, in mother, 138
external, 31
in pregnancy, care of, 89
Gigli wire saws, 214
Glass cannula for intravenous transfusion, 226
nipple-shield, 162
Gloves, rubber, sterilization of, 426
De Lee's method, 427
Gonorrhea, 448

Gonorrhea, treatment of, 449
Gowns, sterilization of, 440
Granulations of navel, 345
Grape-sugar by rectum, 460
Green stools, 332
Gum, red, 342
  white, 342
Gum-arabic water, 455

Halsted's method of sterilization of hands, 425
Hands, sterilization of, 424
    Ahlfeld's method, 425
    De Lee's method, 426
    Fürbringer's method, 425
    Halsted's method, 425
Harelip, 356
Headache during and after labor, 134
  in puerperium, 304
Head-and-mouth guard, 206
Heart-burn in pregnancy, 248
Heat and light in operating room, 187
  dry, sterilization by, 431
  in cesarean section, 207
  prickly, 342
  rash, 342, 343
Hebosteotomy, 211
Hegar's dilators, 235
Hematoma after pubiotomy, 216
Hemorrhage during labor, 272
  in pregnancy, 249
  of newborn, 352
  postpartum, 272
    after-care of, 277
Hemorrhoids, 34
Hernia, 358
  femoral, 358
  inguinal, 358
  umbilical, 358
Hexenmilch, 244
Hiccup of fetus, 48
High stomach after pregnancy, 76, 78
Hirst's bag, 231
History sheet during puerperium, 141
    in first stage of labor, 114
    in puerperal infection, 295
Home nursing *vs.* hospital nursing, 419
Hook, Braun's decapitation, 198
Hospital nurse, relations to patient, 423
  nursing *vs.* home nursing, 419
  work, economy in, 423
Hot-water bags, complications due to, 359
Hygiene of pregnancy, 73
Hymen, 33
Hyperemesis gravidarum, 238
Hypodermoclysis, 225
  instruments for, 225

Ice, application of, to eyes, 349
Icterus neonatorum, 69, 341
Ideal drinking glass, 240
Imperforate anus, 357
Impregnation, 40
Inanition fever, 333
Incubator, 368
  ambulance, 372
  Auvard, 368
  bed of, 375
  care of, 373
  diet in, 378
  keeping feet warm in, 377
  moisture of, 374
  removal of premature infant from, 386
  Sharp and Smith, 368
  station, 369
  temperature of, 373

Incubator, ventilation of, 368, 375
Indigestion in child, 328
in premature infant, 388
Induction of premature labor, 230
instruments for, 230
Infant, baptism of, 200
bathing of, 151
care of, 151
after operative delivery, 189
of bowels, 156
of eyes, 155
of navel, 154
conjunctivitis in, treatment of, 155
constipation in, 156
delivery of, before doctor arrives, 262
diet for, 164
feeding, 392
amount of food, 400
caloric method, 402
foods, artificial, 408
layette, 97
newborn, 68. See also *Newborn infant.*
nursing of, 160
premature, atelectasis pulmonum of, 390
bathing of, 384
blue spells of, 389
care of, 365
general, 386
convulsions of, 390
cyanosis of, 389
diseases of, 387
eyes of, care of, 385
feeding-dropper for, 380
incubator for, 368
indigestion in, 388
infection in, 387
massage of, 386
method of feeding, 380
Infant, premature, mouth of, care of, 385
nasal infection in, 388
nose of, care of, 385
nursing bottle for, 380
removal of, from incubator, 386
saddle-nose of, 388
sprue in, 388
Tarnier's method of gavage in, 381
thrush in, 388
Winckel's permanent bath for, 367
pulse of, 167
respiration of, 167
scales, 101
temperature of, 167
training of, 167
urination in, 159
wardrobe of, 97
weighing of, 166
Infection, auto-, 283
in premature infant, 387
nasal, in premature infants, 388
of eyes, 347
of mouth, 352
of newborn, 346
of throat, 352
of umbilicus, 346
puerperal, 279. See also *Puerperal infection.*
Inflammation of bladder in puerperium, 330
of breast, 315. See also *Mastitis.*
Inguinal hernia, 358
Injuries, operative, of newborn, 353
to brain in birth, 355
Innominate bones, 23
Insanity, puerperal, 304
nourishment in, 306
prevention of suicide in, 305
salt solution in, 306

Insanity, puerperal, sleep in, 306
treatment of, 305
Instruments for embryotomy, 201
for induction of premature labor, 230
for pubiotomy, 213
for treatment of abortion, 234
preparation of, for operation, 187
sterilization of, 432
Inverted nipple, 312
Involution of uterus, 55, 64
Iodoform gauze, 437
Irrigation of eyes, 349, 351
Irrigator, rectal, 156
Ischuria paradoxa, 248
in puerperium, 66
Itching of pudenda in pregnancy, 245

Jacket, confinement, 93
Jaundice of newborn, 69, 341
Junket, 455

Kabo abdominal supporter, 77
Kidney pains, 59
Kidneys in pregnancy, 86
in puerperium, 66
of newborn infant, 70
Knee-chest position, 238
Koumiss, 355

Labia majora, 32
minora, 32
Labor, 54
after-pains of, 61
care during, 103
among destitute, 411
complications during, 262
delivery of child before doctor arrives, 262
dropping as sign of, 56
Labor, dry, 57, 60
false pains of, 56, 103
first stage of, 57
care during, 103
diet in, 113
general instructions in, 114
history-sheet in, 114
preparation for doctor in, 110
of bed for, 107
of patient for, 109
of room for, 105
when to summon doctor, 117
headache during and after, 134
hemorrhage during, 272
lightening as sign of, 55
nursing during, 103
pains, 58, 103
false, as sign of labor, 56, 103
period of dilatation, 57
of expulsion, 57
placental stage, 57
powers of, 58
premature, 54, 55
induction of, 230
instruments for, 230
premonitory symptoms, 55
satchel, list of articles in, 412
second stage of, 57
administering ether in, 123
anesthesia in, 123
care during, 118
chloral in, 120
cramp in leg during, 119
morphin in, 120
pantopon in, 120
scopolamin in, 120
show as sign of, 57, 103
signs of, 54
stages of, 57
third stage of, 57
air-embolism in, 128

Labor, third stage of, care after, 134
during, 125
guarding uterus in, 125, 127
expelling placenta in, 127
lacerations of perineum in, 131
complete, special care in, 140
perineorrhaphy in, 129
Lacerations of perineum, complete, in third stage of labor, special care in, 140
in third stage of labor, 131
Lambdoid suture, 43
Lanugo, 365
Layette, infant's, 97
Leg, cramp in, during second stage of labor, 119
milk-, 297
Leggings, obstetric, 94
sterilization of, 440
Lemonade, egg, 454
Leukorrhea in pregnancy, 245
Ligaments, broad, 31
Light and heat in operating room, 187
in cesarean section, 207
Lightening, 55
Linea gravidarum, 51, 52
Linen bobbin, 439
suture yarn, sterilization of, 439
Liquid diet, 452
Liquor amnii, 42, 59
cresolis compositus, 443
Lithotomy position, 185, 186
Liver of fetus, 47
Livid asphyxia, 360
Lochia, 63
care of, after pubiotomy, 217
cruenta, 63
odor of, 64
Lochia purulenta, 64
sanguinolenta, 63
serosa, 64
serosanguineous, 63
Lockjaw, 359
Lues, 449
Lungs, edema of, treatment, 260
in pregnancy, 51
Lysol gauze, 435
solution, 443

Major operations, 190
Mammary gland. See *Breast.*
Mania in puerperium, 304
Marasmus, 334
Mask of pregnancy, 52
Massage in puerperium, 148
of breast, 309–312
in agalactia, 323
of premature infant, 386
Mastitis, 315
Bier's method of treating, 320
etiology, 316
symptoms, 317
treatment, 317
Materna glass, 406
Maternal changes of pregnancy, 49
impressions, 82
nursing, contraindications to, 393
Meat cure, 455
diet, raw, 456
Meat-extract ice, 456
Meatus urinarius, 31, 33
Meconium, 70
Melancholia in pregnancy, 249
in puerperium, 304
Melena neonatorum, 333, 352
Menses, cessation of, in diagnosis of pregnancy, 73
Menstruation, 38
in newborn, 345
uterus during, 38

Mental condition in puerperium, 67
Mercury, bichlorid of, preparation of solutions of, 442
Milk, abnormal, 325
amount required for feedings, table of, 401
and egg, 456
certified, 405
composition of, 395
diet, 452
digested with acid, 456
drying up, 326
excess of, 321
human and cows', table of comparison, 395
obtaining of, for analysis, 394
lower, obtaining of, 400
mixed, 404
modification of, 395
apparatus for, 398
mothers', substitutes for, 395
peptonized, 407
by rectum, 459
cold process, 456
warm process, 457
with egg, by rectum, 459
quality of, 404
scarcity of, 321
siphon, 399
sterilization of, 403, 457
under, obtaining of, 400
upper, obtaining of, 398
witches', 344
Milk-fever, 66, 307
Milk-leg, 297
Milk-shake, 457
Milk-sugar, 396
Milk-toast, peptonized, 457
Mind in pregnancy, 82
Minor operations, 217
Miscarriage, 55
Mixed milk, 404
Modification of milk, 395
apparatus for, 398
Moisture of incubator, 374
Momburg's belt, 276
Mons veneris, 32
Monstrosities, 356
Montgomery's tubercles, 36
Morbus cæruleus, 337
Morning sickness, 53
in diagnosis of pregnancy, 73
Morphin in second stage of labor, 120
Mother, care of, after operative delivery, 190
during puerperium, daily care of, 135
Mothers' milk, substitutes for, 395
Mouth in pregnancy, 52
infection of, 352
of premature infant, care of, 385
Mouth-and-head guard, 206
Mulberry nipple, 312
Mutilating operations, preparation for, 200
Mutton broth, 457

Nasal feeding, 461
infection in premature infants, 388
Nausea in pregnancy, 237
Navel, care of, 154
granulations of, 345
of newborn infant, 70
Needle, De Lee's, for hypodermoclysis, 225
pubiotomy, 212
Neglected transverse presentations, 198
Neisser, diplococcus of, 348
Nervous system in pregnancy, 54
Nest-building, 40
Neuralgia in pregnancy, 54

Newborn infant, 68
affections of, 328
atelectasis pulmonum of, 68
bed of, 100
bowels of, 70
cry of, 68
eyes of, care of, 132
first care of, 132
weeks of, 68
jaundice of, 69
kidneys of, 70
navel of, 70
outfit for, 97
skin of, 69
sleep of, 69
temperature of, 69
wardrobe of, 97
weight of, 45, 71
Newspapers, sterilization of, 435
Nipple, 36
abnormalities of, 312
bifid, 312
blisters of, 313
cracks of, 313
fissures of, 313
flat, 312
for babies with cleft palate, 356
inverted, 312
mulberry, 312
polypoid, 312
split, 312
Nipple-shield, glass, 162
Wansbrough's, 314
Nitrate of silver for prevention of ophthalmia neonatorum, 132
Nitrous oxid and oxygen anesthesia, 120*h*
Nose of premature infant, care, 385
saddle-, of premature infant, 388
Nourishment in puerperal infection, 289
insanity, 306
Nurse, 444
articles needed by, 445
asepsis of, during puerperium, 285
care of, in infection, 352
delivery of child by, 262
deportment of, 446
dress of, 446
duties of, during forceps operation, 193
in extra-uterine pregnancy, 255
engagement of, 90
hospital, relations to patient, 423
in puerperal infection, 294
instructions for, 92
visiting, duties of, during puerperium, 414
satchel of, 417
visits of, 93
wet-, care of, 326
Nursery, care in, 420
conveniences, 100
Nursing after patient is up, 150
bottle for premature infants, 380
difficulty in, 330
during labor, 103
puerperium, 103
hospital, *vs.* home, 419
maternal, contraindications to, 393
of infant, 160
visiting, 411
Nutritious coffee, 457

Oatmeal-water, 408
Obstetric cases, list of articles for, 91
complications, 237
examination, preparation for, 217
leggings, 94
operations, 178
Occipital presentation, four positions of, 171

Occlusion of anus, 357
Operating room, light and heat in, 187
Operations, 178
care after, 188
forceps, 190. See also *Forceps operation.*
in private home, 181
major, 190
minor, 217
mutilating, preparation for, 200
preparation for, 180
of instruments for, 187
of patient for, 184
of room for, 183
Operative injuries of newborn, 353
Ophthalmia neonatorum, 347
care of nurse in, 352
Credè's method for prevention of, 132
prevention of, 348
treatment of, 349
Orders, 422
Os uteri, 28
Ossa innominata, 22
Osteomalacic pelvis, 27
Ovary, 31
Overgrowth of child, diet for prevention of, 452
Overlying child, 360
Ovulation, 37, 39
Ovum, 40
Ox-gall enema, 300

Packing uterus with gauze, 220
Pad-holder, 92
Pains, after-, 61, 299
bearing-down, 59
false, of labor, 56, 103
in abdomen in pregnancy, 247
kidney 59
labor, 58, 103
Palate, cleft, 356
nipple for babies with, 356
Pallid asphyxia, 360
Pantopon in second stage of labor, 120
Paralysis, facial, after forceps delivery, 353, 354
Patient, preparation of, for first stage of labor, 109
for operation, 184
Pelves, varieties of, 26
Pelvimeters, 111
Pelvis, anatomy of, 21
brim of, 24
contracted, 27
deformed, 27
false, 22, 23
flat, 27
inlet of, 24
osteomalacic, 27
outlet of, 24
small, 24
soft parts of, 28
true, 22, 24
upper strait of, 24
Pendulous abdomen in pregnancy, 246
Peptic salt, 388
Peptonized milk, 407
by rectum, 459
cold process, 456
warm process, 457
with egg by rectum, 459
milk-toast, 457
Perineal body, 34
Perineorrhaphy, 129, 218
Perineum, 32, 33
lacerations of, complete, in third stage of labor, special care in, 140
in third stage of labor, 131
Peritoneum, 31

Permanganate method of sterilization of hands, 425
Pernicious vomiting, 238
Pessary, air, 231
Phimosis, 338
Phlegmasia alba dolens, 297
Piles, 34
Pillow-slips, sterilization of, 440
Pitchers, sterilization of, 439
Pituitrin in agalactia, 322
Placenta, 41, 42, 46, 61
  abruption of, 251
  examination of, 269
  expelling of, 127
  prævia, 250
  premature detachment of, 251
Pneumonia, 336
Point of direction, 171
Polypoid nipple, 312
Polyuria in puerperium, 66
Pomeroy's bag, 231
Position, 169
  diagnosis of, 173
  knee-chest, 238
  lithotomy, 185, 186
  posterior, 176
  Sims', elevated, 270
  Trendelenburg, in bed, 271
  Walcher, 195
    for forceps operation, 196
Posterior positions, 176
Postpartum hemorrhage, 272
    after-care, 277
  visiting bag, 417, 418
Pregnancy, 49
  abdominal supporter in, 76
  alcohol in, 81
  areolar signs of, 73
  bathing in, 87
  bed-sores in, prevention of, 242
  blood in, 50
  bowels in, 84
Pregnancy, breast in, 50, 73
  breasts in, care of, 77, 89
  cessation of menses in healthy woman as sign of, 73
  constipation in, 54
  convulsions in, 256
  corsets in, 76
    high stomach from, 75
  decubitus in, prevention of, 242
  diagnosis of, 73
  diet in, 80
  disorders of, 237
  dress in, 75
  eclampsia in, 256
  ectopic, 252. See also *Pregnancy, extra-uterine.*
  edema of extremities in, 243
  enlargement of breasts as sign of, 73
  enteroptosis after, 76
  exercise in, 81
  extra-uterine, 252
    duties of nurse, 255
    symptoms of, 254
  fainting in, 248
  feeling life as sign of, 74
  fetus as sign of, 74
  frequent urination in, 248
  general changes in, 51
  genitals in, care of, 89
  head of fetus in, 43
  heart-burn in, 248
  hemorrhage in, 249
  high stomach after, 76, 78
  hygiene of, 73
  hyperemesis gravidarum, 238
  itching of pudenda in, 245
  kidneys in, 86
  length of, 54
  leukorrhea in, 245
  local changes in, 49
  lungs in, 51

Pregnancy, mask of, 52
maternal changes of, 49
impressions in, 82
melancholia in, 249
mind in, 82
mode of living in, 75
morning sickness in, 53, 73
mouth in, 52
nausea of, 237
nervous system in, 54
neuralgia in, 54
pains in abdomen in, 247
pendulous abdomen in, 246
preservation of figure in, 78
pride of, 78
pruritus in, 245
ptyalism in, 52
quickening as sign of, 74
shoes in, 78
skin in, 52, 87
taste in, 53
teeth in, 52, 248
toxemia in, 87, 242
urine in, 51
uterus in, 49
vagina in, 49
varicose veins in, 80, 243
vomiting in, 237
vulva in, 50
Premature detachment of placenta, 251
infant, atelectasis pulmonum of, 390
bathing of, 384
blue spells of, 389
care of, 365
general, 386
convulsions of, 390
cyanosis of, 389
diseases of, 387
eyes of, care of, 385
feeding-dropper for, 380
Premature infant, incubator for, 367
indigestion in, 388
infection in, 387
massage of, 386
method of feeding, 380
mouth of, care of, 385
nasal infection in, 388
nose of, care of, 385
nursing bottle for, 380
removal of, from incubator, 386
saddle-nose of, 388
sprue in, 388
Tarnier's method of gavage in, 381
thrush in, 388
Winckel's permanent bath for, 367
labor, 54, 55
induction of, 230
instruments for, 230
Presentation, 169
and position, 169
breech, 177, 269
diagnosis of, 173
occipital, four positions of, 171
shoulder, 177
transverse, 177
neglected, 198
Pressure-marks from forceps, 353, 354
Prickly heat, 342
Pride of pregnancy, 78
Prochownik's diet, 452
Prolapse of cord, 270
Proprietary infant foods, 408
Protargol in prevention of ophthalmia neonatorum, 133
Pruritus in pregnancy, 245
Ptyalism, 52
Puberty, 37

Pubes, 26
Pubiotomy, 211
after-care, 214
care of lochia after, 217
catheterization after, 217
hematoma after, 216
instruments for, 213
needles, 212
operation, 212
Pudenda, itching of, in pregnancy, 245
Puerperal embolism, 297
infection, 279
disinfection, 296
frequency and source, 283
history of, 280
sheet, 295
medicinal treatment, 293
nourishment, 289
prevention of, 284
rectal infusion, 289
salt solution, 289
surgical treatment, 293
symptoms of, 286
the child, 293
the nurse, 294
treatment of, 287
insanity, 304
nourishment in, 306
prevention of suicide in, 305
salt solution in, 306
sleep in, 306
treatment, 305
thrombosis, 297
Puerperium, 61
abnormal milk in, 325
abnormalities of nipples in, 312
agalactia in, 321
asepsis of breasts during, 286
of nurse during, 285
bath in, 147, 151
bladder in, 145
Puerperium, bowels in, 67, 144
breasts in, 65
care of, 135
care during, 135
catheterization in, 146
complications of, 279
constipation in, 300
cystitis in, 303
diet in, 141
diseases of breasts in, 307
drying up milk in, 326
duties of visiting nurse during, 414
engorgement of breast in, 65, 145, 307
excess of milk in, 321
foods to be avoided in, 143
galactorrhea in, 321
general changes in, 66
treatment, 147
genitals in, care of, 138
headache in, 304
history-sheet during, 141
inflammation of bladder in, 303, 315
insanity in, 304
ischuria paradoxa in, 66
kidneys in, 66
massage in, 148
mastitis in, 315
mental condition in, 67
mother during, daily care of, 135
nursing after patient is up, 150
during, 103
polyuria in, 66
pulse in, 66, 148
rectovaginal fistula in, 301
respiration in, 148
retention of urine in, 66
scarcity of milk in, 321
skin in, 67
sleep in, 147

Puerperium, temperature in, 66, 148
time of, diagnosis, 74
of getting up, 148
tympany in, 299
urethra in, 145
uterus in, 61
vagina in, 64
vesicovaginal fistula in, 301
visitors during, 148, 151
vulva in, 64
Pulse in puerperium, 66, 148
of infant, 167
Pump, breast-, 163
Punch, rum, 458

QUALITY of milk, 404
Quickening as sign of pregnancy, 74

RASH, heat, 342, 343
Recipes, 453
Rectal feeding, 459
infusion in puerperal infection, 289
irrigator, 156
Rectovaginal fistula in puerperium, 301
Rectum, 31
Red gum, 342
Reproduction, function of, 37
Reproductive system, anatomy and physiology of, 21
Respiration, artificial, 362
Byrd's method, 362
De Lee's modification, 362, 363
Sylvester's method, 363
in puerperium, 148
of infant, 167
Respiratory tract of infants, affections of, 335
Retention of urine in puerperium, 66
Rice-water, 458
Rochester sterilizer, 430
Room for operation, preparation of, 183
preparation of, for first stage of labor, 105
Rotation, 24
Rubber gloves, sterilization of, 426
De Lee's method, 427
Rum punch, 458

SACRUM, 22
Saddle-nose of premature infant, 388
Sagittal suture, 43
Salt, peptic, 388
solution, 443
administration of, 225
by rectum, 459
drop method of giving, 289, 290
in puerperal infection, 289
insanity, 306
through skin, 460
Salvarsan in syphilis, 450
Sanitary seat covers, 88
Satchel, labor, list of articles in, 412
visiting nurse's, 417
Saws, Gigli wire, 214
Scales, infant, 101
Scarcity of milk, 321
Scissors, Smellie's perforating, 199
Scopolamin in second stage of labor, 120
Scopolamin-morphin amnesia, 120*a*
Semmelweis and puerperal infection, 280
Separation of cord, delayed, 345
Sex, determination of, 83
Sharp and Smith incubator, 368
Sheets, sterilization of, 440
Shield, nipple-, 314

Shirts, infant's, 97
Shoes in pregnancy, 78
Shoulder presentation, 177
Show, 57, 103
Silk, sterilization of, 438
Silver nitrate method for prevention of ophthalmia neonatorum, 132
Simpson's forceps, 191
Sims' position, elevated, 270
Sinus lactiferus, 35
Siphon, milk, 399
Skin, affections of, in infants, 342
  feeding through, 460
  in pregnancy, 52, 87
  in puerperium, 67
  of newborn infant, 69
Skin-eruptions in infants, 342
Sleep in puerperium, 147
  of newborn infant, 69
Smellie's perforating scissors, 199
Snuffles, 335
Solutions, preparation of, 441
Spasms, 358
Specific disease, 449
Spermatozoid, 40
Sphincter ani, 34
Split nipple, 312
Sponges, covered, 433
Sprue, 333
  in premature infant, 388
Starvation fever, 164, 358
Sterile water, preparation of, 441
Sterilization, 92
  by dry heat, 431
  methods of, 424
  of apartments, 440
  of basins, 439
  of bed-pans, 439
  of brushes, 433
  of catgut, 438
  of douche-cans, 439
Sterilization of dressings, 433
  of furniture, 440
  of gowns, aprons, etc., 440
  of hands, 424
    Ahlfeld's method, 425
    De Lee's method, 426
    Fürbringer's method, 425
    Halsted's method, 425
  of instruments, 432
  of linen suture yarn, 439
  of milk, 403
  of newspapers, 435
  of pitchers, 439
  of rubber gloves, 426
      De Lee's method, 427
  of silk, 438
  of sutures, 438
Sterilized milk, 457
Sterilizer, De Lee's glove, 428
  Rochester, 430
Sterilizers, 430
Stockings, infant's, 99
  obstetric, 94
Stomach, high, after pregnancy, 76, 78
Stools, green, 332
Striæ gravidarum, 51, 52
Strophulus, 342
Submammary abscess, 316
Sugar, grape-, by rectum, 460
Supernumerary fingers, 358
  toes, 358
Suture material, preparation of, 438
  yarn, linen, sterilization of, 439
Sutures, 43
  removal of, 220
Sylvester's method of artificial respiration, 363
Symphysiotomy, 211
  after-care, 214
  bed, 216
  bed-frame, 215

Symphysis pubis, 26
Symptoms, recording of, 421
Syphilis, 449
  prevention of contagion in, 450
  treatment of, 450

Tamponade, lysol gauze for, 435
  uterine, 220
Tarnier's axis-traction forceps, 191
  method of gavage in premature infants, 381
Taste in pregnancy, 53
T-binder, 92
Tea, flaxseed, 455
Teeth in pregnancy, 52, 248
Temperature in puerperium, 66, 148
  of incubator, 373
  of infant, 167
  of newborn infant, 69
Tetanus, 359
Teterelle, 382, 383
Therapeutic abortion, 234
Thirst fever, 164
Throat, infection of, 352
Thrombosis, puerperal, 297
Thrush, 333
  in premature infants, 388
Thyroid extract in agalactia, 322
Toast-water, 458
Toes, supernumerary, 358
Tongue-tie, 357
Towels, sterilization of, 440
Toxemia in pregnancy, 87, 242
Tracheal catheter, 360
Training of infant, 167
Transverse presentation, 177
    neglected, 198
Trendelenburg posture in bed, 271
True pelvis, 22, 24
Tubercles of Montgomery, 36
Twilight sleep, 120*a*
Tympany in puerperium, 299

Umbilical cord, 43
    delayed separation of, 345
    prolapse of, 270
  hernia, 358
Umbilicus, infection of, 346
Ureters, 31
Urethra, 31
  in puerperium, 145
Uric acid in urine, 338
Urinary organs of infants, affections of, 337
Urination, delayed, in infant, 337
  difficult postpartum, 66
  frequent, in pregnancy, 248
  in infant, 159
Urine in pregnancy, 51
  retention of, in puerperium, 66
  uric acid in, 338
Uterine curettage, 224
  douche, 224
  tamponade, 220
Uterus, 38
  broad ligaments of, 31
  care of, during third stage of labor, 125, 127
  cervix of, 28
  during menstruation, 38
  fetus in, physiology of, 46
  fundus of, 28
  in pregnancy, 49
  in puerperium, 61
  involution of, 55, 64
  os of, 28
  packing of, with gauze, 220
  shape and size of, at term, 42

Vagina, 29
  in pregnancy, 49
  in puerperium, 64
Vaginal cesarean section, 210
  douche, 223
Varicose veins in pregnancy, 80, 243

Veins, varicose, in pregnancy, 80, 243
Venereal diseases, 448
general consideration, 451
Ventilation of incubator, 368, 375
Vernix caseosa, 69
Version, 197
Vesicovaginal fistula in puerperium, 301
Vesicular eruptions in infants, 342
Vestibule, 33
Villi, 41, 46
Visiting bag, 417, 418
nurse, duties of, during puerperium, 414
satchel of, 417
nursing, 411
Visitors during puerperium, 148, 151
Visits of nurse, 95
Vomiting in child, 330
in pregnancy, 237
pernicious, 238
Voorhees' bag, 231
Vulsellum forceps, 195
Vulva, 29, 32
anatomy of, 32
in pregnancy, 50
in puerperium, 64
Vulvitis in newborn, 345

WALCHER position, 195
for forceps operation, 196
Wansbrough's nipple-shield, 314
Ward, care in, 419
Wardrobe, infant's, 97
Warm feet of incubator infant, 377
Warren dresses, 98
Water, sterile, preparation of, 441
Water-blisters, 342
Waters, bag of, 59
Wehen, 58
Weighing of infant, 166
Weight chart of newborn infant, 72
of newborn infant, 45, 71
Wet-nurse, care of, 326
Whey, 406, 458
champagne, 454
wine, 458
White gum, 342
Wiegand-Martin method of delivering after-coming head, 176
Winckel's permanent bath for premature infants, 367
Wine whey, 458
Wire saws, Gigli, 214
Witches' milk, 344

YARN, linen suture, sterilization of, 439

WELLCOME LIBRARY INSTITUTE