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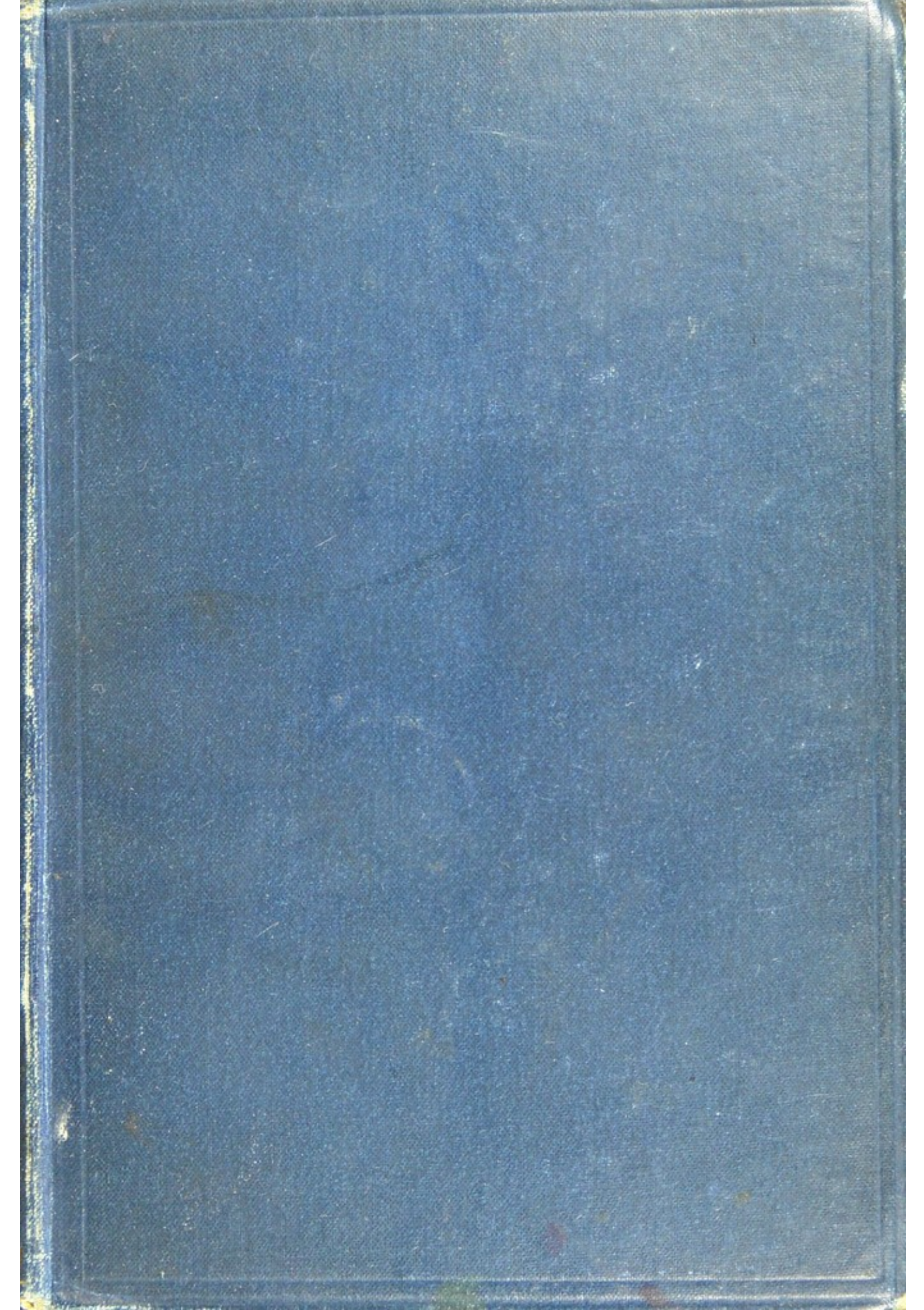
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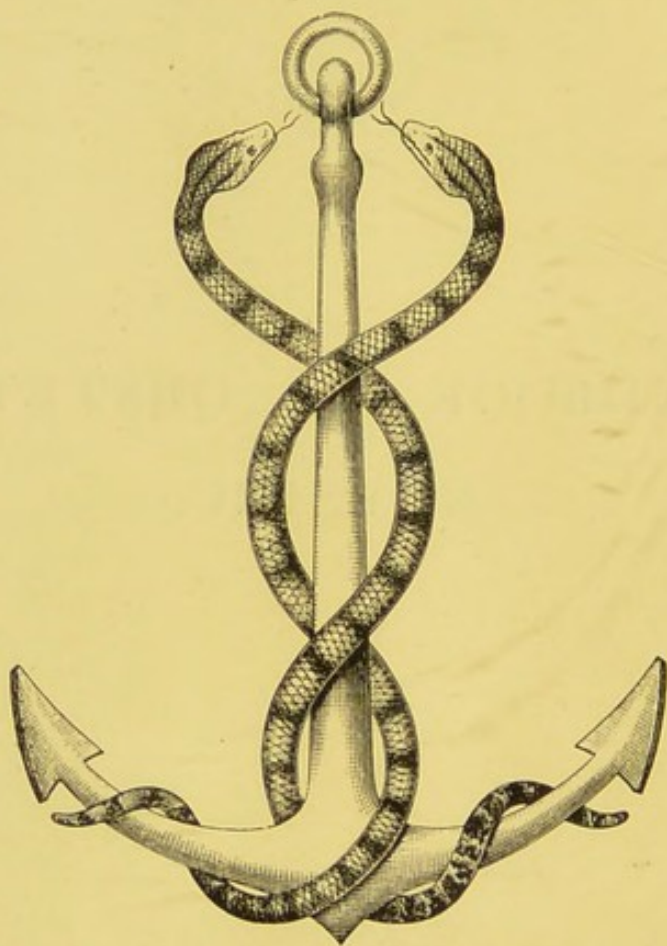


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HANDBOOK OF OBSTETRIC
NURSING.

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NUNQUAM ALIUD NATURA, ALIUD SAPIENTIA DICIT.





SEMI-DIAGRAMMATIC SECTION OF A FULL TIME PREGNANCY
SHOWING POSITION OF *fœtus in utero* (after Richard).

B. 47.
134

HANDBOOK OF OBSTETRIC NURSING

BY

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OF PHYSICIANS; LATE PRESIDENT ROYAL
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TO
OUR FRIEND AND TEACHER,
JOHN HALLIDAY CROOM,
M.D., F.R.C.P.Ed., F.R.S.E.,
THE FOLLOWING PAGES
ARE
RESPECTFULLY DEDICATED,
IN GRATEFUL ACKNOWLEDGMENT
OF MUCH KINDNESS,
AND
WITH SINCERE REGARD.

957400

PREFACE TO THIRD EDITION.

WE have taken the opportunity of a demand for a new Edition of our Handbook to subject it to a thorough revisal, and as far as possible to keep it abreast of the requirements of the present day.

A description of the incubator, and of the process of sterilizing milk, has been added, and a diagram illustrating the proper method of vaginal douching has been inserted.

In an appendix will be seen the Memorandum by the British Medical Association of the Regulations proposed for adoption by the Obstetric Nurses' Board. We append these excellent rules, to still further impress upon Nurses the paramount importance of cleanliness and antiseptics in their work, and to show them that the value of antiseptics in midwifery is not the mere idea of an isolated few, but is a principle of universal acceptance, the importance of which cannot be exaggerated.

We take this opportunity of recording our thanks to Dr. D. J. Graham for his help in seeing these pages through the press.

EDINBURGH, *May* 1898.

PREFACE TO FIRST EDITION.

IN the Edinburgh School of Medicine, the training of Obstetric Nurses has always been a prominent feature; and although there are many excellent Handbooks for Midwives, it has seemed to us that such a work specially in connection with the Edinburgh School has been a want.

In producing our Manual, we have kept before ourselves the fact that Nurses in this department have no special previous training, and that the knowledge necessary to gain the diploma must be acquired in three months. We have, therefore, done our best to make the volume as simple as possible, and while endeavouring to supply the Monthly Nurse with all the necessary instruction, we have intentionally omitted much scientific detail, and confined ourselves to practical and essential facts. Realising as we do their immense importance in Midwifery, we have made antiseptics a special feature throughout the book.

EDINBURGH, *October* 1889.

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HANDBOOK OF OBSTETRIC
NURSING.



HANDBOOK OF OBSTETRIC NURSING.

CHAPTER I.

INTRODUCTION—SKETCH OF THE ANATOMY AND PHYSIOLOGY OF THE BODY.

A NURSE, in the practice of midwifery, occupies a very responsible and quite exceptional position. She has to attend a woman who is undergoing a natural process, which, however, is liable at any time to complications, often involving great danger and even death. The prevention of many of these dangerous complications, and the safety of the mother's life, depend in a very special manner on the way in which the nurse carries out her duties, and on the implicit obedience with which she acts up to the directions which will be laid down for her guidance. Her experience must be not only that gained by reading books, but by practical instruction at the bedside as well.

With regard to what the nurse herself should be, a few suggestions may here be found useful. Above all things, she must be cleanly as regards her person and habits, neat and tidy in her dress, both for her patient's sake and for her own. She must be punctual and obedient in all her transactions. She should try to anticipate her patient's wants without questioning, and never startle or hurt the feelings of those under her charge. She should move about quietly, avoiding all hurry, speak in a low distinct tone, be cheerful and sympathetic, yet firm on all occasions. She must never lose her temper or her presence of mind, and she must acquire a habit of accurate observation. She must not gossip about the cases she may have seen.

If possible, every nurse should take a daily bath. It is useful not only for cleanliness, but also for enabling her to bear well the strain of long-continued work. In the absence of a regular bath, this can be accomplished by wringing out a rough towel in soap and water, and rubbing the body briskly from head to foot.

It is very desirable that a nurse should have, in addition to a thorough knowledge of her particular work, a general idea of the structure and functions of the human body. Obstetric nurses are under a disadvantage in this respect, as their short period of training necessarily prevents them from extending their studies much beyond the bare essentials of their work.

An acquaintance with the natural functions of the body, and the position of some of the chief organs, ought, how-

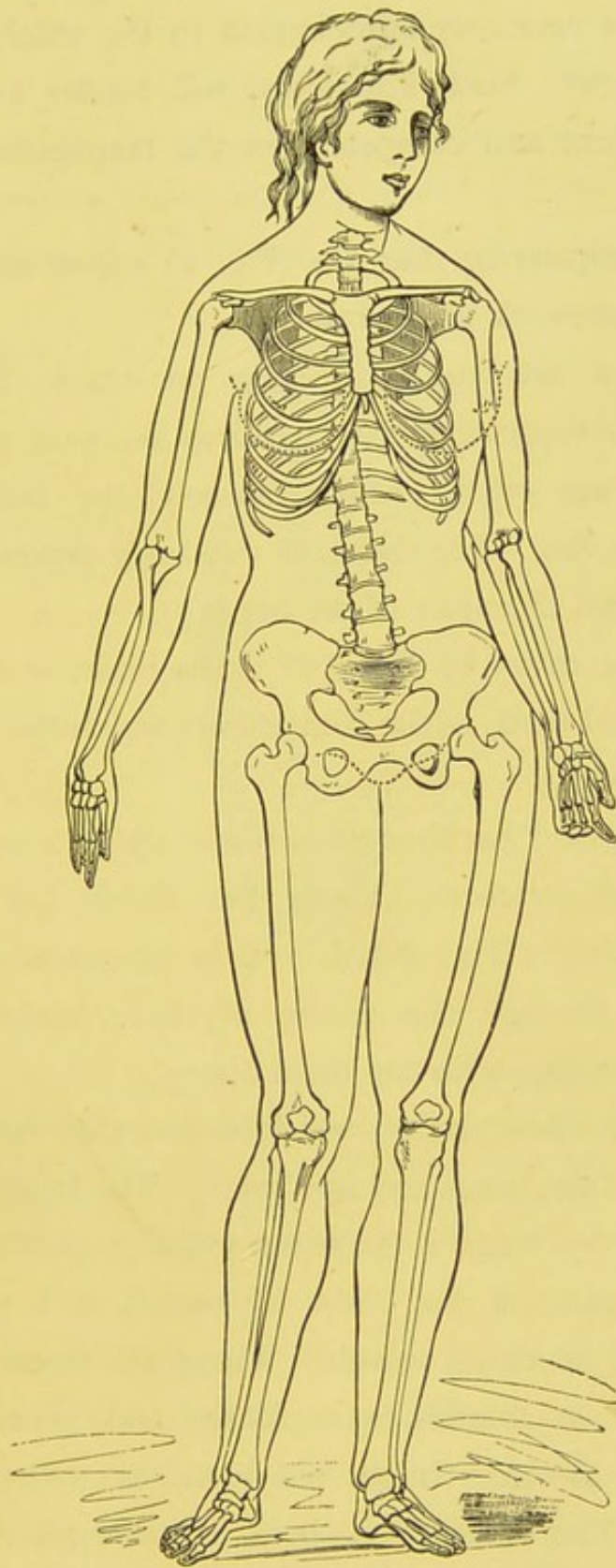


FIG. 1.—Female Skeleton.

ever, to be a necessary introduction to the teaching of an obstetric nurse. Such knowledge will render her all the more intelligent and competent in the management of her cases.

The accompanying diagram (Fig. 1) shows at a glance the bony framework of the body.

The bones are the scaffolding on which the other structures are supported, and they also act as a protection to the delicate organs within, namely, the brain, heart, lungs, uterus, &c. The shape of the body depends largely on the size and character of the bones.

Within the cavity of the skull is the brain, which, along with the spinal cord, is the centre from which the nerves of the body arise.

The spine, or "backbone," is made up of a number of bones called *vertebræ*. These are firmly but pliantly jointed together. The spinal cord is contained in a canal which runs through the centre of these bones, and is directly continuous with the brain above.

Within the chest cavity, which is bounded by the ribs, are contained the lungs and the heart. The heart, situated between the two lungs, is the pump which propels the blood through all parts of the body, by means of a system of tubes known as blood vessels. There are three kinds of blood vessels: (1) arteries, (2) capillaries, and (3) veins. The arteries carry the pure bright red blood from the heart to the body. They pulsate or beat in corresponding time to the heart, so that by feeling and counting the beats of an

artery, we learn the rate at which the heart is going. This is what is meant by the "pulse." The most convenient place for taking the pulse is on the thumb side of the front of the forearm, about an inch above the wrist, where we feel the beating of an artery which is carrying blood to the

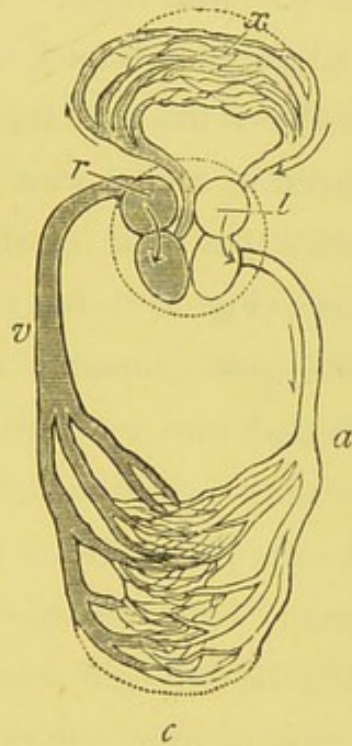


FIG. 2.—Diagrammatic Scheme of the Circulation. This is not supposed to represent the blood vessels on the right and left sides of the body respectively; but is a general scheme of the circulation of the blood. *c*, Capillaries. *v*, Veins. *a*, Arteries. *x*, Lungs. *l*, Left side of heart. *r*, Right side of heart.

hand. The frequency of the pulse is usually from 70 to 80 beats a minute. Exertion, excitement, or any feverish condition, quicken the pulse; while it becomes slower in childbed after delivery if there be no fever.

If we follow out an artery, we find that it is constantly

giving off branches, and that it gets gradually smaller and smaller in size, the farther it is from the heart. It at last branches into a network of very fine tubes, the smallest of which measures $\frac{1}{3000}$ inch in diameter; these are the capillaries. The capillaries gradually join together, get larger and larger, and so form veins. The veins carry the now impure dark purple blood back again to the heart. There is no pulse in the veins, and they are provided with pouch-like valves, placed in such a way that the blood must flow towards the heart. The plan of the circulation of the blood is then as follows (Fig. 2):—the heart consists of two sides—right and left—quite separate from one another, each of which is divided into an auricle and a ventricle. The right side of the heart is connected with the veins, the left with the arteries. In the figure, x represents the lungs where the impure venous blood becomes purified by means of the air we breathe. If we begin with the impure venous blood, we see that it comes from the capillaries, and passes along the veins to the right auricle of the heart. It then passes from the right auricle into the right ventricle, which pumps it into the lungs. It there gets purified by coming in contact with air, and then it passes into the left auricle as bright arterial blood. From thence it is forced into the left ventricle, which propels it into the arteries, and so it finds its way again into the capillaries and veins, thus making the round of the circulation. Each artery in the body is accompanied by, at least, one vein lying alongside of it.

The lungs (right and left) are also contained in the chest cavity, and lie one on either side of the heart. Air passes into them through the windpipe at each inspiration, and is breathed out again during expiration. The lungs contain innumerable little cavities like the pores of a sponge, into which the air we breathe passes. The impure venous blood, on its way from the body, circulates in the walls of these little cavities, and the pure air coming in contact with it through the thin walls of the blood vessels (which permit of the air permeating, but prevent the blood escaping), purifies the blood, and makes it bright red again. The air we breathe out is rendered impure by its having taken up the waste matter from the blood, and is consequently not fit to be breathed over again.

The respirations ought to be about 17 per minute.

The cavity of the abdomen, which is lined everywhere with a membrane called the peritoneum, has as its chief contents, the stomach and intestines, with the liver, kidneys, pancreas, and spleen. These are likewise covered by the peritoneum.

The food which we eat is masticated by the teeth, and mixed thoroughly with the saliva which pours freely into the mouth. It then passes down the *œsophagus* (or gullet) into the stomach, where it is acted upon by the gastric juice. The gastric juice acts on the food, and alters it in such a way that a great part of it is absorbed into the circulation by the blood vessels, which lie in the walls of the stomach. That part of the food which is not absorbed

from the stomach, passes on into the intestine, where it becomes mixed with the bile which comes from the liver, and with the pancreatic juice which comes from the pancreas. In this way more of it is made soluble, so that it can be absorbed into the blood by the blood vessels of the intestine. That part of the food which is insoluble, and which is not capable of being absorbed into the blood, is got rid of by the action of the bowels.

The lower end of the bowel is called the rectum, and its external opening is called the anus.

There are two kidneys, a right and a left, one in each loin. They remove excess of water and impure matters from the blood. Each is connected with the bladder by a tube, the ureter, through which the water, or urine, as it is called, passes. The urine collects in the bladder till a sufficient quantity has gathered, when it is got rid of in the act of micturition, through a canal called the urethra.

Another way by which the blood gets rid of impure matter, is by the sweat glands in the skin—perspiration.

The human body, like that of all animals, has a definite heat or temperature. It is measured by a clinical thermometer, which for this purpose is usually placed in the axilla or armpit of the patient. The temperature of a healthy person in the axilla (the "normal" temperature) is $98^{\circ}4$ Fahrenheit (generally marked by an arrow on the thermometer). Previous to introducing the thermometer, the mercury must be shaken down below 97° , and the axilla should be carefully dried with a towel. The ther-

mometer is then placed next the skin of the armpit, with the arm closed on it, and kept there for *ten minutes* before the temperature is read off. The temperature may also be taken in the mouth, rectum, or vagina. When the temperature rises above 99° , it is a sign of fever. If the temperature should rise to 105° or 106° , the patient is in an extremely dangerous condition. The temperature may be normal in the morning, and high at night. Temperatures, pulses, and respirations should be taken morning and evening in ordinary cases, and more frequently in acute cases. In all cases where the temperature reaches 100° or over, the doctor should be communicated with.

Sometimes the temperature is below normal. This when well marked is not a very common condition, and it is well in such cases to introduce the thermometer again, or use another thermometer, to see that there is no mistake. Subnormal temperatures betoken an enfeebled state of the system.

CHAPTER II.

ANTISEPTICS—THEIR MEANING AND APPLICATION.

UNDOUBTEDLY one of the most essential things for an obstetric nurse to know is the meaning and application of antiseptics. For a proper understanding of this subject, than which there is none more important in the whole of obstetrics, an acquaintance with the ravages and nature of childbed fever is necessary, as it is mainly for the prevention of this dreadful disease that antiseptics are used.

Puerperal or childbed fever, in a word, is neither more nor less than blood poisoning, or septicæmia. When once this disease manifests itself, it not only is extremely serious for the patient herself, but the infection is apt to be carried from one lying-in room to another by means of a third person, and in this way it may spread with alarming rapidity, and with disastrous consequences.

It is an unquestionable fact that the introduction of antiseptics, and the careful and straightforward application of them, constitutes the greatest stride in the practice of midwifery in the present century. It is the most successful practical achievement of modern medicine, and the results of its adoption have been most remarkable.

Everyone is familiar with the ravages childbed fever used to make in our maternity hospitals, and every medical man knows that a mortality of 15 to 20 per cent. was by no means uncommon. Epidemics of childbed fever in Germany, France, London, and Dublin, are facts with which the most superficial student of obstetrics is well acquainted. But it is well known that antiseptics have entirely and absolutely revolutionised all this, and this explains the recent history of such hospitals as Paris, Prague, Copenhagen, London, Dublin, and Edinburgh, where, as a matter of fact, the disease has been practically stamped out. There is no more striking practical fact in the whole history of medicine than that in the hospitals just mentioned, without any external or internal change in the hospitals, except the introduction of antiseptics, the mortality from childbed fever should have fallen from 15 per cent. to almost none at all. Antiseptics, therefore, have almost entirely annihilated puerperal fever. What are the causes, then, of childbed fever, and how is it to be warded off? As stated above, it is blood poisoning, or septicæmia, and it is caused by the entrance, through a wound, of some poisonous material into the blood. It is most apt to occur if the system is in any way lowered.

In the simplest and most natural labours, several wounds are never wanting. There are generally some slight tears of the external parts, there is seldom wanting a tear in the cervix uteri, more or less deep, and there is always a wound inside the uterus, at the place where the placenta or after-

birth was attached. Of course, in difficult labours, there are generally more extensive wounds. The poisonous matters which may be absorbed through these wounds, and give rise to puerperal fever, are very numerous.

Septicæmia may arise from a piece of placenta, or blood clot, being retained in the uterus or passages after the birth of the child, and putrefying; or from the attendants having some poisonous material on their hands, instruments, or appliances, and bringing them in contact with the genitals of the lying-in woman—for example, dirty hands and finger nails, improperly cleansed sponges, bed-pans, &c. &c.

Such poison may be any decaying animal matter, the poison from a dead body or suppurating wound, imperfectly cleansed linen soiled by discharges, infectious disease, as fever, diphtheria, or erysipelas, bad drainage and imperfect ventilation, especially where a number of lying-in women are aggregated together. Even the monthly discharge of a healthy woman is a source of danger, as it decomposes very rapidly. The mere fact of anyone going into a lying-in woman's room who has recently come from a fever case, or from a case of puerperal fever, erysipelas, or diphtheria, or who has been dressing a dead body, may be quite sufficient to give the lying-in woman puerperal fever. Mere length of quarantine, in the case of a nurse having come in contact with such infection, does not necessarily lessen the danger; quarantine does not kill germs. There must, at the same time, be a complete change of clothes, plenty of baths, and the free use of disinfectants and antiseptics. Persons

suffering from a foetid discharge (for instance, from the nostrils) have been known to give lying-in women puerperal fever by coming near them.

It will be seen that the poisonous matters which might thus be conveyed to the wounds of the lying-in woman are endless, and are only to be guarded against by the strictest and most scrupulous attention to thorough cleanliness.

Dr. Playfair has recently said, "I have no doubt in my own mind that the vast majority of cases of puerperal septicæmia arise from poison directly conveyed to the patient by some *preventible* accident."

And again, after stating his conviction that "many and many a case of septicæmia has originated in the nurse," and enumerating instances where dirty hands, sponges, catheters, and sheets had been direct causes of the disease, he remarks that "in a hundred unsuspected ways such as these, quite beyond the control of the medical man, death may be conveyed to the patient."

It is now well known that putrefaction and decomposition are caused by small solid particles of living matter, called germs, which exist everywhere in the air.

Wherever there is dust, dirt, or dead animal matter of any kind, there these germs are to be found in countless numbers. Wherever they exist in a flourishing condition, or, in other words, wherever there is putrefaction, there is always a foetid or offensive odour.

Antiseptics are chemical substances which have the power of destroying these germs, and by so doing they prevent

putrefaction. Childbed fever is therefore a distinctly preventible disease, and its prevention is accomplished by *thorough cleanliness and care on the part of the nurse to begin with*, and by *freely and systematically using antiseptic and disinfectant agents in all cases of labour, and for a week at least after delivery*, so as to prevent any septic germs from entering the wounds. After the germs have thoroughly found their way into the body, it is next to impossible to destroy them, and they usually cause the death of the patient.

The best antiseptics, and those most suitable for general use, are carbolic acid, corrosive sublimate or perchloride of mercury, and biniodide of mercury. They are all poisonous, especially the two latter, and great care must be taken to prevent their being accidentally swallowed. Carbolic acid is used in a solution of one part of carbolic to forty parts of water (1 to 40), in other words, two tablespoonfuls of pure carbolic acid to a quart of water. The corrosive sublimate is used in a solution of one part of corrosive to two thousand parts of water. Care must be taken not to use it stronger than this for vaginal injections, or evil consequences may result. It can be procured in the form of a concentrated solution, a measured quantity of which, added to a certain amount of water, makes a solution of the required strength.¹

¹ Pellets containing corrosive sublimate can be procured, one of which dissolved in a certain quantity of water makes a solution of the strength of 1 in 2000. Similar pellets of biniodide of mercury are prepared, as also a concentrated solution similar to the corrosive. The biniodide is used in the same way as the corrosive; it is even a better antiseptic, is less poisonous, and does not injure instruments.

Oil, vaseline, or glycerine can also be impregnated with carbolic acid or corrosive sublimate.

Other antiseptics are Condyl's fluid, iodoform, chlorinated soda, eucalyptus oil, boracic acid, salicylic acid, tincture of iodine (a teaspoonful to the pint of water), sanitas (two ounces to a pint), Creolin (Jeyes' fluid), Lysol (one per cent.), &c. Condyl's fluid (a solution of permanganate of potash) should be used in the proportion of one tablespoonful to a quart of water. Crystals of permanganate of potash can also be used to make a similar solution by dissolving one teaspoonful in two quarts of water. A solution of permanganate of potash is only of use so long as it is of a red colour, and, in using it for syringing, the washing out must be continued till the return flow comes back the same colour as it went in, otherwise it does little good. Soap destroys the efficacy of Condyl's fluid, as also that of corrosive sublimate solution. With these precautions, permanganate of potash lotion is an excellent antiseptic.

Chlorinated soda (Labarraque's solution) can be used in the proportion of one ounce to ten ounces of water. It is useful for the hands, but destroys clothes. Chlorinated lime is also a valuable antiseptic for disinfectant purposes.

Substances can also be rendered aseptic by boiling or steaming for half an hour, or baking in an oven for two hours at a temperature of 234° F. One per cent. of washing soda should be added to the water in which metal or glass instruments are boiled.

Cotton wool which has been impregnated with salicylic acid or corrosive sublimate makes an excellent dressing for wounds, and is constantly used to receive and disinfect discharges of all kinds. Such cotton wool should be used as a substitute for sponges, and burned after use.¹

Solutions of corrosive sublimate should not be put into a metal dish, as the corrosive quickly corrodes the metal. Carbolic acid has a characteristic smell; corrosive sublimate and biniodide of mercury have none. Solutions of corrosive sublimate and biniodide should always be coloured, to guard against accidental poisoning.

There are many more antiseptics, but those mentioned are the best. Washing the hands with soap and water and turpentine and a new nail brush is one of the best means of thoroughly cleaning them before dipping them in the antiseptic solution. After rinsing the hands in the antiseptic lotion, they should not be dried or allowed to touch anything that is not aseptic. The nails must be kept clean and short. To keep the hands soft after the use of antiseptics, wash in plain hot water, rub well with glycerine and water, and then carefully dry them.

A nurse must be on the outlook for any symptoms of poisonous absorption of antiseptics. Carbolic acid and perchloride of mercury are the two most likely to cause poisonous symptoms, especially if they are used in too

¹ Artificial sponges made of Gamgee tissue are good. Pieces are cut of suitable size, and the layers of netting are sewn together round the margin to prevent fragments of the wool getting loose. They should be boiled before use and burned after use.

strong solutions, and become absorbed, through the mucous membrane or a wound, into the blood.

The first indication of poisonous absorption of carbolic acid is a dark greenish discoloration of the urine. This may be followed by vomiting and collapse, with feeble pulse and low temperature, and frequently an increased flow of saliva. Poisonous absorption of corrosive sublimate gives rise to soreness of the gums, increased flow of saliva, a metallic taste in the mouth, vomiting, colic, diarrhoea, and hæmorrhage from the bowel. Patients with kidney disease are more liable to be injuriously affected by corrosive sublimate. On any of these symptoms arising, a doctor should be at once informed.

With Dr. Halliday Croom's kind permission, we append the printed rules and instructions for nurses which he is in the habit of enforcing in the Royal Maternity Hospital, Edinburgh, throughout his term of duty. During the seven years that these rules have been in operation, Dr. Croom has not had a single death from puerperal fever in the hospital wards. They are as follows :—

“RULES TO BE STRICTLY OBSERVED BY NURSES.

“1. *Washing Hands*.—No nurse shall touch or make any application whatever to the genital organs of a patient without having first thoroughly washed the hands with soap and water, scrubbing them well with a clean nail brush, and then rinsing them in carbolic solution (1 in 30), or in corrosive sublimate solution (1 in 2000).

"2. A large bottle, containing a solution of 1 in 30 carbolic acid, or of 1 in 1000 corrosive sublimate, and a small bottle of carbolic oil (1 in 20), or of corrosive sublimate in vaseline (2 grs. to 1 oz.), shall permanently stand on the table in every ward and delivery-room.

"3. *Diapers*.—Each diaper, on removal from a patient, shall at once be taken out of the ward or delivery-room downstairs to the wash-house, and there placed in a tub containing carbolic wash.

"4. Each diaper shall be washed, boiled, and dried by the laundress.

"5. Immediately before application to the patient's genitals, the nurse in charge shall soak the diaper in 1 in 20 carbolic wash, or 1 in 2000 corrosive sublimate solution. Afterwards she shall dry it, or apply it wet, according to instructions.

"6. *Catheters, Vaginal Tubes*.—All catheters and vaginal tubes shall be kept, when not in use, in carbolic oil (1 in 40).

"7. *Before* using a catheter, the nurse shall dip her fingers and the catheter in carbolic oil (1 in 20), or in corrosive and vaseline (2 grs. to 1 oz.).

"8. *After* use she shall wash the catheter in carbolic lotion (1 in 20), or in corrosive sublimate solution (1 in 1000), and replace it in carbolic oil (1 in 40).

"9. *Syringes, Sponges*.—All syringes and sponges shall be kept, when not in use, in carbolic lotion (1 in 40), or in corrosive sublimate solution (1 in 1000).

"10. *Before* using a syringe, the nurse shall lubricate her fingers and the vaginal tube of the syringe with carbolic oil (1 in 20), or with corrosive and vaseline (2 grs. to 1 oz.), and shall see that the air is carefully expelled.

"11. *Washings and Syringings.* — All washings and syringings, when such are required, shall be done with carbolic lotion (1 in 40), or with corrosive sublimate solution (1 in 2000).

"12. All the Mackintosh sheets shall be washed in a carbolic or corrosive sublimate solution.

"13. *Dirty sheets.*—All dirty sheets shall be promptly removed from the ward or delivery-room to be cleansed.

"14. *Deaths.*—On the death of any patient, the body shall be at once removed to the mortuary outside the hospital.

"15. *Visitors.*—No visitor whatever shall be admitted into the hospital unless provided with a special pass from the medical officer on duty.

"16. No one shall be allowed to visit the hospital who is engaged in the dissecting rooms, or in attending post mortem examinations, or infectious cases of any kind."

Nurses must be extremely careful about the cleanliness of their own clothing and persons. When at work they should wear washing dresses (preferably white), and their under-clothing should be frequently changed.

From what has been said, it will be seen that thorough cleanliness, and the free use of antiseptics, have done more to prevent deaths from childbed fever than any other form of treatment. It is the nurse who has the charge of carrying out many of these details, and thus the life of the lying-in woman depends, in great measure, on the conscientious way in which she attends to the above instructions. Her responsibilities, therefore, are great.

CHAPTER III.

THE BONY PELVIS.

THE pelvis is that part of the skeleton which is placed between the lower end of the spinal column and the thigh bones. It forms a canal through which the child passes during labour; and for this reason it requires special attention. The pelvis is composed of four bones, the sacrum, the coccyx, and the right and left innominate bones, and contains the uterus, bladder, and rectum.

In childhood, each innominate bone is originally made up of three separate and distinct bones, called respectively the ilium, the ischium, and the pubes. In the grown-up person, however, these three bones have joined together to form one bone, but the names of the original bones are still retained for descriptive purposes. The haunch or flank bone is the *ilium*; the bony prominence in the buttock upon which the body rests in sitting is the *tuberosity of the ischium*; while the *pubes*, or share bone, is situated to the front, and along with its fellow of the opposite side, supports the external organs of generation.

The *sacrum* is a broad, triangular, somewhat flattened bone, continuous with the spinal column above, and

originally composed of five separate bones. Its front surface is hollowed out, or concave, with a well-marked projection above, called the promontory of the sacrum.

The *coccyx*, or tail bone, is a small bone attached to the lower end of the sacrum by a hinge joint, which allows it to be pushed back when anything presses on it from the front. Sometimes this joint is ankylosed or stiffened, so that it cannot move. In such cases the coccyx is apt to come in the way during labour, and may give trouble.

The Innominate Bone :—

(a) The *ilium*, or haunch, is the broad expanded part of the innominate bone; it helps to support the intestines, and, in the later months of pregnancy, the lower part of the uterus as well. Its upper curved border is called the crest of the ilium, and this terminates in front in an eminence called the anterior superior spine. Its inner surface is somewhat hollowed out, and is called the iliac fossa.

(b) The *ischium* consists of a tuberosity, a spine, and a ramus. The tuberosity is that portion on which the body rests when in the sitting posture; the spine is situated above and behind the tuberosity, and is simply a sharp, projecting piece of bone, which protrudes slightly into the pelvic cavity; the ramus runs upwards and forwards from the tuberosity, and joins on to the pubic bone.

(c) The *pubes*, or share bone, joins with its fellow of the opposite side, and with the rami of the ischial bones forms the pubic arch.

The sacrum and coccyx form the back wall of the pelvis, while the innominate bones form the front and sides.

The chief joints of the pelvis are :—

(1) The symphysis pubis, or joint between the two pubic bones.

(2) The sacro-iliac synchondroses (right and left), or joints between the sacrum and ilia ; and

(3) The sacro-coccygeal joint, or junction between the sacrum and the coccyx. This is the most movable joint in the pelvis.

There are also various fibrous bands or ligaments which help to strengthen the joints and fill up the openings between the bones. A very strong ligament, called the great sacro-sciatic ligament, stretches from the back of the sacrum to the tuberosity of the ischium ; while another, the small sacro-sciatic ligament, is attached to the spine of the ischium. These ligaments, by their position, complete openings in the pelvis, called respectively the great and small sacro-sciatic foramina.

On each side of the pubic arch is seen a somewhat triangular opening, called the obturator foramen, which, in the living subject, is filled up by a fibrous membrane—the obturator membrane.

On the outside of each innominate bone is seen the acetabulum, which is a cup-shaped depression or socket, into which the head of the thigh bone fits, so as to form the hip-joint.

On looking at the pelvis as a whole, it is seen to be

divided into two parts by a ridge of bone, called the ilio-pectineal line.

All above this boundary line is the false or greater pelvis, which is bounded on each side by the broad expanded wings of the iliac bones.

All below the boundary line is the true or lesser pelvis, which, from an obstetric point of view, is of great import-

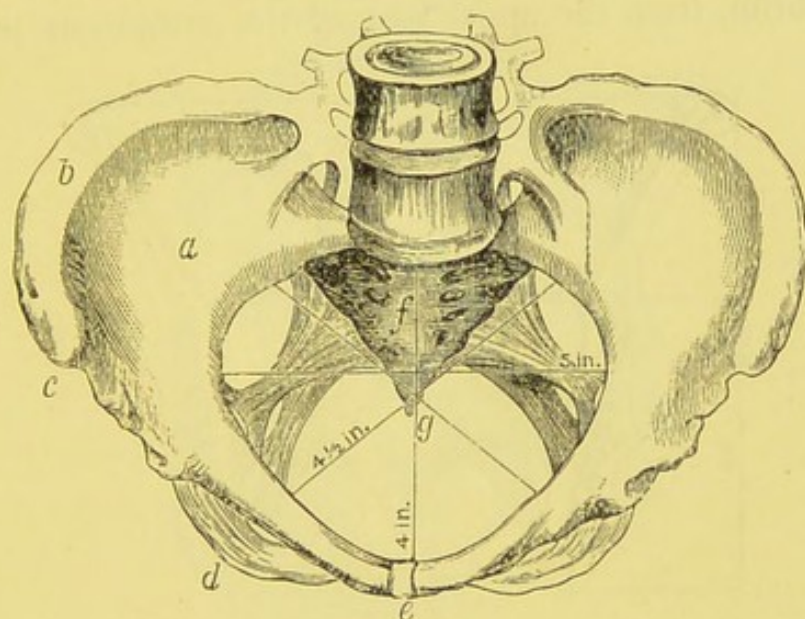


FIG. 3.—Female pelvis from above, showing diameters of brim. *a*, Iliac fossa. *b*, Crest of ilium. *c*, Anterior superior iliac spine. *d*, Tuberosity of ischium. *e*, Symphysis pubis. *f*, Sacrum. *g*, Coccyx.

ance. The true pelvis is divided into a brim, a cavity, and an outlet.

The *brim* or *inlet* is heart-shaped, and is bounded by the ilio-pectineal line, and the promontory of the sacrum. The *outlet* is diamond-shaped, and is bounded by the lower border of the symphysis pubis in front, by the tip of the coccyx behind, and by the ischial tuberosities, and the

sacro-sciatic ligaments on either side. The *cavity* of the pelvis is that part which lies between the brim and the outlet.

Various measurements, or diameters as they are called, are taken from certain points in the pelvis. The same number, viz. four, are taken at the brim, the cavity, and the outlet.

They are as follows :—

(1) An antero-posterior or conjugate diameter, measured at the brim, from the upper part of the symphysis pubis to

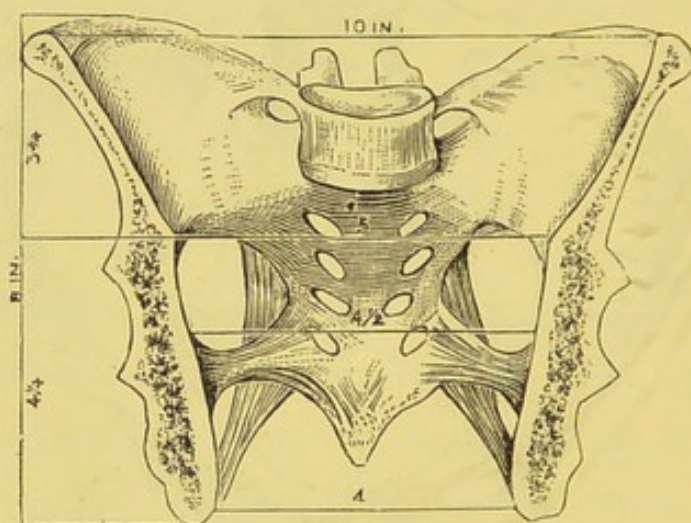


FIG. 4.—Transverse vertical section of female pelvis, showing how the transverse diameter diminishes from brim to outlet.

the promontory of the sacrum (4 inches), and at the outlet from the lower border of the symphysis pubis to the tip of the coccyx (5 inches) (Fig. 3).

(2) A transverse diameter measured from side to side of the pelvis at the brim, cavity, and outlet (Fig. 4). It measures 5 inches at the brim, and 4 inches at the outlet; and

(3) Two oblique diameters, a right and a left. The right oblique at the brim is measured from the right sacro-iliac synchondrosis to a prominence on the ilio-pectineal line on

the opposite or left side, called the pectineal eminence. The left oblique diameter at the brim is measured from the left sacro-iliac synchondrosis to the right pectineal eminence. Oblique diameters are also measured in the cavity and at the outlet.

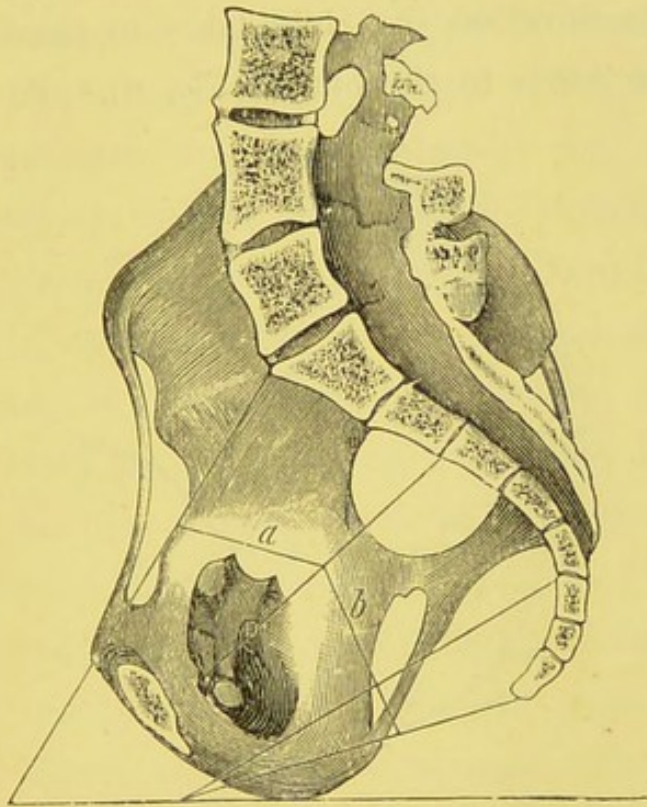


FIG. 5.—Vertical mesial section of pelvis, showing axes.
a, Axis of brim. *b*, Axis of outlet.

The following table shows the measurements at a glance
 The figures mean inches.

	Antero-Posterior.	Obliques.	Transverse.
Brim,	4	$4\frac{1}{2}$	5
Cavity,	$4\frac{1}{2}$	$4\frac{1}{2}$	$4\frac{1}{2}$
Outlet,	5	$4\frac{1}{2}$	4

Some external measurements of the pelvis are also taken.
 The most important are :—the distances between the widest

parts of the iliac crests—the inter-cristal diameter; and between the anterior superior iliac spines—the inter-spinous diameter. The inter-cristal diameter ought to be about 11 inches, and the inter-spinous about 10 inches.

By the axis of the pelvis is meant an imaginary line showing the direction the child takes in passing from the brim of the pelvis to the outlet (Fig. 6). To understand

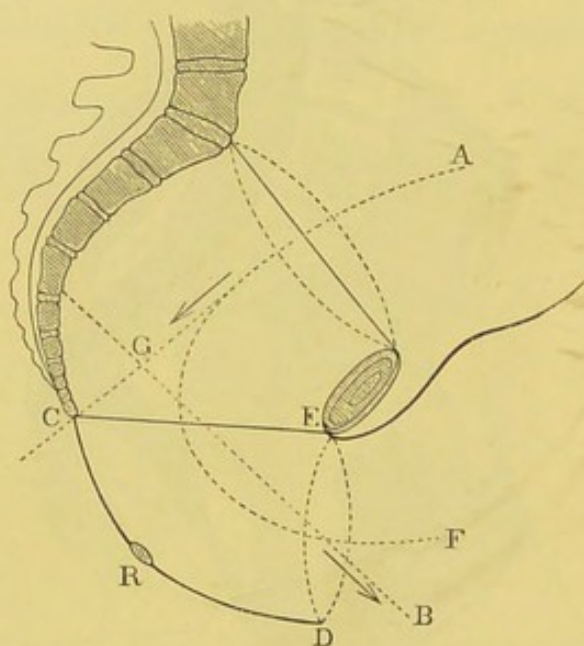


FIG. 6.—A G C, Axis of inlet of pelvis. B G, Axis of outlet of pelvis. R, Anus. D C, Perineum and soft parts at pelvic outlet, as stretched by the advancing head of the child. A F, Curve of Carus.

this, the pelvis must be put in the same position as it would occupy in the living person. For this purpose it must be held with the notches of the acetabula (or sockets for the thigh bones) looking directly downwards, which shows its natural position in the erect posture in life.

Now suppose a child to be passing through the brim of the pelvis, and not altering its original course, it would pass

in the direction of the line A G C, Fig. 6, through the end of the coccyx. This line indicates the axis of the inlet or brim of the pelvis, and its direction would be represented by a line drawn from the navel to the tip of the coccyx. The line B G, Fig. 6, represents the axis of the outlet of the pelvis, and shows the direction in which the child must pass before it is born. It will thus be seen that if A G represents the direction which the child takes when entering the pelvis, and B G the direction it takes when being born, this change must take place in the cavity of the pelvis, which it does by the child practically following the curve of the sacrum. The general direction in which the child passes, while on its journey through the pelvis, may be thus represented by the curved line A F in Fig. 6, which is called the curve of Carus.

In the living subject, the measurements of the pelvis are, of course, much modified by the soft structures which clothe the bones, and by its contents. The axis of the outlet of the pelvis is especially modified by the perineum. See Fig. 6, C D.

There is a great difference between the pelvis in the male and female. In the female, the bones are lighter and smoother than in the male. The iliac bones are more spread out; the cavity of the pelvis is shallower, and more capacious. The outlet is larger, and the ischial tuberosities are farther apart. The pubic arch is wider, and the promontory of the sacrum does not project so much as it does in the male pelvis.

CHAPTER IV.

FEMALE ORGANS OF GENERATION.

THE female generative organs are divided, for convenience of description, into external and internal.

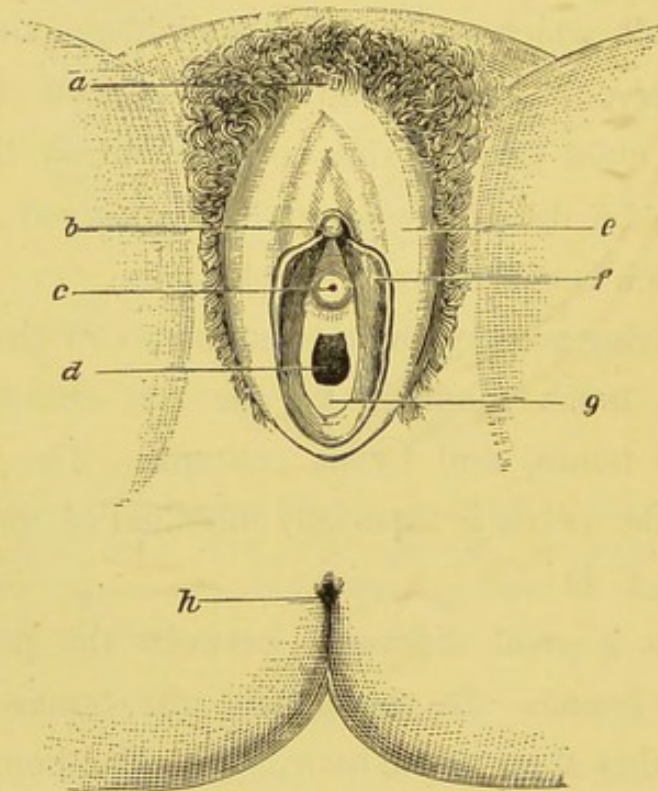


FIG. 7.—External female genital organs. *a*, Mons veneris. *b*, Clitoris. *c*, Orifice of urethra. *d*, Orifice of vagina. *e*, Labium majus. *f*, Labium minus. *g*, Hymen. *h*, Anus.

The external genitals are included under the name of pudenda, or vulva (Fig. 7).

The cushion of fat, usually covered with hair, lying immediately over the symphysis pubis, is the mons veneris. Running down from the mons veneris, one on each side of the opening of the vulva, are the labia majora, or large lips. Beneath the labia majora, and entirely concealed by them in young women, are seen two fleshy folds, which are named the labia minora, or nymphæ. They join together above, and at their junction is situated a small projection called the clitoris. Below the clitoris, and bounded on each side by the nymphæ, is a triangular smooth space called the vestibule. At the lower border of the vestibule, and about an inch below the clitoris, is the opening of the urethra (the *meatus urinarius*), through which the urine escapes from the bladder. The nurse should know exactly the position of the meatus urinarius, as she will frequently be required to pass an instrument, called a catheter, into the bladder, for the purpose of drawing off the urine. The method of performing this little operation will be fully described in a subsequent chapter (Chapter XXIII.).

Below the meatus urinarius is the orifice of the vagina, the canal or tube leading to the uterus or womb. In virgins, this opening is partially blocked by a delicate crescentic membrane called the hymen. The hymen is usually ruptured at marriage; but a woman may be a virgin and yet have no hymen, or it may be present in a woman who is pregnant, in some cases even offering an obstruction to the birth of a child. In a woman who has borne children, the only remains of the hymen are a few fleshy pro-

jections at the orifice of the vagina, called the *carunculæ myrtiformes*.

Passing backwards from the vulva is the perineum, which separates the orifice of the vagina from the anus. It measures about $1\frac{1}{2}$ inches in length. During the birth of the child, it becomes greatly distended, and thins out like india-rubber. It may be torn during labour to a greater or

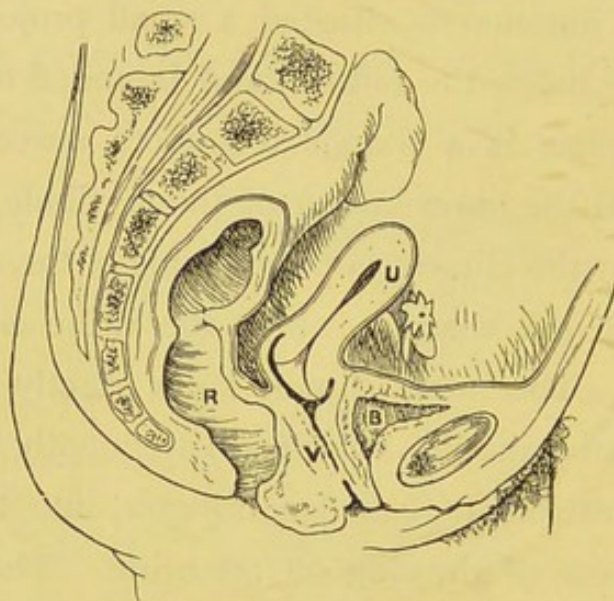


FIG. 8.—Vertical mesial section of female pelvis, showing internal organs of generation. *u*, Uterus. *v*, Vagina. *r*, Rectum. *b*, Bladder.

less extent, sometimes completely into the rectum. That part of the perineum in the virgin which is next the vulva is called the fourchette; it consists merely of a fold of skin, and is almost always torn in a first labour.

Behind the perineum is the anus, which is the orifice of the rectum.

The *vagina* is the canal which connects the external with the internal organs of generation (Fig. 8). Through it (1)

the menstrual discharge escapes ; (2) conception takes place ; and (3) the child is born. It is, in fact, the avenue to the uterus.

It is about three inches in length, but its elasticity is great. It is longer in virgins than in women who have borne children, and during the middle months of pregnancy its length is increased. It is thrown into transverse rugæ or ridges, which, by their unfolding, enable it to dilate. It just admits a finger in the virgin, but in pregnant women it is capable of dilating to permit the passage of a full-sized child. The vagina is not really a tube, as its walls are closely approximated. The uterus is situated at the top of the vagina, while in front of it are the urethra, bladder, and symphysis pubis, and behind are the perineum, rectum, and sacrum.

Sometimes the vaginal walls are very flabby, and the consequence may be a falling down of the uterus.

The shape of the vagina corresponds roughly to the shape of the front of the sacrum, being narrow below at the orifice, and wider above.

The vagina is kept moist by a secretion of mucus. This secretion is often exaggerated both in pregnant and non-pregnant women, and they are then said to suffer from a discharge called "the whites." There should, however, be no such discharge in a perfectly healthy woman. During labour, this mucus is poured out freely so as to aid the birth of the child, which, of course, can pass more easily over a smooth, moist surface, than over a rough, dry surface.

The *uterus* is situated at the top of the vagina, between the bladder in front and the rectum behind. In its cavity the child grows and develops, and during labour it is mainly through its contractions that the child is expelled.

The uterus is a pear-shaped organ (Fig. 9), 3 inches in length, $1\frac{1}{2}$ inches in breadth, about 1 inch in thickness, and weighs a little over an ounce in the unimpregnated condition. Its cavity measures $2\frac{1}{2}$ inches in length. After child-

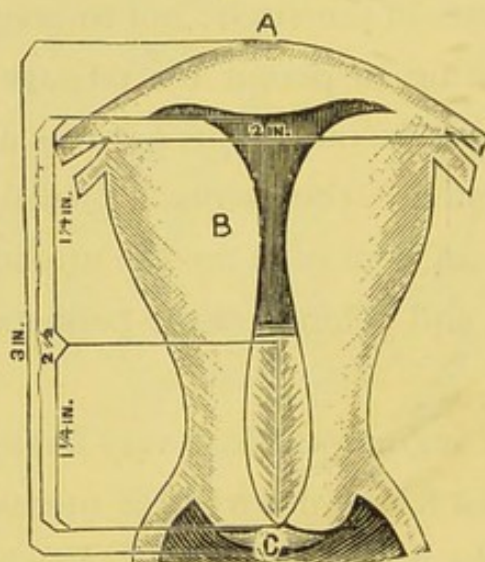


FIG. 9.—Diagram of uterus, showing cavity. *a*, Fundus. *b*, Body. *c*, Cervix.

bearing, the whole uterus remains larger and heavier than previously. The changes which are produced in the uterus by pregnancy will be subsequently considered.

The chief portion of the uterus is called the *body*, and its rounded upper extremity is called the *fundus*, while that part which is next the vagina is the *cervix*, or neck.

The cavity of the uterus is lined by mucous membrane, very similar to that which lines several of the cavities of

the human body, such as the mouth, stomach, nose, &c. The mucous membrane of the uterus, like other mucous membranes, secretes a small quantity of fluid. Mucous membranes, besides secreting mucus, are capable of sucking up or absorbing other fluids or solids which may be applied to them. For instance, the mucous membrane of the stomach and bowels, as we have seen, absorbs nourishment for the body from the food we eat. The mucous membrane of the uterus is capable also of absorbing substances very rapidly, especially after labour. This cannot be insisted on too strongly, keeping in mind what has been said about puerperal fever, and the absorption of poisonous materials into the blood, as well as the absorption of antiseptics.

The neck of the uterus, or cervix, is more or less conical in shape, and projects for about three-quarters of an inch into the upper part of the vagina in a nulliparous woman. The mouth of the uterus, or *os uteri externum*, is a small circular or transverse fissure at the lower end of the cervix. The opening between the cavities of the cervix and body of the uterus is called the *os internum*. In women who have never borne children, the *os externum* is only large enough to admit the passage of a small catheter (Number 4).

That part of the cervix which lies in front of the *os uteri* is called the anterior lip of the cervix, while that part which lies behind is called the posterior lip. In a woman who has borne children, the cervix is considerably shorter than in a nulliparous woman. In *multiparæ* it is thickened and

notched, and the os may even admit the tip of the forefinger for a short distance, especially during pregnancy.

The body of the uterus is chiefly composed of muscular tissue, most of the fibres of which interlace in all directions and surround the blood vessels which lie in the walls of the uterus. The consequence is, that when these muscular fibres contract, they press upon the blood vessels, and close them entirely. The importance of this will be seen later on. There are also longitudinal and circular muscular

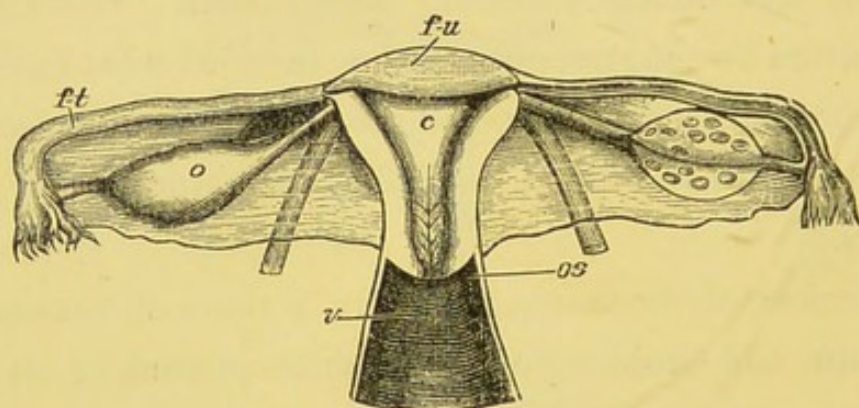


FIG. 10.—Internal female genital organs, showing relative positions of—*f-u*, Fundus uteri. *c*, Cavity of uterus. *os*, Os uteri externum. *v*, Vagina. *o*, Ovary. *f-t*, Fallopian tube.—The ovary and tube on left side are shown in section.

fibres. The former run from the anterior lip of the cervix, over the fundus, to the posterior lip. By their contraction they help to open the os uteri in labour. The circular muscular fibres surround the internal os, and the openings of the Fallopian tubes.

The uterus is capable of great enlargement, and of great contractile power. It enlarges in order to contain the growing child, and its contractile power is for the purpose of

expelling the child at birth, and for controlling hæmorrhage after labour.

The *Fallopian tubes* are two hollow canals, which pass from each side of the fundus uteri (Fig. 10). They are from 3 to $4\frac{1}{2}$ inches long, and will admit the passage of a bristle. Each ends in a trumpet-shaped mouth, surrounded by a fringe of small processes, and this is called the fimbriated end of the tube. When the ovum escapes from the ovary, this fimbriated end of the tube grasps the ovary, and receives the ovum, which reaches the cavity of the uterus by passing along the Fallopian tube.

The *ovaries* are two flattened, somewhat oval bodies, about one inch long and half an inch thick. They lie one on either side of, and about an inch away from, the fundus uteri, to which they are attached by a ligament. They are the organs in which the ova or eggs are developed. The ova are contained in a number of little sacs or bags, which burst when they are ripe. Their contents escape into the fimbriated extremity of the Fallopian tube which grasps the ovary, and so the ovum passes into the uterus.

Two fibrous cords, the round ligaments, are attached to the uterus, in front of the Fallopian tubes. They help to support the uterus, and they end in the mons veneris and labia majora.

The ovaries, Fallopian tubes, and round ligaments are all kept in position by a fold of peritoneum (the broad ligament), which envelops them. The bladder, uterus, and rectum are also closely invested by peritoneum, which binds them together. There is thus an intimate connection

between these organs, so that, if any one of them be deranged, the others are liable to be affected also.

The *breasts*, or *mammæ*, are two glands situated on the front of the chest, one on each side of the breast bone. They vary much in size in different women, and during pregnancy they enlarge greatly. Their function is the secretion of milk for the nourishment of the child.

The *nipple* is a conical-shaped projection at the apex of this gland. The milk ducts all converge into it, and open on its surface.

Surrounding the nipple is the *areola*, which in the virgin is pink. During pregnancy it becomes dark coloured, and remains more or less dark ever after.

The breasts and the uterus are intimately connected. In many diseases of the uterus, the pain is referred to the breast; and after childbirth, when the child is put to the breast, contraction of the uterus, often in the form of *after pains*, is brought about.

The secretion of milk is called *lactation*.

CHAPTER V.

MENSTRUATION.

MENSTRUATION means a bloody discharge from the uterus every month. It is also called the menstrual flow, menses, or catamenia.

This discharge is peculiar to the human female, though it has been said to occur in monkeys. Animals, such as the cow, elephant, bitch, &c., have a red discharge occasionally, but it comes from the vagina, and not from the uterus, as in women.

Menstruation in a healthy woman begins at puberty, usually about the age of fourteen, and recurs every month, except during pregnancy and lactation, till the change of life or menopause (generally between forty-four and fifty), when it ceases. When the discharge is present, the woman is said to be "unwell," "to alter," "to have her periods."

At puberty, the girl develops into a woman, the breasts enlarge, and the pelvis increases in size. The organs of generation, both external and internal, become mature, and ready to perform the functions of reproducing the species.

In this country, puberty occurs at from fourteen to fifteen years of age, and at the same time menstruation becomes

established. In warm climates, it occurs one or two years earlier; in cold climates, one or two years later. Normal menstruation is known to occur earlier and later than this, but rarely. Mode of living determines, to some extent, the manifestations of puberty. In the rich and luxurious, it occurs earlier than in the poor.

The cessation of menstruation (menopause) occurs at the change or turn of life, which is generally somewhere between forty-four and fifty years of age. Menstruation thus lasts usually about thirty years, and this is the fertile period of a woman's life.

The change of life has been said to be a dangerous period. This, however, is a mistake, as no more women die then than at any other time.

Menstruation is usually suppressed during lactation and pregnancy, but there are exceptions. Thus, a woman may menstruate for two or three months after she has become pregnant, the reason of which will be explained later on. Menstruation is sometimes arrested from other causes than pregnancy.

The menstrual flow usually recurs every twenty-eight days, and lasts for about four days—the quantity of discharge generally being from four to eight ounces at each period. Variations from this, however, occur in different women. The discharge escapes gradually in a gentle oozing. The colour is dark red, like venous blood, with a peculiar odour, and consists chiefly of blood mixed with mucus. It is generally fluid; sometimes, however, it comes

away in clots. A most important practical point with regard to the nurse's duties may here be mentioned (though it will again be spoken of), namely, that every clot, or unusual discharge from a patient, should be most carefully kept for the doctor's inspection, and this rule admits of no exception.

The nature of the menstrual discharge was much misunderstood in former times. It was held to be extremely poisonous, so much so, that it was commonly thought that if a menstruating woman walked three times round a garden, all the flowers would wither, and all the caterpillars would be killed. These ideas are happily now exploded; but there is no doubt that a menstruating nurse, unless she be most cleanly and careful, may be a source of danger to a lying-in woman, and may be the means of giving her puerperal fever.¹

The effects of the development of menstruation upon the body and mind of a young girl are very striking, and the sudden transformation into womanhood is most remarkable.

There is usually a feeling of discomfort, and general lassitude, at the menstrual epochs, with headache, pains in the back, breasts, &c. These symptoms vary in severity in different women, some having hardly any discomfort, while others suffer severely.

Menstruation is intimately associated with the ripening of the ova or eggs in the ovaries. The ripening of these

¹ In such cases, antiseptic diapers, which ought to be burned after use, cannot be too strongly recommended.

is usually accompanied by congestion of the ovaries and uterus, with which menstruation co-exists as a rule. Ova, however, may escape from the ovary, pass along the Fallopian tube, and get into the uterus, independently of menstruation. If the ovum do not become impregnated, it is simply passed off in the discharge.

Should, however, the ovum become impregnated, conception is said to have taken place. It gets caught in the folds of the greatly thickened mucous membrane of the uterus, and there grows and develops during the term of pregnancy.

Conception most usually takes place immediately or shortly after a menstrual period. This, however, is not always the case, for women have become pregnant before menstruation has become established, or even after the menopause. They may also become pregnant during lactation, when menstruation is in abeyance.

When a woman suffers excessive pain at her menstrual periods, she is said to have *dysmenorrhœa*. When the menstrual flow is excessive, it is called *menorrhagia*; and when it is absent it is called *amenorrhœa*. Hæmorrhage between the menstrual periods is *metrorrhagia*.

CHAPTER VI.

GROWTH AND DEVELOPMENT OF THE IMPREGNATED OVUM —DECIDUA—MEMBRANES—PLACENTA.

Changes in Uterine Mucous Membrane, due to Pregnancy.

—When the ovum becomes impregnated, the mucous membrane of the uterus, instead of being shed as in menstruation, continues to grow, becomes thicker, and is thrown into many folds; any of the depressions so formed offers a suitable resting-place for the ovum. The ovum usually becomes attached, as would be expected, near the upper part of the uterus. Its resting-place is the site where the placenta is afterwards formed, and is usually on the posterior or anterior wall of the uterus.

The Decidua.—The mucous membrane is now thickened, and is called the decidua, which is for descriptive purposes divided into two parts, viz.: decidua vera and decidua serotina (Fig. 11).

Decidua Vera—Decidua Serotina.—The decidua vera is the name given to the entire lining membrane of the uterus, with the exception of the small portion upon which the ovum rests, which is called the decidua serotina.

Decidua Reflexa.—After the implantation of the ovum on the decidua serotina, a new layer of decidua, called decidua

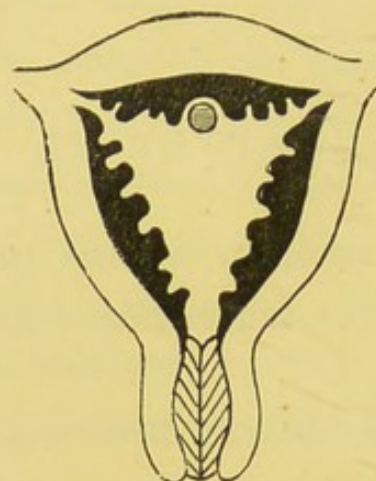


FIG. 11.—Cavity of uterus, containing ovum, showing deciduæ vera and serotina.

reflexa, grows over the ovum, and completely encloses it, serving to fix it in position (Fig. 12).

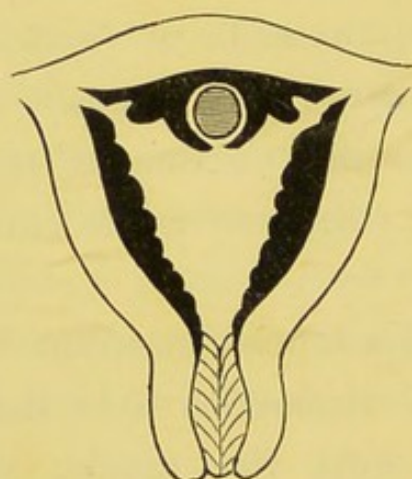


FIG. 12.—Cavity of uterus, containing ovum, showing decidua reflexa enveloping the ovum.

Coalescence of Deciduæ Vera and Reflexa.—Closely surrounded by the decidua reflexa, the ovum continues to grow, until at the end of the third month its dimensions

are such that it fills the entire uterine cavity. The decidua reflexa and decidua vera are thus brought so closely in contact, that they no longer can be differentiated from each other, the combined layers now being simply called the decidua (Fig. 13).

The decidua serotina, as will afterwards be shown, plays an important part in the formation of the placenta.

Membranes.—Coincident with the development of the

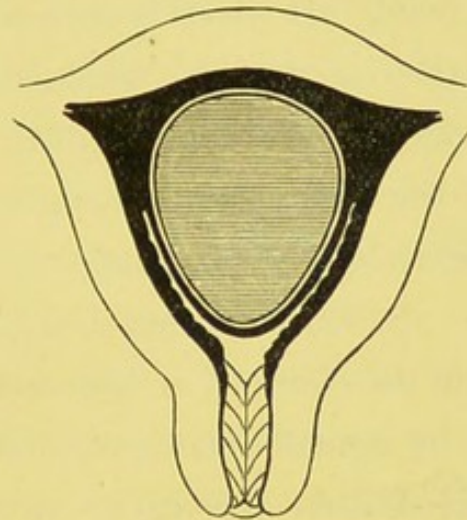


FIG. 13.—Cavity of pregnant uterus at third month, showing contact of deciduæ vera and reflexa.

foetus (or embryo, as it is specially called during the first three months of its growth), there are formed from the ovum two membranes, which enclose the embryo as in a bag.

Chorion—Amnion.—The outer of the two membranes, that which lies in contact with the deciduæ reflexa and serotina, is called the chorion, the inner being named the amnion.

Chorion.—The chorion, or outer sac, is formed during

the third week of gestation, and presents on its outer surface a shaggy appearance, the result of the formation of a large number of tuft-like projections called villi, which, burrowing as they do into the surrounding deciduæ, serve to keep the ovum in position, and also as channels through which nourishment is received from the surrounding maternal parts. At the end of the second month, however, the majority of the villi disappear, the only part upon which they still remain being that which is apposed to the decidua serotina. Here they grow with increased vigour, dipping gradually more deeply into the decidual substance, thus helping to form the permanent attachment between the mother and ovum, called the placenta.

Amnion.—The amnion, or inner layer of the sac, lies immediately within the chorion ; it is occasionally separated from it, however, by a small quantity of fluid.

Liquor Amnii.—Within the cavity of the amnion is secreted a considerable quantity of fluid, the so-called liquor amnii, by which the sac is distended, and in which the foetus floats.

The purposes of this fluid are, during pregnancy, to protect the foetus from shocks and pressure through the uterine walls, and to allow of its easy movement in the later months ; again, during labour, it is of service in lubricating the passages, and in forming with the membranes a fluid wedge, which regularly and effectually dilates the cervix uteri.

Placenta.—The placenta, or after-birth, as has before

been stated, is the medium of attachment between the mother and ovum. It is formed during the third month of pregnancy, by the dipping of the permanent villi of the chorion into the decidua serotina, and is thus formed partly by the ovum, and partly by the maternal tissues. The decidua serotina, for descriptive purposes, may be likened to a sponge, the spaces in which are filled with maternal blood; each space has a special artery and vein, through which the blood is constantly entering and leaving, and so it is always kept filled with pure blood.

The villi of the chorion may be likened to the fingers of a glove; they are small blind sacs, with extremely thin walls, within which are minute blood vessels or capillaries, through which the foetal blood circulates.

By the dipping of these thin-walled villi into the blood-filled spaces of the decidua serotina, it is apparent that the blood of the mother and foetus are brought into extremely close contact, without actually mixing. By this means the foetal blood is purified and aerated, in a manner similar to that which has already been described in ordinary respiration, the difference being that the spaces of the lung are filled with air, instead of, as in the placenta, with maternal blood. This arrangement simulates closely the respiration in fishes; the villi of the chorion being surrounded by maternal blood in much the same way as the gills of a fish are surrounded by water.

Not only, however, does the blood of the foetus become purified and aerated, but it also abstracts from the maternal

blood nutritive matters, necessary for growth and development.

The shape of the placenta is generally somewhat circular (Fig. 14). Its average weight is $1\frac{1}{2}$ pounds, and its transverse measurement about 7 inches, whilst in thickness it rarely exceeds 2 inches at any part. The villi being microscopical in size, some idea may thus be formed of what

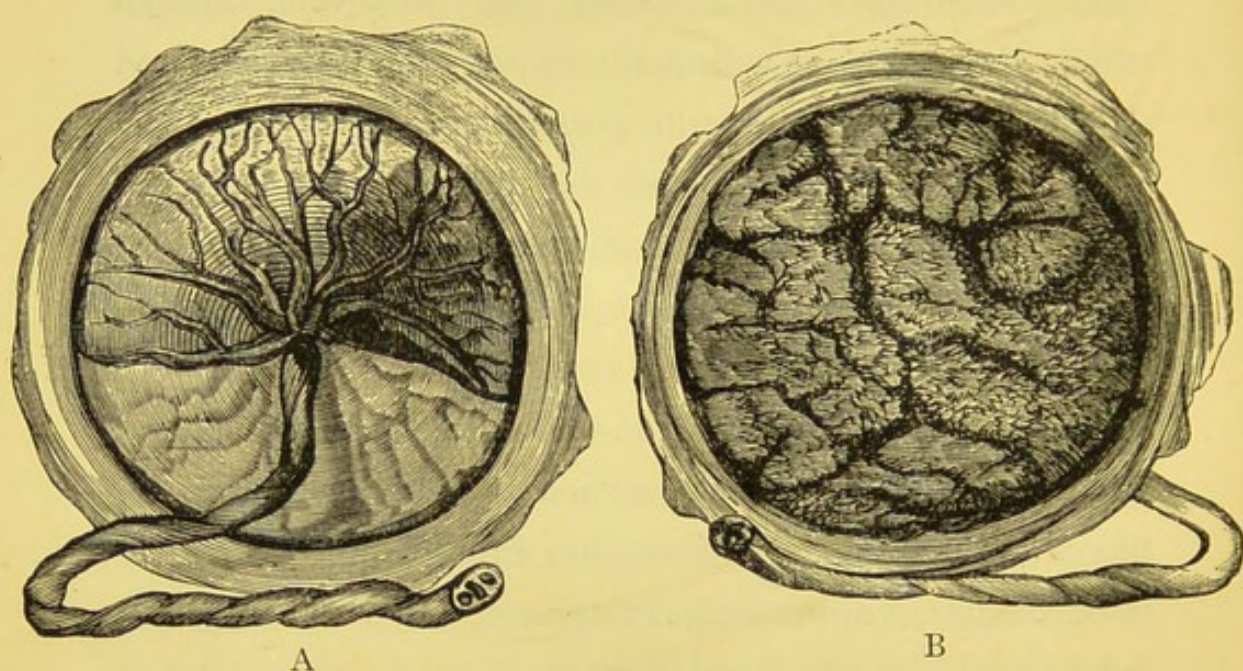


FIG. 14.—Diagram of placenta.

A, Foetal surface. B, Maternal surface.

an infinite number there are, and what a large area is thus afforded for the contact of the maternal and foetal blood.

The two surfaces of the placenta are respectively named *maternal* and *foetal*, according to the structures with which they are in relation.

The maternal surface, which is apposed to the uterine wall, is rough and irregular, the irregularities being caused

by grooves, which run in all directions, and divide it into a number of smaller portions, called cotyledons. The foetal surface is covered by the amnion, and has a smooth shining appearance, with numerous blood vessels coursing over it, branches of the umbilical arteries and vein.

The edge is well defined and regular, whilst passing from it are the membranes, chorion and amnion.

From about the centre of the foetal surface of the placenta springs the umbilical cord (funis). This occasionally arises from the edge, constituting what is called a battledore placenta.

The umbilical cord varies in length from 6 inches to as many feet, and is the channel of connection between the placenta and foetus. It is composed of a jelly-like substance, through which run the two umbilical arteries and one vein. *In utero*, it hangs free in the liquor amnii. Frequently, it is twisted one or more times round the neck of the foetus, and occasionally is found knotted, due to the movements of the foetus while in the uterus.

No opportunity of examining the normal placenta should be lost, until a thorough knowledge is acquired of its details, for, after every labour, it must be thoroughly examined to ascertain that complete expulsion has taken place, as the retention *in utero* of small detached pieces, or of a portion of the membranes, is a fertile source of severe after pains, hæmorrhage, foetid discharge, and puerperal fever. The examination is most satisfactorily accomplished by floating the placenta in a basin of water.

Having described the various channels by which the foetal blood is brought into contact with the maternal, it may be well to follow its circulation step by step, so far as the placental part is concerned.

Thus, commencing at the foetal heart, the blood is driven by it into the umbilical arteries. Coursing in these through the cord, it reaches the placenta, where it continues to flow in the divisions and subdivisions of these vessels, until it reaches their remotest branches, the capillaries of the chorionic villi: from thence it returns purified in a converse manner, through the umbilical vein to the foetus, there it circulates, and eventually returns to the heart, from whence it started.

The arrangement of the vessels in the cord and placenta may be compared to a tree, the umbilical arteries and veins representing the trunk, their divisions and subdivisions the branches, whilst the capillaries of the chorionic villi take the place of the twigs.

A detailed description of the periods at which the respective parts of the foetus are developed is quite unnecessary in such a work as this; but, as a broad rule, it may be laid down that, after the third month, at which time the foetus measures about 3 inches, the length of the foetus in inches is about double the number of the month of the pregnancy; thus, at the fifth month the foetus will measure about 10 inches, at the seventh month 14 inches, and so on. The non-existence of a placenta is a certain sign

that the third month has not yet been reached. By the fourth month the sex of the fœtus may be determined; and during the fifth, hair and nails commence to grow. Viability apart from the mother is only possible after the middle of the seventh lunar month (28th to 30th week).

CHAPTER VII.

PREGNANCY—SIGNS AND SYMPTOMS—DURATION.

WHEN a woman becomes pregnant, a series of well-marked conditions is manifested, most of which, when they occur singly, merely lead to the suspicion of its existence, but, collectively, enable the diagnosis to be made with the utmost certainty and precision. These conditions are called the signs and symptoms of pregnancy.

They may be comprised under two groups, viz. subjective and objective phenomena.

The former are those conditions which the patient herself experiences, and the existence of which is only to be ascertained by interrogation; whilst the latter, or objective phenomena, are those conditions which the attendant may observe, viz. :

By sight,	or	Inspection.
By touch,	„	Palpation.
By hearing	„	Auscultation.

These phenomena, as will be seen from the subjoined table, occur in a well-defined order, each being manifested at a definite period of gestation.

Table of the Signs and Symptoms of Pregnancy in the order of their occurrence.

MONTHS.	1	2	3	4	5	6	7	8	9
Suppression of Menses,	×	×	×	×	×	×	×	×	×
Morning Sickness, .		×	×	×	?	?	?	?	?
Uterine Souffle, . .		×	×	×	×	×	×	×	×
Dusky Hue of Vagina,			×	×	×	×	×	×	×
Mammary Areola, .			×	×	×	×	×	×	×
Ballottement, . . .				×	×	×	×		
Enlargement of Abdomen,				×	×	×	×	×	×
Fœtal Heart, . . .				?	×	×	×	×	×
Fœtal Movements, .				?	×	×	×	×	×
Shortening of Cervix,			A ppar ent.						×

We shall, however, not describe them in the order in which they occur, but in the more practical method in which we have already classified them, so that it may be made more evident, when brought in contact with a case, what information is to be derived by questioning alone, and what further is to be gained by examination. Thus,

under the heading of subjective phenomena, the first condition we have to inquire into is—

Suppression of Menses.—This condition, technically called “physiological amenorrhœa,” is, as the name implies, the cessation of the usual monthly discharge. Occurring, as it usually does, immediately after impregnation is effected, the date of the last menstruation is generally taken by the mother as the period from which she may calculate the time of her expected confinement. Though a very constant symptom, it is not absolutely reliable, for occasionally, in spite of pregnancy being established, menstruation recurs as usual for the first one or two months, the site of the bleeding being the decidua vera before it has become incorporated with the reflexa. Some cases have been recorded where menstruation has periodically continued throughout the entire pregnancy ; such, however, are quite phenomenal, and form the inevitable exception which proves the rule. In suspecting pregnancy from the above symptom, a very important source of fallacy must be kept in mind ; this is, that menstruation frequently stops from other causes, such as bloodlessness, consumption, &c., *i.e.* “pathological amenorrhœa.” This form, however, is generally gradual in its onset, the menstrual discharge becoming monthly less and less, while the amenorrhœa of pregnancy is, as a rule, suddenly developed, the previous periods having been quite natural.

Morning Sickness.—This is an almost constant symptom, which generally manifests itself after the first menstrual

period missed, and lasts until the fourth month ; its cause, though not definitely settled, is probably due to what is called sympathetic irritation.

The sickness may occur at any time during the day, but, as a rule, is most severely felt on rising in the morning (hence the name). Its severity varies widely in different cases, in some being represented merely by a slight feeling of nausea, whilst in others it constitutes a grave disorder, all food being rejected. Between these extremes all degrees are met with ; but, as a rule, it is merely a feeling of nausea, accompanied now and then by the rejection of some mucus, after which food can be taken with relish, and without any inclination to vomit.

Quickening.—This, popularly known as “feeling life,” is the first sensation felt by the mother of her infant’s vitality ; it is usually first experienced about the twentieth week of gestation, and is of value in calculating, with some precision, the period of pregnancy, should the history of amenorrhœa be indefinite.

Too much value must not be attached to it, however, as women have frequently supposed themselves to be pregnant, from feeling movements which were caused by flatulent distension of the bowels.

Movement is popularly considered to be first felt when the foetus becomes alive. This is erroneous, as life exists in the ovum from the moment of impregnation, whilst movements are not felt until the uterus has risen out of the pelvis, and has come in contact with the abdominal wall of the

mother. The sensation is described as being, at first, of a fluttering nature, but as the uterus enlarges and the foetus grows, the movements become more pronounced, in some cases being excessive, and giving rise to much discomfort. Their prolonged absence, after once being felt, is suggestive of the death of the foetus, though unnecessary alarm need not be occasioned by a day or two's quiescence.

Besides the above well-marked and almost constant subjective phenomena, there are numerous others of an indefinable nature, of which each woman has her own peculiar type, by which she can, having once experienced them, count upon the recurrence of pregnancy with great certainty.

Objective Phenomena, or Signs which the Attendant should observe by Examination :—

First, by Sight or Inspection.—Examination by this method is to be directed to changes which are evident in the breasts, abdomen, and vagina.

The changes in the breasts are very characteristic, and usually commence about the third month of pregnancy. At this time they begin to increase in size, while coursing over them may be seen large blue veins, evidence of increased blood supply. The pink colour of the nipple and areola is replaced by a brown shade, the depth of which varies according to the complexion of the person : if fair, the brown pigmentation is but slight ; whilst if dark, the colour is extremely deep, in some cases being quite black.

Surrounding the nipple are also to be observed a number of small projections, about the size of millet seeds, varying

from fifteen to twenty in number. These, together with the brown pigmentation, constitute "the areola of pregnancy." If the breasts be squeezed, a little milky fluid may be seen to exude from the nipple, a sign of pregnancy which, though not absolutely certain, is of much value.

These mammary changes are chiefly of importance in recognising pregnancy in women who have never previously been pregnant (*primiparæ*). In *multiparæ* they are of little value, because the brown discoloration, having been once established, never entirely fades; whilst milk in small quantities may remain in the breasts for a number of years after the birth of a child.

Coincident with the pigmentary changes in the areola, a similar process may be observed in the middle line of the abdomen, where a dark line is formed, extending occasionally from the lower end of the breast bone to the symphysis pubis, but more commonly only between the latter and the umbilicus. This line is called the *linea nigra*, and, like the areola of pregnancy, it is better marked in persons of dark complexion. On the flanks, there may be seen during the later months a number of purple marks, called *striæ gravidarum*, which are due to the stretching of the abdominal walls by the enlarging uterus, by which the tissues under the skin are torn. After the birth of the child, these marks gradually lose their purple appearance, become white, and remain thus for many years. They may be caused by any other condition which tends to stretch the abdominal walls, and are, therefore, by no means indicative of pregnancy alone.

By far the most important point to be observed by the visual examination of the abdomen is its characteristic change of contour, the various periods of pregnancy being indicated by corresponding alterations in its shape and size.

Thus, for the first three months, the abdomen will be found to be flatter than usual, while the depression of the umbilicus is deepened and more marked, owing to the dragging of the heavy uterus, which is still within the pelvis.

After the end of the third month, at which time the uterus commences slowly to rise out of the pelvis, and distend the abdominal walls, no appreciable change in the contour can be noted until the fifth month, when a decided fulness of the lower part of the abdomen is evident, the umbilical depression having by this time disappeared.

The abdominal cavity now becomes rapidly more and more distended, until the maximum size is reached about the end of the ninth month; the umbilicus during the last three months projects instead of being depressed.

During the later months, the large abdominal tumour tends to disturb the natural equilibrium of the body during standing and walking, necessitating a throwing back of the head and shoulders in an exaggerated "military style."

By inspection of the vagina, the normal pink colour of the mucous membrane will be seen to be replaced by a violet hue of more or less intensity, this being due to the pressure of the enlarged uterus on the surrounding veins, preventing the free return of blood from the

parts, and thereby giving rise to a certain amount of congestion.

This sign is generally well marked, but, being caused by other conditions, is valueless as a special test of pregnancy.

Second, by Palpation or Touch.—Tumour in Abdomen.—This is to be made out, first, during the fourth month of gestation, the uterus then being abdominal.

It may be best felt (with the patient on her back and her knees drawn up), by laying the hands flat on the abdominal walls, and slowly, gently, but firmly depressing the tips of the fingers in all directions, meanwhile keeping the patient in active conversation, to prevent tension of the abdominal muscles; if performed in a jerky manner, it is disagreeable to the patient, who winces and tightens her abdominal muscles, and thus effectually prevents a satisfactory examination.

By palpating the abdomen, the size of the uterus can be satisfactorily gauged, which is a point of great importance in calculating the date of the pregnancy, as the rate of growth is very regular, the fundus uteri reaching to definite heights at certain months with great precision.

Thus, at the fifth month, the fundus may be felt midway between the umbilicus and symphysis pubis. At the sixth month, it reaches up to the umbilicus. At the seventh month, it is two inches higher, and continues so to grow, until, towards the end of the ninth month, it may be felt immediately under the lower end of the breast bone (Fig. 15).

Within the last week of pregnancy, the uterus sinks about an inch, a circumstance which the patient is made distinctly aware of, by her breathing becoming less embarrassed, while progression is rendered much more difficult.

The enlargement of the uterus is not to be considered entirely due to the distension of its cavity by the ovum, for coincident therewith, the uterine wall becomes greatly

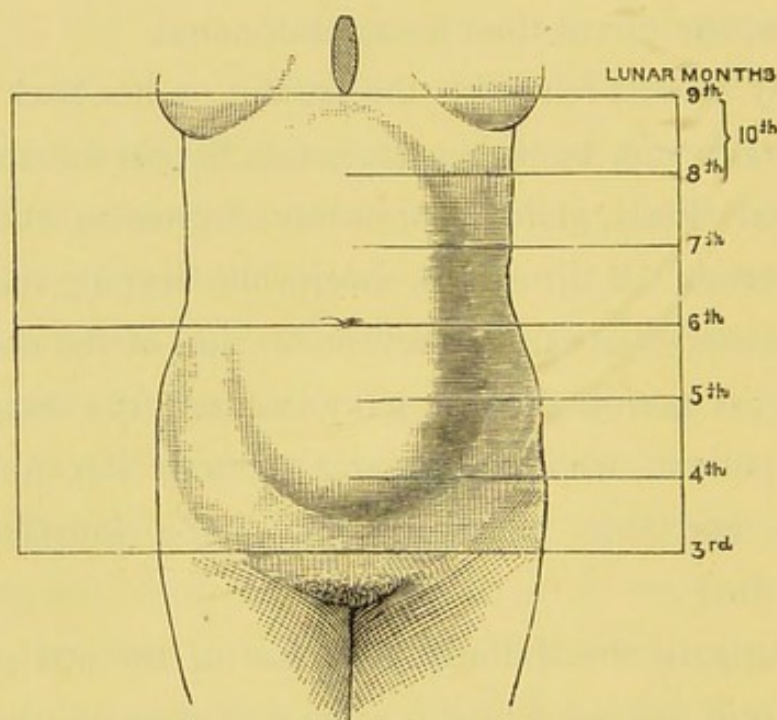


FIG. 15.—Diagram showing the position of the fundus uteri at the different months of pregnancy.

thickened by the growth of new muscular tissue, and thus it becomes so strengthened that it forms the chief factor in the expulsion of its contents.

To show the extent of the growth, it may be mentioned that the unimpregnated uterus weighs only about one ounce, while the uterus immediately after labour weighs from 14 to 18 ounces.

Intermittent Uterine Contractions.—After the uterus is large enough to be palpated, if the hand be steadily kept in contact with it for a short time, a distinct hardening of its substance will be felt, followed by an equally distinct softening or relaxation. These are due to intermittent contractions, which generally occur every five or six minutes.

Fœtal Parts and Movements.—In the later months, by careful palpation one will generally be able to make out, with more or less precision, the various parts of the foetus, the movements of which may be also distinctly felt. These, it need hardly be said, are absolutely certain signs of pregnancy, and the former are further of much value in diagnosing the position of the child.

Ballottement.—This diagnostic sign is arrived at by the vaginal method of examination (internal palpation), described Chapter XIV.

The patient being placed in a half-sitting position, the tip of the finger is placed on, or in front of, the cervix uteri, a sudden push upwards with the finger is then made, which causes the foetus to ascend in the liquor amnii towards the fundus uteri, but, gravitating again to its former position, it drops gently on the tip of the finger, giving rise to a sensation as if something had fallen on it.

This can only be satisfactorily accomplished when the uterine cavity is relatively large to the size of the foetus—*i.e.* between the fourth and seventh months.

Changes in Cervix Uteri.—From increased blood supply

the uterus becomes softened at an early date, so that, on vaginal examination, the cervix is found to have a soft, pulpy feeling, which gives rise to an erroneous impression of shortening. This latter change, however, does actually occur in the last week of pregnancy. After the subsidence of the abdominal swelling, as previously mentioned, the cervix becomes flush with the vaginal roof. This renders it more difficult to make out on examination—the os uteri now forming the only guide. The os uteri externum, in the later months, will generally be found to be slightly open, often sufficiently to allow of the introduction of the tip of the finger, especially in multiparæ.

Third, by Hearing, or Auscultation.—Uterine Souffle.—By means of a stethoscope placed on the abdomen over the uterus, one can, from an early period, hear a distinct blowing sound, rhythmical with the mother's pulse, the uterine souffle. It is caused by the rushing of the maternal blood through the large vessels of the uterus and placenta. This is also met with in some uterine tumours (fibroids).

Fœtal Heart.—More important than the uterine souffle is the beating of the fœtal heart, which is first to be distinctly heard about the fifth month. It is a faint sound, like the tick of a watch heard through a pillow, with an average rate of about 130 beats per minute. Though sometimes impossible to hear, as a rule it is very evident, and can be made out with ease after a little practice.

From the above it will be seen that natural pregnancy runs a well-defined course, and offers a large number of well-

marked signs, which appear at definite periods, and which, if taken collectively, are valuable as affording sufficient data for a correct diagnosis.

Signs and Symptoms of Pregnancy.

Subjective Phenomena		{		Suppression of Menstruation.
		{		Morning Sickness.
		{		Quickening.
Objective Phenomena	By Inspection	{	A. Mammary Changes	1. Pigmentation.
				2. Enlargement.
				3. Secretion of Milk.
		{	B. Abdominal Changes	1. Pigmentation.
				2. Contour.
		{		3. Striæ.
		C. Vaginal Discoloration.		
	By Palpation	{	A. External or Abdominal	1. Uterine Tumour.
				2. Uterine Contractions.
				3. Fœtal Parts.
				4. Fœtal Movements.
		{	B. Internal or Vaginal	1. Softness of Cervix.
				2. Shortening of Cervix.
		3. Ballotement.		
	By Auscultation	{		1. Uterine Souffle.
				2. Fœtal Heart.

If taken alone, however (with the exception of the foetal heart, foetal parts, and foetal movements), grave errors in diagnosis may be committed.

From the late occurrence of the certain signs of pregnancy, it will be evident how difficult a correct diagnosis in the early months must be. And involving, as it frequently does, grave responsibilities, both personal and social, the diagnosis should always be left to a medical man.

The duration of pregnancy in the human female is about 280 days, calculating from the *first* day of the last menstrual period. Therefore, in order to foretell the date of the expected confinement with considerable precision, add seven days to the date of the first day of the last menstruation, and then either count forward nine months, or backward three months, the date resulting to be taken as the middle of the week in which the confinement probably will occur.

Thus, supposing the last menstruation began on the 21st March, add seven days, 28th March, count back three months, or forward nine months, 28th December. The confinement may therefore be reasonably expected to occur during the last week of the year.

Should there be any hitch in the calculation from the menstrual period, our data must be arrived at from the more uncertain signs of quickening, and the size of uterine tumour previously described; these, though both excellent helps, cannot be relied on with the same confidence.

[TABLE.

Table for Calculating the Period of Utero-Gestation.

NINE CALENDAR MONTHS.					TEN LUNAR MONTHS.		
From		To		Days	To		Days
January	I	September	30	273	October	7	280
February	I	October	31	273	November	7	280
March	I	November	30	275	December	5	280
April	I	December	31	275	January	5	280
May	I	January	31	276	February	4	280
June	I	February	28	273	March	7	280
July	I	March	31	274	April	6	280
August	I	April	30	273	May	7	280
September	I	May	31	273	June	7	280
October	I	June	30	273	July	7	280
November	I	July	31	273	August	7	280
December	I	August	31	274	September	6	280

CHAPTER VIII.

DISEASES AND COMPLICATIONS OF PREGNANCY.

PREGNANCY is frequently associated with a variety of abnormal conditions, which may, or may not, be the result of the pregnant state. Those which owe their origin directly to the pregnancy, are called the "*diseases of pregnancy*," while those which occur quite independently, though coincidently, with this condition, are called the "*complications of pregnancy*." Under the former heading, there come a great variety of ailments, one of the most frequent and troublesome being—

Excessive Sickness.—This is merely an exaggeration and continuation of the ordinary morning sickness, which is met with in the early months of gestation. It varies greatly in severity; sometimes existing to such an extent that every particle of food taken is at once rejected, the patient becoming emaciated and weak from starvation. This is most apt to occur in cases of excessive distension of the uterine cavity, as in twins and hydramnios (*see* page 79), but it may occur in any pregnancy.

The treatment consists in the avoidance of all irritation of the stomach, by the abstinence from solid food—iced milk,

milk, and potash water being substituted. Various sedatives, such as bromide of potash, bismuth, dilute hydrocyanic acid, &c., frequently prove of much value ; but occasionally all forms of treatment fail, the induction of abortion, or premature labour, then becoming the only alternative, and being of course the duty of a medical man only.

Salivation.—An excess of the salivary secretion is another most distressing condition, which admits of little or no treatment, and continues during the whole pregnancy, at the completion of which it immediately ceases.

Temporary relief may sometimes be afforded by the use of alum and other astringent gargles.

Leucorrhœa.—A white vaginal discharge, often excessive, is very common. If the strictest cleanliness be not observed, this may give rise to intense itching of the vulva, “pruritus,” a most irritating condition, which renders the patient’s state unbearable.

The treatment is to syringe twice daily with tepid water ; care should be taken, however, to prevent the induction of labour, which is apt to occur if the water used be too warm, or be too energetically applied.

From pressure on blood vessels and other parts by the enlarged uterus, the pregnant woman is apt to suffer from a number of abnormal conditions, viz. :

Œdema, or swelling of the legs and feet, generally associated with a more or less varicose condition of the veins. It is due to pressure on the veins which are distributed to these parts.

Constipation, probably due to pressure on the bowels.

Hæmorrhoids, or piles, due to pressure which interferes with the return of blood from the veins of the rectum.

Jaundice, due to pressure on the liver.

Frequent Micturition may be the result of irritation of the bladder from pressure by an anteverted uterus, or dragging on the bladder during the early months of gravid retroversion (*see* page 73).

Retention of Urine during the third and fourth months of pregnancy is usually due to a retroverted uterus causing pressure on the bladder; it is also common during the last week of normal pregnancy.

Albuminuria, or presence of albumin in the urine, due to pressure on the vessels of the kidney. This, if associated with swelling of the body, is an extremely anxious sign, for very frequently with this condition convulsions occur, either in the later months of pregnancy, during labour, or in the puerperium, constituting the grave disorder we shall afterwards consider under the name of eclampsia.

There are also a number of nervous disorders, frequently associated with pregnancy, which may fairly be ranked as due to this condition.

Neuralgia, especially of the head and face, is an extremely common occurrence in the earlier months. Quinine, which is so frequently taken for neuralgia, should be avoided in pregnancy, as it tends to cause abortion.

Chorea, or St. Vitus' dance, an irregular twitching of the various parts of the body, is occasionally very severe

in pregnant women. It generally occurs in primiparæ, who have already suffered from it during childhood. So exhausting is it sometimes, that premature labour has to be induced to save life. Such cases require skilled medical treatment.

Abnormal Appetite.—Extraordinary cravings are sometimes met with, women eating brushes, coals, pocket-handkerchiefs, &c., with the greatest greed and evident relish.

Insanity.—Generally the patient becomes extremely melancholy, imagining all sorts of evil about herself, and often attempting to take her life. Such cases, it need hardly be said, require constant and strict watching.

A number of minor nervous conditions are frequently to be noticed, such as sleeplessness, irritability of temper, and a peculiar dry hacking cough, which is often very troublesome. These minor nervous phenomena are much commoner in the higher grades of society, and are to be treated by open-air exercise, light reading, and other forms of amusement. The treatment of the more severe conditions does not fall to be described in a work of this kind.

Pregnancy is very prone to have a deleterious effect on previous heart affections, due probably to the extra strain on the heart. Also in consumptive women, though the patient often feels much better while pregnant; after labour, the disease is apt to make very rapid strides.

Under the term *Complications of Pregnancy*, or diseases which do not owe their origin to the pregnant state, we might include all forms of disorder, each having a more or

less marked tendency, by weakening the constitution, to prevent the completion of gestation; but as there are a few which have a specially deleterious influence, we shall restrict ourselves merely to mentioning these.

By far the most important are those diseases which are associated with high temperature, such as inflammation of the lungs, and the eruptive fevers (smallpox, scarlet fever, measles, &c.). Not only have they a marked tendency to bring on labour, but the infectious fevers in the puerperium tend to give rise to, or to be transformed into, that most dread disease, puerperal septicæmia. Another complication which deserves special notice is syphilis, a form of blood poisoning which has a most injurious effect upon pregnancy. It does not merely confine itself to the mother, but is communicated to the foetus, which, if born alive, has a taint left upon it, which it is almost impossible to eradicate.

CHAPTER IX.

MANAGEMENT OF PREGNANCY.

THE proper management of pregnancy consists mainly in a strict observance of the ordinary laws of health. Abundance of pure air is of great importance both in the house and out of it, and the pregnant woman should avoid hot, ill-ventilated rooms, crowded meetings, too much confinement indoors, and rough or fatiguing journeys.

She must not make an invalid of herself by any means. Daily open-air exercise for one or two hours, short of absolute fatigue, should be freely indulged in, and while avoiding all undue strains, the performance of most of her ordinary daily duties should be continued as usual. Violent exercise of any kind is harmful, and may produce miscarriage. Miscarriages are most apt to occur at the time in each month which would correspond to the menstrual period did pregnancy not exist, also in the third and seventh months of pregnancy; special care should therefore be taken at these times. It is a good rule for a pregnant woman to note down in her diary these approximate dates for the whole term of her pregnancy, and take precautions accordingly.

The food of the pregnant woman should be plain, nutritious, and easily digested, and she should take her biggest meal at the time of day she feels most hungry. Except under exceptional circumstances, stimulants should be forbidden. Her meals should be at regular times. The dress should be loose and easy, especially about the breasts and abdomen. Garters and tight corsets should be given up. Closed woollen overdrawers or knickerbockers (an excellent protection at all times against chills) are specially useful in these circumstances, owing to the fact that the projecting abdomen does not allow the skirts to come closely enough in contact with the lower limbs. Flannel should always be worn next the skin. Pregnant women often evince a good deal of nervous irritability. This should be gently dealt with, remembering that it is greatly due to their state of health. They should be guarded from all excitement and disagreeable shocks or impressions, and have a full allowance of sleep,—at least eight hours daily. Towards the end of pregnancy, a short rest and sleep every afternoon is a great help towards keeping the patient in good health and spirits. The daily bath should not be omitted, but continued up to the end of pregnancy, with plenty of friction to secure complete reaction, especial care being taken that the external genitals are kept perfectly clean.

The daily action of the bowels must be carefully seen to. As a rule, constipation exists during pregnancy. If this cannot be rectified by suitable dieting, then some simple medicine should be taken regularly, such as liquorice

powder, compound rhubarb pills, cascara, or whatever may be ordered by a medical man as being suitable in any special case. Strong purgative medicines are to be avoided. Where piles are present, an enema of soap and water will prevent any straining efforts. Inflamed piles should be bathed with warm water and fomented, and the patient should remain in bed for a day or two. In such a case, however, a medical man should be called in.

Care of Nipples. During the last two or three months the nipples should be cleansed daily with a solution of borax (a tablespoonful to a pint of water) or boracic lotion. Afterwards they should be anointed with cold cream, and, if small or sunken, should be drawn out gently with the thumb and fingers. In some cases, however, where the nipples are tender and apt to crack, nothing is better than a lotion of eau-de-cologne (or whisky) and water, equal parts, applied twice daily with the finger.

Examination of the Urine. Especially in a first pregnancy, a sample of the urine should be sent once a week during the last month or two to the doctor for examination.

If any of the complications or diseases of pregnancy (Chapter VIII.) should be noticed, a doctor should at once be sent for; similarly if there are any indications of abnormal pregnancy (Chapter X.).

CHAPTER X.

ABNORMAL PREGNANCY — RETROVERSION, ANTEVERSION,
AND PROLAPSE OF PREGNANT UTERUS — MOLES,
CARNEOUS AND VESICULAR — HYDRAMNIOS — EXTRA-
UTERINE FETATION.

Incarcerated Retroversion of the Pregnant Uterus (Fig. 16).
—This is a condition where the fundus and body of the

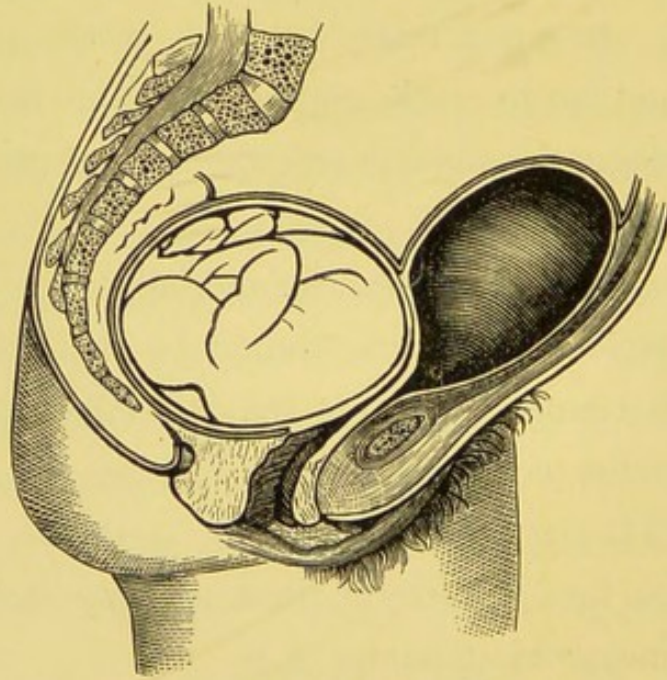


FIG. 16.—Diagram of retroverted pregnant uterus, showing distension of bladder.

uterus, containing an ovum, lie backwards in the pouch of peritoneum behind the uterus called the pouch of

Douglas, where the cervix is correspondingly tilted forwards and upwards towards the symphysis pubis. By this means the fundus and body are on the same, if not a lower, level than the cervix uteri, the converse of the normal position. Cases of retroversion are of common occurrence in the non-pregnant uterus, and thus the majority of cases of gravid retroversion, probably, are the result of pregnancy becoming established in uteri previously so displaced.

This condition is always followed by a well-marked train of symptoms. The patient fancies herself about three months pregnant, during which time she may have had some bearing down feelings, associated with frequent calls to pass water, and an irregular state of the bowels, diarrhœa alternating with constipation. Emptying of the bladder soon becomes a matter of difficulty, and the bowels become obstinately constipated. Should she not now obtain advice, after a few days voluntary voidance of urine becomes impossible, and constant dribbling results; at the same time, the lower part of the abdomen becomes swollen and painful, especially on pressure.

Such is the usual course of events; let us now analyse them, and see what they represent.

The bearing down pains are due to the heavy uterus tending to fall lower and lower in the pelvis; the early bladder symptoms, to irritation of that organ by the traction of the falling body of the uterus, and the slight pressure of the forward tilted cervix; while the pressure of the fundus and

body of the uterus on the rectum account for the irregularity of the bowels.

The difficulty in passing water which is experienced during the fourth month, is due to the uterus becoming so large that it presses against the neck of the bladder, and thus blocks it.

The time at which this occurs, viz. the fourth month, is all-important, and easy of investigation. The uterus, as has before been stated, remains a pelvic organ till the end of the third month, and then commences to grow upwards into the abdomen, as it is too large for the pelvis to contain; but if retroverted, it is prevented from rising by the promontory of the sacrum; continuing to grow, however, it soon fills the whole pelvis, and exerts excessive pressure on the surrounding organs, the rectum and bladder.

As voluntary voidance of urine is now impossible, the bladder rapidly becomes distended, and forms a tumour in the lower part of the abdomen. This excessive distension of the bladder exerts great pressure on the contained urine, and causes it to dribble away constantly, giving rise to the impression that "incontinence" instead of "retention" of urine exists, thus throwing the unwary off their guard. Should treatment not be adopted at this time, sloughing of the tissues pressed on, and absorption of the poisons of the decomposing urine, follow.

In some cases the uterus spontaneously rounds the promontory of the sacrum, and pregnancy continues as usual, but such a favourable course is not to be depended upon.

The diagnosis is made easy by a history of three months' amenorrhœa, and the following well-marked signs found on examination :—

- 1 An abdominal tumour, immediately above the symphysis pubis, tender to touch.
- 2 A distinct bulging of the posterior vaginal wall, due to a boggy mass, the fundus uteri.
- 3 Great difficulty in reaching the cervix uteri, which is tilted upwards and forwards against the symphysis pubis.
- 4 Displacement upwards of the orifice of the urethra, due to traction on anterior vaginal wall by the retroverted uterus.
- 5 And, lastly, disappearance of abdominal tumour on drawing off the urine by means of a catheter.

It may here be strongly urged that, before commencing to examine any abdominal tumour, the urine should always be drawn off by means of a catheter ; through attention to this simple rule, many a diagnosis will be simplified, and many an error obviated.

The treatment consists in replacing the fundus uteri into its normal position, and keeping it there by means of a support. The method of so doing is not within the sphere of the nurse's duty, and need not be described in the present work. Suffice it to say, the operation is often by no means simple ; and the more advanced the pregnancy, the more difficult is its performance ; occasionally it is quite impossible, and abortion has to be induced. Indeed, abortion is a very frequent sequel even to a successful attempt at reposition.

Anteversion of the Pregnant Uterus, or Pendulous Belly.

—This is the converse of retroversion, the fundus and body of the uterus having fallen forwards instead of backwards. It is by no means so grave a condition, but it gives rise to unpleasant symptoms.

In the early months of pregnancy, extreme bending forwards is prevented by the close proximity of the symphysis pubis to the front of the body of the uterus; but in the later months, after the uterus has grown well into the abdomen, this obstacle is no longer present, and the abdominal walls now form the only preventive. These being in some multiparæ much relaxed from former pregnancies, they offer little resistance, and this accounts for the greater frequency of this condition in multiparæ than primiparæ. A pendulous belly in a primipara is highly significant of a deformed pelvis.

Symptoms.—During the early months these are slight; frequent micturition, from pressure on the bladder, being the chief. Treatment is impossible at this stage.

During the later months the urinary symptoms are much exaggerated, walking is impeded, and the figure appears abnormally large. The treatment at this stage consists in keeping the patient lying on her back as much as possible, and in the application of a well-fitting abdominal belt or binder, which should be applied while the patient is in this position.

During labour, much delay is experienced by the change of direction of the parturient canal. This is to be remedied

by keeping the patient on her back and adapting a tight binder, which tends to replace and retain the uterus in its normal position.

Prolapse of the Pregnant Uterus.—This is a condition where the gravid uterus, through loss or weakening of its supports, tends to fall through the vagina and pass out at the vulva.

By pressing on the surrounding pelvic organs, it gives rise to bladder and rectal symptoms of a similar nature to those of a gravid retroversion.

The treatment consists in replacing the uterus, and keeping it in position by means of a vaginal support.

Moles.—These are of two varieties, fleshy and vesicular. The fleshy mole results from an effusion of blood into the uterine cavity during the early months of pregnancy, which is insufficient to cause total separation and expulsion of the ovum, as in abortion, but is sufficient to prevent its natural growth.

The portion of ovum still attached to the uterine decidua continues to be nourished, and forms a channel of communication between the effused blood clot and the uterus. The former becomes organised by means of blood vessels passing into it, and, together with the altered ovum, forms a flesh-like mass, having little or no resemblance to the usual products of conception. The foetus is either absorbed, or so altered that it is no longer discernible, and may remain in the uterus for many months, till eventually expelled.

During the retention of the mole, the symptoms of pregnancy remain unaltered.

The vesicular mole, called also *hydatidiform* or *myxomatous degeneration of the chorion*, is characterised by the existence in the uterus of a large number of small cysts, or vesicles, like white currants. These are formed from the villi of the chorion, which, instead of atrophying at the end of the second month of gestation, as was previously described (Chapter VI.), continue to grow and multiply with great activity, until they not only fill the entire uterine cavity, but also distend it to such an extent, that its dimensions are double, if not three times, the usual size of a normal pregnancy at a corresponding date.

Thus, at the end of the third month, the uterus, instead of being still in the pelvis, may reach up to a higher level than the umbilicus. The fœtus is probably absorbed, as usually no trace of it can be found.

Symptoms. — The usual symptoms of pregnancy are present, but they are generally associated with excessive vomiting and occasional red vaginal discharge; in the latter are frequently to be found some of the small cysts. These, together with the rapidly growing tumour, make the diagnosis easy, but should the cysts be wanting, the diagnosis is extremely difficult.

The treatment is the duty of a medical man only, and consists in the rapid emptying of the uterus. Occasionally, spontaneous delivery of the mass occurs; this may reach to pounds in weight. The dangers from artificial emptying

are great. They are, rupture of the uterus, from the rapid growth not allowing of corresponding thickening of the uterine walls ; post partum hæmorrhage, from the over distension preventing sufficiently firm contractions ; and septicæmia, from the inability to completely empty the uterus, the retained portions degenerating, decomposing, and being absorbed.

Hydramnios.—An abnormal increase in the amount of liquor amnii, which shows itself, as a rule, about the fifth or sixth month of gestation, although occasionally earlier. It is frequently associated with twin pregnancies.

The foetus is often dead, shrivelled, or deformed, but not necessarily so. About sixty per cent. are born alive, although only about half that number survive above a few hours.

The symptoms are those of excessive enlargement for the time of the pregnancy. This rapidly increases till great difficulty in breathing is experienced. Premature expulsion of the ovum not infrequently takes place.

There is no treatment of any avail in arresting the rapid accumulation of the fluid ; therefore, when the health of the mother becomes seriously impaired, there is no alternative but to puncture the membranes and draw off the fluid, a proceeding which never fails to be followed by expulsion of the ovum, and therefore should never be performed unless the symptoms are urgent. This must only be done by a medical man.

The dangers to the mother are considerable: first, from the deterioration of health due to excessive pressure; and, secondly, from the distension of the uterus predisposing to post partum hæmorrhage, as in vesicular mole.

Another abnormal condition, due to excessive secretion of fluid in the uterus during pregnancy, is the so-called *hydrorrhœa gravidarum*. Here the fluid is secreted from

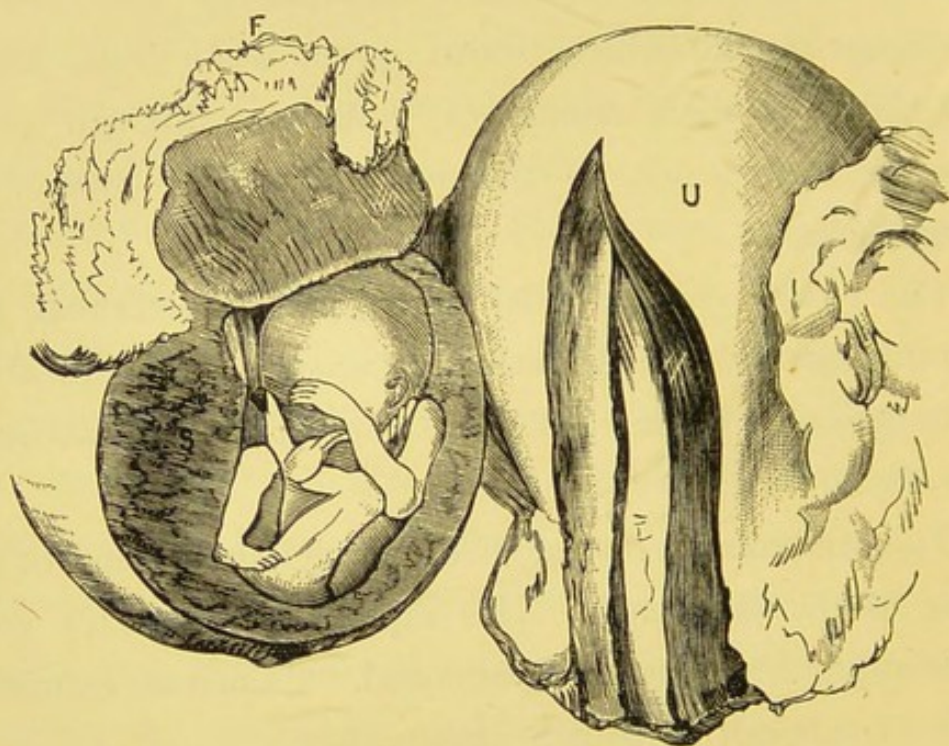


FIG. 17.—Extra-uterine tubal pregnancy. *u*, Uterus.

the decidua, and differs from hydramnios in that it constantly dribbles away, frequently in such quantity as to thoroughly soak the patient's clothes.

Apart from this inconvenience, it gives rise to no symptoms, but may be taken for premature rupture of the membranes, which is highly indicative of approaching

expulsion. The condition generally commences during the later months of pregnancy, and permits of no successful treatment.

Extra-Uterine Fætation, as the name implies, is the implantation, growth, and development of a fertilised ovum on any site except in the uterine cavity. According to the site, so is it named. Thus, if in the abdominal cavity, among the intestines, *abdominal*; if in the ovary, *ovarian*; if in the Fallopian tube, *tubal* (Fig. 17); the last is much the most common variety. The condition is always one of extreme gravity, the sac in which the ovum is contained being liable at any moment to rupture, and the contents, accompanied by more or less severe hæmorrhage, evacuated into the abdominal cavity. This usually occurs about the third or fourth month of gestation. The symptoms of rupture of the sac are, a sudden feeling of pain in the lower part of the abdomen, as though something had given way, faintness, superseded by collapse, the patient becoming deathly pale, and the pulse quick, thready, and almost imperceptible; at the same time, consciousness and the other mental faculties are unimpaired. Death usually results.

The diagnosis of this serious condition, before rupture has taken place, is extremely difficult. Frequently, nothing more than a normal pregnancy is suspected, no abnormal symptoms existing; more frequently, however, there is constant pain in the lower part of the abdomen, associated with an irregular vaginal discharge of blood; these symptoms, however, are by no means absolutely indicative

of the condition, the diagnosis at all times being very obscure.

Occasionally, the gestation proceeds to full time, labour pains come on and pass off without result; the fœtus dies, and by a process of calcification is transformed into a lithopædion or stone child.

CHAPTER XI.

ABORTION—THREATENED, INEVITABLE, IMPERFECT— SYMPTOMS—DIAGNOSIS—TREATMENT.

IN a wide sense, by the term *abortion* is meant the expulsion of the ovum any time before the fœtus is able to live independently of its mother ; or, in other words, before it is viable, that is, before the end of the seventh month. Expulsion after this time, but before the ordinary 280 days of gestation, is called a *premature labour*.

The term abortion is not uncommonly restricted to expulsion of the ovum during the first three months, a "miscarriage" being the term used for the same condition between the third and seventh months ; this is an unnecessary and unpractical division.

Abortions are of frequent occurrence in all classes of women, but especially in the higher grades of society ; they are also more liable to occur in multiparæ than primiparæ, and frequently recur with great persistency in successive pregnancies, constituting the so-called "habit of aborting." They occur more frequently in the earlier months, the attachment of the ovum to the uterus then being only slight. In the very early periods of pregnancy,

they give rise to so slight symptoms that they are not infrequently mistaken for a delayed and profuse menstruation. Up to the third month, the ovum is as a rule expelled entire, but after that time the placenta is formed, and affords a firmer attachment to the uterus. Then the membranes usually rupture, and allow the expulsion of the foetus alone,—the membranes and placenta following as in a normal full time labour.

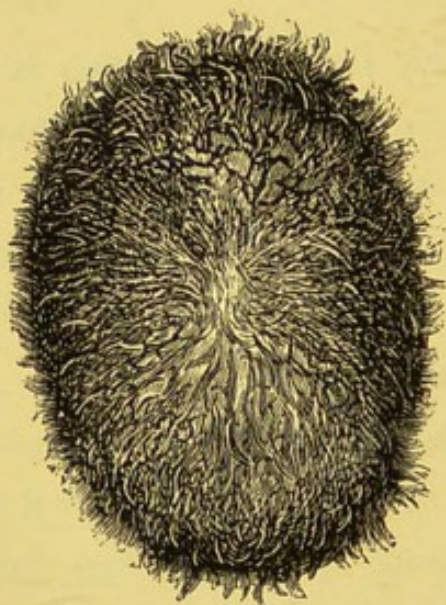


FIG. 18.—Abortion at third month, showing shaggy decidua.

The attachment of the placenta to the uterus is frequently so firm that its expulsion is prevented, thus the risks of septicæmia and hæmorrhage are very great. Therefore abortion between the third and sixth months is much graver than before that period.

The causes of abortion are very numerous. It may be the result of the most trivial accident; whilst, on the other hand, the most severe injuries to the mother often in no

way affect an existing pregnancy. Women are particularly liable to abort during the days in each month corresponding to what would have been a menstrual period did pregnancy not exist.

Fevers, especially of the infectious type, are very apt to produce abortion ; mental emotion, fright, and anxiety have also the same tendency.

Syphilis, by poisoning the blood of the mother, and thus

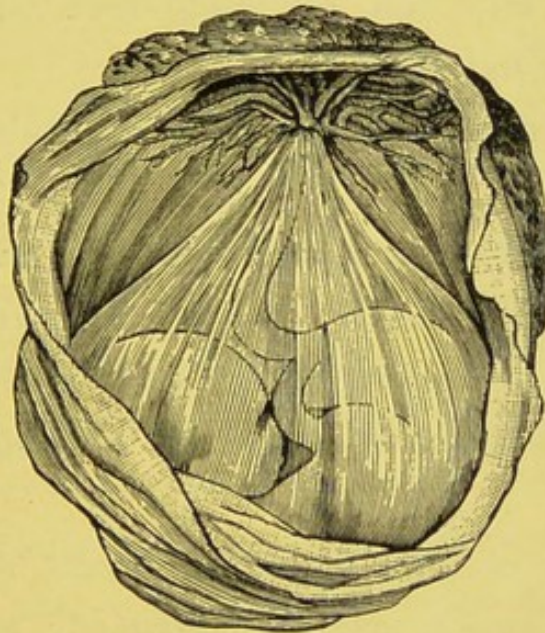


FIG. 19.—Abortion after third month, showing placenta, and the foetus enveloped in membranes.

preventing the healthy nutrition of the ovum, and so causing its death, is without doubt one of the most fertile causes of abortion ; the “habit” of aborting being frequently due to this disease. This can often be prevented by medical treatment at the beginning of pregnancy. Hæmorrhage into the interior of the uterus, between the deciduæ vera and reflexa, or between the decidua vera and the uterine wall, causing

separation and subsequent death of the ovum, is the most frequent cause of abortion. It may, however, be extremely severe, yet not cause abortion, the source of the hæmorrhage in these cases being that part of the decidua which is close to the os uteri, through which the blood escapes without causing fatal separation of the ovum. Occasionally a slight hæmorrhage occurs, insufficient to cause total separation, and, being retained in the uterus, together with the altered ovum, forms what has previously been described as a "carneous (fleshy) mole."

The symptoms of abortion are chiefly two, hæmorrhage and pains.

The former indicates separation of the ovum; the latter, contractions of the uterus. As a rule, hæmorrhage precedes the pains, and may continue for days without their occurrence, but occasionally the pains are developed before the hæmorrhage.

When either of these symptoms occurs alone, hope of averting the abortion may be entertained; and the condition is thus called one of "threatened abortion." Should, however, both be present, little hope of preventing expulsion can be entertained, and the term "inevitable abortion" is now used to distinguish it from the preceding.

If, associated with either of these symptoms (even should they be very slight), an open os uteri, through which the ovum can be felt, is found by vaginal examination, the diagnosis of "inevitable abortion" is assured.

Treatment.—In managing a case of abortion, the treat-

ment must entirely depend on whether it be *threatened* or *inevitable*. If it be the former, every effort to avert expulsion must be made. The patient should be put to bed, and absolute rest enforced; the bowels cleared out by means of an enema (Chapter XXIII.), and opium given, either in the form of a morphia suppository, $\frac{1}{4}$ grain, introduced into the rectum, or 15 drops of chlorodyne by the mouth, to be repeated at intervals of four hours. If, on the other hand, the abortion be *inevitable*, efforts must be directed to clear out the uterus as speedily as possible; the methods of accomplishing this vary according to the urgency and progress of the case. In all cases, however, a teaspoonful of the liquid extract of ergot should first be given, and repeated at intervals of two hours—this drug having been proved to have a most pronounced effect in strengthening uterine contractions. If the os uteri be found to be fairly well dilated, attempts should be made to express the ovum by means of suprapubic pressure, as described, page 120. Should this, after a few attempts, prove unsuccessful, the application of the hot vaginal douche should next be tried,—the water used being as hot as the finger can bear (120° F. if possible), (*see* Chapter XXIII.).

Should the hæmorrhage be very severe, and prospects of speedy expulsion (such as a well-dilated os) be absent, plugging the vagina should be performed (*see* Chapter XXIII.). By this means the bleeding is held in check whilst assistance is obtained. Not uncommonly, as has before been said, the foetus is expelled alone, the placenta

and membranes, in whole or in part, being retained ; this constitutes what is called an "imperfect abortion." This serious condition is frequently the cause of septicæmia or dangerous hæmorrhage. Retention of part of the ovum being of such gravity, it will be apparent how necessary it is to satisfy oneself that it has been entirely expelled. All discharges must therefore be thoroughly examined should such be doubtful, and if a doctor is also in attendance, the discharges must be carefully kept and shown to him, so that he may ascertain whether everything has been expelled or not.

The after treatment differs in no way from that of an ordinary full time labour—the same care and rest being necessary. This cannot be too strongly urged upon patients, who are apt to consider abortions very trivial matters, and wish to continue their ordinary duties as if nothing had happened, ignorant that the uterus, &c., have to undergo the same elaborate process of restitution (though perhaps to a less extent) as after a full time labour. The knowledge of this would, without doubt, prevent the wards of our hospitals being so energetically patronised by women suffering from aches and pains, the subjects of chronic uterine inflammations and displacements ; diseases which the most able physicians can frequently do little more than temporarily alleviate.

In all cases of abortion medical advice should be procured if possible, especially so should the discharge be excessive or fœtid, or if there is the least suspicion that the abortion is an imperfect one.

CHAPTER XII.

THE FŒTUS.

THE child, while still unborn, is called a foetus. It is important for a nurse to have some idea of the size and development of the foetus at the different months of pregnancy, so that she may recognise when the child is born prematurely. This has been already referred to in a previous Chapter (page 48).

The *mature* child, born at full time, measures about 20 inches in length, and weighs on an average $6\frac{1}{2}$ lbs. The weight, however, varies much, and male children are generally heavier than females at birth. The newly-born mature child has a rosy skin, covered with a whitish, greasy material, called *vernix caseosa*; the nails project over the finger tips, the head is covered with hair, and the navel is situated below the middle of the body. When born, it cries loudly, moves its legs and arms freely, and generally empties its bladder and rectum.

As it is the foetal head which usually causes the most difficulty in ordinary labour, it is necessary to look at it somewhat closely, and compare its measurements with those of the pelvis, through which it has to pass. For this

purpose a knowledge of the names and relative positions of the bones of the vault of the skull or cranium is requisite. The cranial bones in the fœtus are not firmly joined together, as they are in the grown-up person, but are separated from one another by considerable membranous intervals, which allow a certain amount of motion and

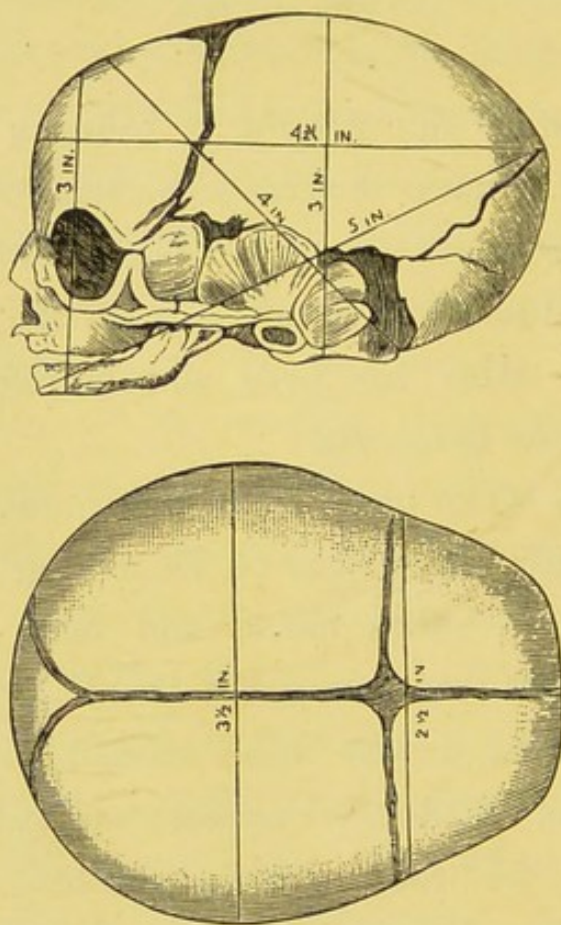


FIG. 20.--Fœtal skull, showing diameters.

overlapping of the bones during labour. By this arrangement the head is capable of being moulded by pressure ; its passage through the pelvis being thus facilitated (Fig. 20).

The cranial bones are as follows :—Two *frontal* or fore-

head bones, situated in front ; behind these are the two *parietal* bones, which together go to form the sides and the top of the skull ; the two *temporal* bones, one behind each ear ; and the *occipital* bone, which forms the back part of the skull, just above the nape of the neck.

The membranous spaces between these bones are called *sutures* and *fontanelles*.

There are four sutures, named respectively the *frontal*, the *coronal*, the *sagittal*, and the *lambdoidal*.

The frontal suture separates the two frontal bones from one another, and the coronal suture lies between the two frontal bones and the two parietal bones. Between the two parietal bones, and running along the vertex of the skull, is the sagittal suture, while between the parietals and the occipital bone is the lambdoidal suture.

The *fontanelles* are membranous spaces of a large size where the sutures meet. There are two, an anterior and a posterior. The *anterior fontanelle*, or *bregma*, is the larger, and is at the junction of the frontal, sagittal, and the two halves of the coronal sutures. It is diamond-shaped, and measures about half an inch in length ; it has four sutures running from it. The small or *posterior fontanelle* is situated at the point of junction of the sagittal and lambdoidal sutures. It is triangular in shape, and has three sutures running from it. It can be made bigger and more distinct by depressing the tip of the occipital bone beneath the parietal bones. The portion of the head lying between the anterior and posterior fontanelles is called the *vertex*.

When the head is compressed in the pelvis during labour, the bones of the skull overlap one another. The posterior ends of the parietal bones overlap the occiput, and the anterior ends of the parietals overlap the frontal bones, while one parietal bone overlaps the other. This overlapping movement of the bones is called equitation, or moulding.

Certain measurements of the foetal head are taken, which are called its diameters. The longest measurement is from the occiput to the tip of the chin—the *occipito-mental* diameter, which measures 5 inches; the next in length is from the occiput to the root of the nose—the *occipito-frontal* diameter, measuring $4\frac{1}{2}$ inches; while the *sub-occipito-bregmatic* diameter, from the nape of the neck to the anterior fontanelle, measures from 4 to $3\frac{1}{2}$ inches, according as one measures to the front or back part of the fontanelle.

The measurements of the head from side to side are two in number—the *bi-parietal*, between the widest parts of the parietal bones, measuring $3\frac{1}{2}$ inches; and the *bi-temporal*, between the ears, measuring 3 inches.

There are two vertical diameters—the *fronto-mental*, from the chin to the top of the forehead, and the *cervico-bregmatic*, from behind the angle of the lower jaw to the anterior fontanelle, each of which measures 3 inches.

The moulding which the head undergoes during labour modifies these measurements considerably.

The head of a male child is generally somewhat larger than that of a female. Civilisation and intellectual culture

have also probably done a good deal to increase the size of the foetal skull in both sexes.

The *attitude* of the foetus in the uterus is one of flexion. That is to say, it is all bent upon itself; the head and arms are bent on the chest, the thighs on the body, and the legs upon the thighs. It is so arranged as to occupy the smallest available space, and thus forms a solid compact mass.

By the *presentation* of the foetus, we mean that part of the foetus which lies over the os uteri; for example, head presentation, shoulder presentation, breech presentation, &c.

The *position* of the foetus means the relation which the presenting part bears to the bony pelvis.

Both the presentation and position of the foetus may be frequently changed during pregnancy, but in by far the majority of cases the foetal head is the presenting part.

The child's bowels at birth are filled with a greenish, treacly-looking substance, which is called the *meconium*. It is composed chiefly of bile, and is passed in considerable quantity soon after birth.

CHAPTER XIII.

PHENOMENA, MECHANISM, AND DURATION OF LABOUR.

At the end of pregnancy the foetus is expelled from the uterus, and its expulsion through the passages constitutes *labour*.

The chief agent in the expulsion of the child is the contraction of the uterus, which, however, is assisted by the muscles of the abdomen, the latter being brought into play in the act of bearing down.

Labour is divided into three stages, called the *first*, *second*, and *third* stages of labour.

In the majority of cases, however, before the first stage sets in, there are certain *premonitory symptoms* which denote its approach. These symptoms depend upon the descent of the uterus, and preparatory changes in the maternal passages.

They are as follows :—

Subsidence or sinking of the uterine tumour. The result being that the fundus uteri, instead of reaching up to the tip of the breast bone, as it did before, falls away from it. This generally takes place about a week before labour sets in, and is commonly known as the "*lightening before labour*."

When this has taken place, there is, of course, more room for the lungs to expand, and the woman feels that she can breathe more easily, and with less oppression than she did for some time previously. As a result of the sinking of the uterus, there are pressure symptoms on the bladder and rectum. There may be frequent desire to make water, and there is generally great constipation, though sometimes the pressure irritates the bowel, and brings about diarrhoea. The patient will also complain of difficulty of locomotion, while piles and varicose veins in the legs are aggravated.

Another premonitory symptom of labour is increased moisture of the vagina. This is due to an increased mucous secretion from the vagina and cervix uteri. Shortly before labour, this mucous discharge is generally tinged with blood, and is commonly known as the "shows."

When labour commences, the uterus contracts at intervals, and these contractions are accompanied by pain; so much so, that the term "*pain*" is always used to describe a contraction of the uterus. These labour pains, or uterine contractions, are for the purpose, first, of opening the mouth of the uterus; and secondly, of expelling the foetus.

Intermittent uterine contractions exist all through pregnancy, but it is only when labour sets in that they become painful, and strong enough to produce any effect.

There are *false* and *true* pains, and it is important to recognise the one from the other.

False pains are generally caused by constipation, or any

²disordered state of the stomach or bowels, by ³retention of urine, or by ⁴being overtired from standing too long.

These pains come on at irregular intervals, generally begin in the ⁵front of the abdomen, and have ³no effect whatever in opening the os uteri. On placing the hand over the fundus uteri, ⁴no hardening of the uterus can be felt. They can thus be distinguished from true labour pains.

Their treatment consists in removing the condition which causes them. The patient should be put to bed, the bowels freely moved by means of an injection or enema (Chapter XXIII.), and a sedative administered, *e.g.* laudanum or chlorodyne, 20 drops, or a $\frac{1}{4}$ gr. morphia suppository introduced into the rectum. If retention of urine be suspected, a catheter must be passed, and the urine drawn off.

True pains, as a rule, begin in the back, shoot round to the front, and down the thighs. At the commencement of labour the interval between the pains may be even as much as an hour, but as labour advances they become gradually more frequent. Towards the end of labour there is only a few minutes' interval between them, and the duration of each pain is increased.

If the hand be placed on the abdomen at the commencement of a pain, the uterus is felt to stand out, and become hard, while it gets soft again when the pain passes off.

If the pains were continuous, not only would the patient's strength soon be exhausted, but the long-continued pressure would be most injurious, probably fatal to the child.

The actual suffering during the pains varies much in

different women. Some suffer comparatively little, others endure the most intense anguish. It is a well-known fact that, though labour pains are quite involuntary, yet they are influenced to a certain extent by the feelings. For instance, a fright, or the arrival of the doctor, may temporarily arrest them.

As stated above, labour is divided into three stages.

The *first stage* is from the beginning of true labour pains till the full dilatation of the os uteri.

The *second stage* is from the end of the first stage till the birth of the child ; and

The *third stage* is from the delivery of the child till the expulsion of the after-birth, or placenta.

The first stage of labour is called the stage of dilatation, as it is during this period that opening of the mouth of the uterus takes place.

The pains during this stage are described as "gnawing," or "grinding," in their character.

Women have no tendency to bear down at this time, nor do they necessarily lie down, but generally walk about, or occupy a sitting posture. They are irritable and restless, and when a pain is present, they cry out in a sharp, shrill manner, or give vent to helpless and desponding moans. The cry of the first stage is of quite a different character from that of the second stage of labour, being indicative of suffering *without* effort.

A popular notion is, that these gnawing pains are doing no good ; but this is a great mistake, as they are of the greatest

value in opening the os uteri, preparatory to the expulsive pains of the second stage.

If a vaginal examination be made, the condition of the os uteri will at once tell whether the pains are true or false. If the pains are true, and the patient in the first stage of labour, the os will be found partially open. During the pain, its edges will become thin, and the membranes or bag of waters will become tense, and bulge through the dilating os. As the pains become more frequent and stronger, the dilatation of the os becomes more apparent. Dilatation is effected partly by the contraction of the longitudinal fibres of the uterus, and partly by the bag of waters bulging through it and acting as a fluid wedge.

The lips of the os should be relaxed, moist, and easily dilatable.

The bag of waters is formed by the segment of membranes, which is exposed by the opening of the os. Its shape, as felt on a vaginal examination, should be round and globular. Sometimes it is felt projecting in a sausage shape, and when such is the case it is a sign either of a deformed pelvis, or a presentation of the fœtus other than the head, *e.g.* breech, shoulder, etc.

The membranes should not rupture till the os is fully dilated; sometimes, however, rupture occurs long before this has taken place. In other cases, they are so tough that they require to be ruptured artificially after the os is dilated. Great care should be taken not to rupture them accidentally before the os is fully opened, as the hard head of the child

does not dilate the os so rapidly or so painlessly as the bag of membranes. When the membranes rupture early, and the waters drain away before the end of the first stage, the patient is said to have a "dry labour," which is always tedious. A dry labour may also occur when there is a deficiency or absence of the forewaters.

The membranes usually rupture in the centre of the os uteri. Sometimes, however, the child is born with some of the membranes enveloping its head; it is then said to be born with a "*caul*." In rare cases the whole ovum may be expelled without rupture of the membranes at all. When the membranes rupture, some of the liquor amnii escapes with a gush. This is called the escape of the forewaters. All the liquor amnii does not come away at this time, as the child's head, lying closely over the mouth of the uterus, prevents it all escaping. Towards the end of the first stage, there is often some sickness and nervous shivering, which are not to be regarded as bad signs.

After the os is fully dilated, and the membranes have ruptured, the second stage of labour begins. This is the stage of expulsion, as it is during this stage that the child is expelled into the world. The danger to the mother and foetus begins after the rupture of the membranes, and this fact must never be lost sight of by the nurse.

After the completion of the first stage, the pains often go off for a little; they soon, however, begin again, but with a great alteration in their nature. If the patient has been previously walking about, or sitting up, she at once

lies down, the uterus contracts closely on the foetus, and the bearing down pains set in. The patient exerts herself to the utmost when each pain comes on, and presses down with all her might to assist the uterus in expelling the child.

To give herself more purchase, she seizes hold of a towel tied to the head or foot of the bed, and presses with her feet on the foot of the bed, at the same time holding in her breath during each pain. The cry in this stage is different; it is indicative of suffering *with* effort, and consists of a series of deep groans in the intervals of the straining efforts. As the child's head is forced farther down in the pelvis, the pains gradually become stronger and more frequent. The exertion of the bearing down efforts causes the face to flush, and brings about free perspiration.

These propulsive pains gradually force the head of the child down into the pelvis.

At the commencement of labour in a first pregnancy (*e.g.* a primiparous woman), the foetal head lies within the brim of the pelvis, but in subsequent pregnancies (multiparous women) it lies above the pelvic brim, and only comes into the brim when labour has begun. When the pelvis is narrow, the head is prevented from entering the brim of the pelvis.

When the head enters the brim, it is said to be "engaged in the pelvis."

In 97 per cent. of cases the child's head is the presenting part, and as labour goes on it gradually descends through the pelvis, and is expelled at the vulva.

When the head is passing over the perineum, the pains become stronger and more frequent, and the suffering caused by the stretching of the parts is so great, that the patient cries out in agony. This, of course, prevents her from bearing down, and thus rupture of the perineum, which in most cases is brought about by too rapid expulsion of the head, is prevented.

The perineum is stretched over the advancing head like a sheet of indiarubber; with each pain it becomes more stretched, and after the pain it recoils by its own elasticity, and forces the head slightly back again. This alternate back and forward movement of the head (which may go on for a considerable time) gradually and slowly stretches the perineum sufficiently to allow the head to glide over it safely. The head, when it is expelled, passes upwards and forwards in consequence of the elastic resistance offered by the perineum, and emerges through the dilated orifice of the vagina and vulva.

After the birth of the head, the rest of the body is usually expelled by a single pain, followed by the remains of the liquor amnii and some blood clot.

The pressure which the head undergoes in passing through the pelvis causes an alteration in its shape, to which the name of "moulding" is applied. After a long, difficult labour, the head has a drawn-out appearance, and resembles a sugar loaf in shape. It is well to remember, however, that it soon resumes its natural shape, however great the deformity may appear at first.

In tedious labours there is always noticed a puffy swelling on the head, which is called the *caput succedaneum*. It forms on that part of the head which lies over the opening of the os uteri, as that part is not subjected to pressure, and is consequently unsupported. It also very soon disappears.

The *third stage* begins after the birth of the child, and

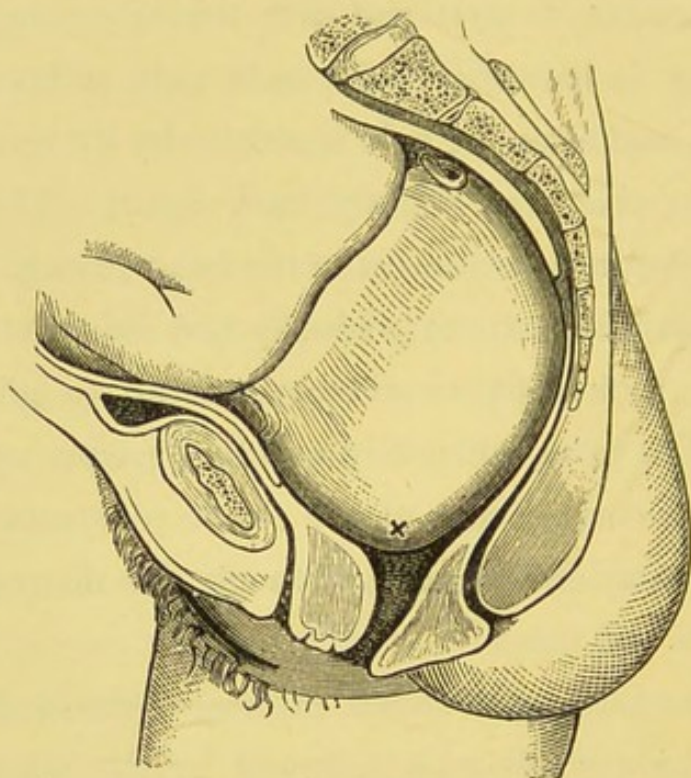


FIG. 21.—Second stage of labour, showing moulding of foetal head and formation of caput succedaneum x.

terminates with the expulsion of the placenta. After the child is born, the uterus contracts on the placenta, which is in this way detached from the uterine wall. The contraction of the fibres of the uterus at the same time closes up the open mouths of the blood vessels, and prevents hæmorrhage, which is the danger to be feared in this stage.

In ten or fifteen minutes after the birth of the child, the uterus usually contracts pretty strongly, and the placenta is expelled from its cavity, either through the vulva or into the vagina, and thus labour is terminated.

With regard to the mechanism of labour, only a few words will be necessary in a book of this nature. As previously mentioned, in 97 per cent. of cases the child presents

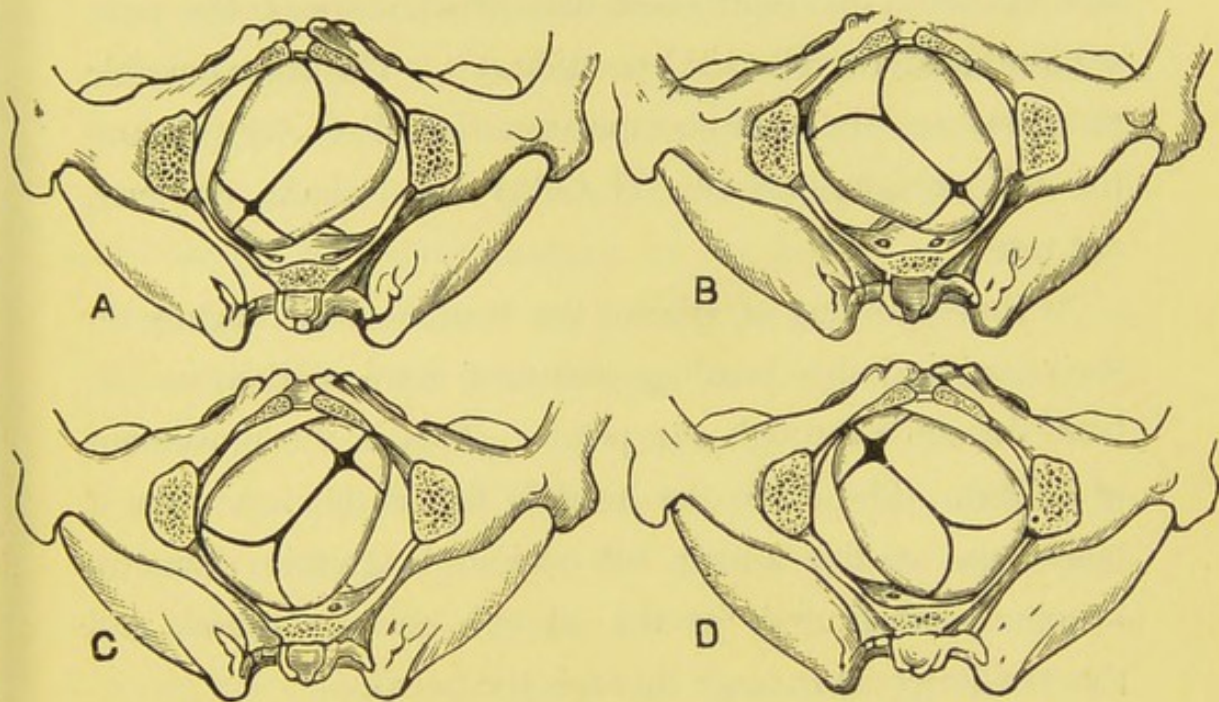


FIG. 22.—Diagram of vertex positions from below.

A, Left occipito-anterior. B, Right occipito-anterior.
C, Right occipito-posterior. D, Left occipito-posterior.

by the head, and in the overwhelming majority of these head cases, the long occipito-frontal diameter of the head occupies the right oblique diameter of the pelvis. The occiput is that part of the vertex which descends first through the pelvis, and which rotates inwards under the symphysis pubis. It is thus called the denominator, and vertex

positions are named according to the situation of the occiput.

In by far the majority of cases the occiput lies forwards, opposite the left ilio-pectineal eminence, and this is the left occipito-anterior (L.O.A.) position of the head (Fig. 22, A).

The vertex position next in frequency is where the occiput lies opposite the right sacro-iliac synchondrosis, the right occipito-posterior (R.O.P.) position (C). The other possible positions are the right occipito-anterior (R.O.A.) (B), and the left occipito-posterior (L.O.P.) (D), which, however, are rare.

At the beginning of labour, the head is bent slightly on the chest, and this bending becomes more marked as the head descends through the pelvis. This is the movement of flexion. The more the head is flexed the less room it takes up, as the 4-inch sub-occipito-bregmatic diameter becomes substituted for the $4\frac{1}{2}$ -inch occipito-frontal, and this facilitates its passage through the pelvis.

The next movement of the head is one of *internal rotation*, which is a movement of the occiput forward under the arch of the pubes. By this movement the long diameter of the head comes to occupy the antero-posterior diameter of the outlet of the pelvis, which is the longest. The occiput now appears under the arch of the pubes, and the face lies in the hollow of the sacrum. Then comes the movement of *extension*. The nape of the neck gets caught under the pubic arch, and is firmly fixed. The pains, however, act

on the front part of the head, and cause the forehead, eyes, nose, mouth, and chin to pass successively over the perineum, and so the head is born. After extension has taken place, with the patient lying on her left side in bed, the child's face looks directly backwards towards the tip of the coccyx. *External rotation* now occurs, and this depends on the movement undergone by the shoulders. One shoulder comes behind the symphysis pubis, and the other moves into the hollow of the sacrum. The head in consequence rotates in such a way that (when the patient is on her left side) the child's face is directed upwards, and the occiput turned downwards to the bed (*i.e.*) to the left. The shoulder which is on the perineum is usually born first, the other one then follows, succeeded by the rest of the body.

In the right occipito-posterior position, the occiput, in rotating under the arch of the pubes, has to pass round the whole right side of the pelvis, and in doing so the vertex necessarily occupies for a time the right occipito-anterior position. Sometimes, in the right occipito-posterior position, the occiput, instead of rotating forwards, rotates backwards into the hollow of the sacrum. This is what is called the persistent occipito-posterior position of the vertex, and the head is born with the face under the arch of the pubes. Occipito-posterior positions always render the labour more difficult and tedious, so much so, that very often skilled assistance is required to complete delivery.

The *duration of natural labour* averages about twelve hours from the beginning of true pains. It is usually longer in primiparæ than in multiparæ. The first stage generally lasts about eight hours, though it may be much longer or much shorter than this. As long as the membranes are unruptured, no harm can befall the fœtus, and there is but little danger to the mother. The second stage should not last longer than three hours in multiparæ, and four hours in primiparæ. If it last longer than this, assistance should be procured, to prevent dangerous consequences resulting, both to the mother and child.

The third stage is usually over in about a quarter of an hour.

CHAPTER XIV.

MANAGEMENT OF NORMAL LABOUR.

UPON being called to a labour, the summons must be obeyed as quickly as possible, because, should anything untoward happen, the blame, whether deservedly or not, is sure to be laid on the expected attendant.

The nurse, if a doctor is also expected, is always sent for first, and ought to know when it is necessary to send for the medical attendant. This is by no means a pleasant situation, for if, on the one hand, she sends too early, she lays herself open to the reproaches of the busy doctor, especially if roused in the early hours of the morning; while, on the other hand, if she sends too late, even though the labour has ended most satisfactorily before the doctor has arrived, she is apt to be blamed both by the patient and her friends. When the doctor is required, the nurse should send a note explaining the nature and necessity of the case, and should not trust to a mere verbal message.

Again, on her arrival, or before the doctor can be got, the nurse may have to combat some serious complications, which may arise at any moment in any labour. These complications, arising so unexpectedly, and endangering, as they so frequently do, the life of both mother and child,

without doubt make this form of nursing by far the most anxious and trying; it therefore requires for its efficient performance the cultivation of a thorough knowledge of the subject, both theoretical and practical, a deep sense of responsibility, a clear head and ready hand.

In readiness for a sudden call, a small hand-bag should be kept, containing—

1. Higginson syringe, with vaginal nozzle.
2. Catheter (gum elastic male).
3. Pair of scissors, and clean nail brush.
4. Hank of strong linen thread, or some narrow white elastic.
5. Safety pins, and clinical thermometer.
6. Small pot of carbolised vaseline.
7. One ounce bottle of liquid extract of ergot.
8. Bottle of corrosive sublimate tablets, 1-2000.
9. An ounce bottle containing crystals of permanganate of potash.

Should the patient be found to be in labour on the arrival of the attendant, information is at once to be sought—first, as to the pains, when they commenced, and their nature, as regards site, frequency, and severity; secondly, as to the condition of the bladder and bowels, as their evacuation is most essential.

As a rule, however, the nurse is engaged to be present a few days before the confinement is expected, during which time the following preliminaries can be satisfactorily attended to.

First, the Room.—This should, if possible, be sunny, large,

and airy, easily warmed and ventilated, thoroughly cleaned, and all unnecessary furniture removed. In small houses the drawing-room is often very suitable. It should be as far away from drainage as possible; it should have an open fireplace and be free from all infection. It is well to see that the drains of the house are in good order some time before the labour.

Second, the Bed.—This should, if possible, be of iron, without curtains, and must be placed in the room in such a position that, when the patient lying upon it is on her left side, the edge to which her back is turned is easily accessible to the attendant.

The bedding should be as plain as possible, not a feather-bed; and across the middle of the bed is to be laid a waterproof sheeting, about a yard in breadth, and covered by a sheet or blanket, doubled over it.¹ By the patient lying on this during labour, the discharges are prevented from soiling the ordinary bedclothes, while its removal is accomplished with little disturbance to the patient after the labour is completed. It is well to have, in addition, a second piece of waterproof on the top of the mattress, which should be left as a protection for at least the first few days of the puerperium. The carpet at the bedside must be protected by a piece of waxcloth or a bath blanket.

Third, the Patient.—The condition of the bowels must be carefully attended to. By so doing, many a tedious labour may be saved, and much unpleasantness avoided.

¹ Hartmann's corrosive wood-wool accouchement sheets are specially to be recommended.

About a week before the confinement is expected, a thorough purge should be obtained by means of castor-oil (tablespoonful), or by whatever aperient medicine the patient is in the habit of taking. This is to be followed each morning by some mild laxative, such as liquorice powder (teaspoonful), or a seidlitz powder, by which a thorough evacuation of the bowels is daily obtained. The patient should have a hot bath as shortly before her confinement as circumstances will admit.

Again, all articles of clothing, &c., likely to be required during the confinement must be held in readiness, viz. diapers, binder, baby's clothes, hot and cold water, &c. Nothing should be left to be sought out during the labour, it being necessary at that time that the nurse should be free to attend to the patient, and to her alone. All articles of clothing must be well aired and warmed before use.

The nurse should have ready in the room—

1. Clean towels (about a dozen), and plenty of napkins.
2. Several clean sheets.
3. Two or three binders, each a yard and a quarter long by half a yard wide.
4. Two clean waterproof sheets, each a square yard.
5. Waxcloth or rug, to protect carpet at bedside.
6. Box of safety pins.
7. Scissors.
8. Higginson syringe, or douching apparatus, in good order and clean. It is well to have a second syringe in case an enema is required.

9. Clean dish for placenta.
10. Bed-pan.
11. Some clean basins.
12. Slop-pail.
13. Brandy or whisky.
14. Abundance of hot and cold water.
15. Two new nail brushes.
16. Antiseptic ointment.
17. Packet of salicylic or corrosive wool.
18. Strong linen thread or narrow white elastic tape for tying the cord.
19. Vaseline or olive oil for cleaning the child.
20. Child's clothing, and a piece of clean flannel to wrap it in at first.
21. Nursing apron, and needles and thread.
22. Child's bath, bath thermometer, puff-box, and Castile soap.

The doctor in attendance will see to the antiseptics, ergot, and chloroform, which are required.

The nurse, of course, should always have the two former with her in her bag in case of need.

Pains having commenced and continued for some time, a vaginal examination should be made, to ascertain if the labour is actually in progress. This should be performed during a pain, and in the following manner. The patient should lie on her left side, with her back directed towards the examiner, the knees well drawn up towards the abdomen, and the hips close to the edge of the bed. Then

the examiner, having washed the hands most thoroughly in some antiseptic solution, and oiled the fore and middle fingers of the right hand with antiseptic oil (not with any handy greasy substance, such as soap, lard, or cold cream), passes these fingers between the buttocks over the perineum till the vulva is reached, and then insinuates them gently between the labia into the vagina.

By now pushing steadily and quietly upwards and backwards into the hollow of the sacrum, the cervix and os uteri are reached, the latter varying in size with the different stages of labour.

By the vaginal examination, the following points should be ascertained :—

1. Condition of the passages.
2. Condition of the rectum.
3. Stage of labour.
4. Presentation of the foetus.

Condition of the Passages.—If soft and moist, other things being normal, a speedy labour may reasonably be expected ; the contrary is to be feared, if they are hot and dry. The size of the pelvis must also be carefully noted.

Condition of the Rectum.—When empty, it is not recognisable ; but if loaded, feels like a sausage-shaped body bulging through the posterior vaginal wall, between the finger and the hollow of the sacrum. If loaded, it must be emptied at once by means of an enema (*see* Chapter XXIII.).

Stage of Labour.—This is gauged by the dilatation of the os uteri ; the first stage lasting till its full dilatation, the

second stage from its full dilatation to the expulsion of the foetus.

Full dilatation is the condition in which the uterus and vagina form one continuous tube, no constriction being formed by the cervix uteri.

Should the os be found quite closed after the continuation of pains, which the patient feels are situated in the abdomen, false pains may be diagnosed.

Presentation of Foetus.—This is difficult to diagnose with certainty when the os is not sufficiently dilated to allow of the entrance of the tip of the finger. The diagnosis will be fully dealt with when we come to consider the individual presentations. It may, however, here be stated that, if the presentation be the normal vertex, the hard globe-like mass of the head will generally be distinctly felt through the roof of the vagina. Should no such presenting part be accessible, the probability is some abnormality exists, in which case there should be no delay in sending for assistance.

Much information as to the presentation of the foetus can be obtained in the later months of pregnancy by examining the abdomen with the hands—*abdominal palpation*. By making deep pressure above the symphysis pubis with both hands, the hard head can be easily felt at the pelvic brim in head presentations. Similarly in breech presentations, the hard head can be felt at the fundus of the uterus, and its absence noted at the pelvic brim. In thin women, the child's back, breech, and limbs can usually be distinctly felt. In cross-births the head will be felt lying in one or other

iliac fossa, the long diameter of the child's body lying obliquely across the mother's abdomen. If two foetal heads can be felt, then, of course, twins can be diagnosed. A little practice will enable a nurse to make these points out with great accuracy on carefully examining the abdomen in late pregnancy with well-warmed hands. The patient should lie on her back with her knees drawn up, and she must keep her abdominal muscles as slack as possible.

The Management of the First Stage.—Should the patient be found to be in labour, the vagina must be thoroughly douched with an antiseptic solution, and the vulva well washed with an antiseptic lotion and cotton wool, after being thoroughly cleansed with soap and water. No sponges must be used. The first stage being that of dilatation of the os uteri, upon examination the os will be found at this time to be more or less open. Further, during each pain, the edges of the os will be found to become tense, and at the same time, should the membranes not previously have ruptured, the bag of forewaters will be distinctly felt to project through the dilated cervix.

The vaginal examination having been commenced during a pain, as previously stated, the dilatability of the cervix, and the strength and effect of the pain, are to be noted; the fingers, however, must be kept in the vagina till the pain has passed off, after which additional information is to be sought.

The pain having subsided, one finger is to be passed through the os, and the condition of its edges noted. These,

if thick and soft, are indicative of rapid dilatation, while, if thin and rigid, the process will be slower.

The bag of membranes will now be found to be flabby, and by gently pressing the fingers upwards, through it will be felt the rounded mass of the head, should such be presenting. If, by gentle pressure, no presenting part can be felt through the membranes, it may be surmised that some abnormality exists. Strong pressure upwards through the membranes should never be made, as they may be ruptured, and the most efficient factor in the dilatation of the cervix thus lost. The membranes are also liable to be ruptured if pressed on during a pain when they are tense; examination through the os should therefore never be attempted at this time. Having satisfied oneself that the labour is progressing favourably, and so far as can be made out everything is normal, further examinations are only to be made at long intervals. If too frequently performed, they only tend to irritate the cervix, and thus delay its rapid dilatation.

After examination, the examiner is frequently asked if all be right, and how long the labour is likely to last.

To the first question, if all be well, at once say so to the patient. If not, however, it is better to conceal the fact from the patient, although telling the friends.

To the second question, one should never commit oneself by a definite answer, it being impossible to foretell the duration of any labour. It is better to say that all depends on the strength of the pains and the patient's own exertions. During the first stage, the patient is to be encouraged to get

up and go about, and also told not to bear down during the pains, as by so doing she is only wasting her strength. Should any food be desired, beef-tea, warm milk, or tea may be given with advantage. No stimulants must be given unless under medical advice.

During this stage, also, the nurse should get everything in readiness, such as,—plenty of hot and cold water; this is most essential. Baby's clothes, diapers, and binder, hung before the fire to air; and linen thread, scissors, and pins put in a handy situation.

Management of Second Stage.—After full dilatation of the cervix has taken place, the labour enters the second stage. The nurse should now send for the medical attendant, if one has been engaged. If not, she should proceed to rupture the membranes, if rupture has not already occurred spontaneously. This is most satisfactorily performed by scraping firmly upon the presenting bag of forewaters during a pain, with the finger nail. On rupture of the membranes, there is usually a gush of liquor amnii, for the reception of which a bowl or bed-pan should be held at the vulva, to prevent unpleasant soaking of the bedclothes. With the gush of water the head or presenting part will generally advance well into the brim of the pelvis.

A thorough examination must now be made, to ascertain, first, the position of the foetus; and, secondly, that there is no prolapse of the cord, as now is the time that such is likely to occur.

The patient, during this stage, is to be kept in bed, lying

on her left side, and a stool or some such article placed at the foot of the bed, for the feet to press against during the pains, which are now of a bearing down character. The nurse must see that the patient relieves her bladder from time to time.

All clothes are to be taken off, with the exception of stockings, a flannel petticoat cut up the back, and a clean night-dress, the latter being tucked well up under the arms, to prevent soiling. By this means the great annoyance and risk of changing clothes after the labour is over, are avoided.

Encouragement is to be given to the patient to bear down during the pains, their strength and efficacy being thus increased. Counter pressure over the sacrum during the pains is usually a great comfort to the patient. If cramp occurs, it is to be treated by straightening the affected leg and rubbing it.

Examinations may now be made more frequently (every half hour), to ascertain if progress is being made; and the external parts should be occasionally cleansed with pledgets of wool moistened with antiseptic lotion.

The head continuing to advance, when it reaches the pelvic floor, bulges the perineum, and slowly dilates the vulva. This can be distinctly seen, and renders further digital examination unnecessary. A pillow can now be placed between the knees, or the nurse can raise the right thigh during the pains. Frequently the doctor gives a little chloroform at this stage. In preparation for this the nurse should see that false teeth are removed, and that the patient's head

is low. A little vaseline or glycerine smeared over the nose and cheeks prevents the chloroform from blistering the skin.

As the head advances, the perineum becomes much thinned out over it, appearing as if at any moment rupture might take place, and enticing one to give it support. This is a form of treatment, however, on no account to be adopted, ruptures being favoured rather than prevented by so doing.

If, however, the perineum be very rigid, and the pains are very strong, hot antiseptic fomentations may be gently applied to it, or its inner surface lubricated with carbolic oil (1-20), and counter pressure applied directly to the advancing head, to prevent its too rapid expulsion, the patient meanwhile being counselled to cry out, to prevent bearing down, so as to give time for the vaginal orifice to stretch. Half an hour or more may be required to effect this. The head, on being born, should be received in the right hand of the attendant, whose fingers should be now passed round the neck of the fœtus to ascertain whether a loop of cord is constricting it. If such be the case, the cord is to be slipped over the head, from the occiput forwards over the face. See that the child's head does not lie in a pool of fluid.

The left hand is now to be placed over the abdomen, on the fundus of the uterus, and thereon, during the next pain, steady pressure is to be exerted, by which means the birth of the shoulders and body is assisted, and the complete contraction of the uterus ensured. Do not try to deliver the body of the child by pulling on the head, a process which appears so tempting. By so doing, not only is there

a great risk of injuring the child severely, but also the natural mechanism of labour is so seriously interfered with, that rupture of the perineum is a frequent result. There is but little doubt that this method of delivery, by traction, is one of the most fertile sources of severe lacerations of the perineum.

By the "expression" method, on the other hand, not only is the natural mechanism assisted, but the cavity of the uterus, being compressed as it becomes emptied, affords an efficient preventive against post partum hæmorrhage.

After the complete birth of the child, a teaspoonful of ergot (liquid extract) may be administered to the mother.

The child, on being born, usually at once begins to breathe and cry. To prevent the inhalation of blood or mucus, the mouth and nose should as soon as possible be thoroughly cleansed. Should breathing not begin almost immediately, cold water sprinkled over its back or chest will generally stimulate it to do so. Should this prove insufficient, other methods of resuscitation will have to be had recourse to (*see* Artificial Respiration, Chapter XXII.).

The separation of the child from the mother should now engage the attention. This is accomplished by ligature and division of the umbilical cord, thus :—

Pulsation in the cord having ceased, two ligatures of stout linen thread, four ply, or white elastic (one ply), are to be tightly applied round the cord, at a distance of about two or three inches from the body of the child, and the cord divided between them by means of a pair of scissors.

The piece of cord attached to the child having been

examined carefully for bleeding and found satisfactory, the child should now be wrapped up in a blanket, and deposited in a safe and warm place, and attention again directed to the mother.

During the short interval in which the attendant is engaged in ligaturing and dividing the cord, it is well that the assistance of some of the friends should be obtained to grasp the uterus from above, relaxation of the uterus and consequent hæmorrhage being thus efficiently guarded against.

Perhaps the most important part of the attendant's duty yet remains to be performed, viz. the management of the third stage. By its efficient performance, not only are the immediate risks of post partum hæmorrhage, &c., minimised, but also the remoter evils of septicæmia, subinvolution, &c., prevented.

The attendant should now grasp the fundus uteri with her left hand, and firmly hold it. The uterus, if at all firmly contracted, is easily recognised as a hard rounded mass about the size of a foetal head, lying in the lower part of the abdomen, about as high as the umbilicus.

The hand over the fundus should be retained quietly in that position for about fifteen minutes, during which time slight alternate softenings and hardenings of the uterus will be felt, due to relaxations and contractions respectively.

At the end of this time, should the placenta not already have been expelled, the uterus should be more tightly grasped during a contraction, and firmly pressed down in the axis of the inlet of the pelvis; by this means one will

seldom fail to express the placenta. If, however, the attempt be unsuccessful, desist from pressing for a few minutes (the hand still resting on the fundus), and then repeat the process, directing the patient to bear down at the same time.

The placenta, while being extracted from the vulva, is to be caught by the hands and twisted round and round; by this means the membranes, which are still retained in the uterus, are twisted into a rope-like form, by which there is less risk of their being torn, and their complete removal is more effectually accomplished.

Never, under any pretext, attempt to deliver the placenta by pulling on the cord, as by so doing inversion of the uterus, post partum hæmorrhage, and incomplete delivery are favoured. Should delivery of the placenta not have occurred within an hour of the birth of the child, assistance must at once be sought.

Occasionally, though expelled from the uterus, the placenta may remain lying in the vagina, from whence it may easily be removed by introducing a couple of fingers into the vagina and hooking it out, the usual precaution of twisting being again rigidly adhered to. Thus it is well, in cases of supposed retained placenta, to make a vaginal examination, to ascertain that it is not merely retained in the vagina. Sometimes in these circumstances, if the patient coughs or sneezes, expulsion of the placenta is brought about. It is thus well to try this simple expedient when in difficulty. The position of the placenta is easily ascertained by following the umbilical cord with the fingers, when, if it be found

to be attached to a body (placenta) in the vagina, the whole may be easily removed ; while if, on the other hand, it be found to pass through the cervix uteri, it is evident that the placenta is retained in the uterus, from whence its removal is only to be attempted by a qualified person.

After the complete removal of the placenta, the hand is still to be retained grasping the uterus for at least ten minutes, and until it is felt to be hard like a ball, after which it may safely be left, and the toilet of the patient attended to.

All dirty clothes, sheets, and the "Mackintosh" are now to be removed, the external genitals thoroughly washed with an antiseptic solution, and a diaper placed over the vulva. The binder is now to be applied, and the pinned-up clean night-dress pulled down, the patient being made in all other respects comfortable. The performance of the above duties must be done with the least possible movement of the patient.

The binder is best made of cotton, and should be four feet long and eighteen inches broad, a handy substitute being a bolster-slip. Its use is to give comfort to the mother, and perhaps, to a certain extent, to preserve the figure, not, as erroneously though popularly supposed, to prevent hæmorrhage. It likewise maintains abdominal pressure, and prevents suction of air into the vulva immediately after labour. Thus it will be seen that the binder should on no account be applied till it is ascertained that the uterus is firmly contracted, and has remained so for at least a quarter of a hour. In applying the binder, care

should be taken that its lower edge embraces the body below the prominence of the hip bones, while its upper edge should pass round the body about the level of the lower end of the breast bone.

The binder is best put on by rolling it up to half its length, passing the roll underneath the patient's back, and then straightening it carefully and evenly out.

It is most easily fastened by stout safety pins, and should be drawn tightly at its lower edge, the upper edge being left slacker, so as not to hamper respiration. It is also well to place a folded towel between the uterus and binder, so as to keep up pressure.

The patient may now, if she desire, partake of some light nourishment, such as beef-tea, and then be allowed to rest. Before the patient is left to sleep, the pulse must be carefully counted; this, if found to be under 100 beats per minute, is evidence that all is satisfactory; but, on the other hand, should the beats exceed the above number, impending or actual hæmorrhage is to be suspected. This must at once be investigated, by feeling if the uterus be firmly contracted, and by examining the diaper for any excess of blood.

Provided everything be satisfactory, the room should now be darkened, and quietness enforced, so that the patient may enjoy a well-earned rest.

All soiled linen must be removed from the room, and the placenta should be taken away to be burned, and not left lying about, in or near the lying-in room. The placenta must not, however, be destroyed till the doctor has examined it.

CHAPTER XV.

THE NORMAL PUERPERIUM AND ITS MANAGEMENT.

By the term puerperium is meant the period between the completion of labour and the return of the sexual organs to their natural state, a process which takes from six to eight weeks for its completion.

For part of this time only is it necessary for the mother to be confined to bed; but during the whole period more than usual care is to be taken, and over-exertion strictly avoided.

During this period, by a process called "involution," the uterus becomes diminished in length from about 7 to 3 inches, and in weight from 2 pounds to about 2 ounces. This diminution for the first ten days is both rapid and definite, and can be easily noted by the attendant, the fundus uteri being distinctly felt through the abdominal walls at the respective levels mentioned in the subjoined rough but practical table:—

[TABLE.

DAY.	POSITION OF FUNDUS UTERI.
1	2 fingerbreadths above the umbilicus.
2	1 " " "
3	} At level of the umbilicus.
4	
5	1 to 2 fingerbreadths below the umbilicus.
6	Midway between umbilicus and symphysis pubis.
7	} 3 fingerbreadths above symphysis pubis.
8	
9	2 " " " "
10	1 " " " "
11	} At brim of pelvis.
12	

After the twelfth day, the uterus is no longer to be distinctly felt through the abdominal wall, and the process of involution becomes much slower and less definite.

From the vagina there is a discharge called the "lochia," which continues for a period varying from ten days to three or four weeks. For the first three or four days, this discharge is of the nature of pure blood; after this it becomes more and more watery in consistence, till at length no appearance of blood is evident. The amount decreases gradually; sudden stoppage, however, is a warning of mischief. The smell of the lochia is peculiar and heavy, but should never be foetid.

Immediately after labour, there is usually a small quantity of milk found in the breasts, but its active secretion does not commence till about the third day of the puerperium, this being frequently immediately preceded

by a slight rise in the temperature, popularly called "the milk fever." The breasts at this time become much enlarged, and tense and knotty to the touch, while the veins on the surface may be seen engorged and prominent.

The first milk secreted, "the colostrum," is of a peculiar consistence, and has a purgative action, which is of service in clearing out the meconium from the bowels of the child.

Lactation should on no account extend over a longer period than nine months, the child after this time being more benefited by cow's milk and other food. During lactation, menstruation is stopped; on the recurrence of the latter, at whatever time, the child should as a rule be weaned. Recurrence of menstruation in those not nursing takes place usually within three months.

Management of the Puerperium.—The great essentials of the management of the puerperium are rest and cleanliness, in attention to which the secret of success chiefly lies. The want of care in carrying out these two principles constitutes the most fertile cause of serious complications, both immediate and remote. The nurse should sleep within call of the patient, but in a separate bed; she must give no medicine without instructions, and tell the doctor at once if there is anything abnormal, but must never alarm the patient.

After the labour is terminated, and the mother made comfortable, as described in the previous chapter, rest and sleep for two or three hours should be encouraged. Should

she desire some little nourishment before this (which is unlikely), a drink of milk, tea, or soup may be given.

Very often, shortly after labour, especially in primiparæ, there is manifested a severe shiver, unattended with any feeling of cold, a condition which, though apt to appear alarming, quickly passes off without any bad effects, being probably due to some form of nervous excitement. It should be treated by giving a warm drink of tea, putting a hot-water bottle to the feet, and adding an extra blanket. Should there be a recurrence of shivering, the temperature must be taken. The patient should lie on her back for the first few hours; later, the posture should be frequently changed. She must not sit up in bed for at least the first week. Flooding, fainting, or sudden death may result from sitting up too soon.

After the mother has rested, the child may be placed to the breast, and an attempt at suckling made, by which means, from the close nervous connection between the breasts and the uterus, the latter is stimulated to contract firmly, and secondary hæmorrhage guarded against. Application of the child to the breast thus also frequently proves of much value in severe after-pains, by causing the uterus, through contracting, to expel retained clots, from the retention of which the pains arise. Furthermore, the nipples are drawn out more easily before the breasts become tense.

The room should be well ventilated, and not kept too warm, a temperature of 60° F. to 65° F. being ample. Soiled linen must be removed at once. Diapers should be

soaked in 1 to 2000 corrosive solution, and then thoroughly dried and warmed before use. They should always be boiled in the washing. Clean diapers should be applied every three hours for the first four days, after which the number is to be lessened according to the amount of discharge. A preferable substitute for the ordinary diaper is sublimated absorbent cotton wool, or "wood wool," a pad of which is placed over the genitals, and kept in position by a napkin passing between the thighs and pinned to the binder before and behind.¹ When soiled, the wool is at once burned, and a fresh pad applied; by this means the risk is avoided of the application of an insufficiently clean diaper. The external genitals are to be cleansed with warm antiseptic solution and cotton wool every time the diaper is changed,² and, *should it be the desire of the medical attendant*, the vagina douched out occasionally with 1 to 4000 warm corrosive solution as he directs. Douching, however, should not be undertaken by the nurse on her own responsibility. *Nothing must be allowed to touch the genitals that has not been previously cleansed in an antiseptic solution.* No foetor must be allowed. Soiled linen should be removed from the room at once. The patient should be sponged with a fresh flannel and warm water every two or three days, only a small portion of the body being done each time.

The temperature and pulse should be taken night and

¹ "Wood wool" or "sanitary" pads are sold for the purpose.

² Antiseptic tow or a freshly boiled piece of coarse muslin can be also used as substitutes for sponges. Either is cheaper than salicylic or corrosive wool, and they are likewise to be burned after use.

morning. The temperature, if above 100° F., should at once arouse suspicion, especially if associated with a quick pulse. Transitory elevations of temperature, however, are frequently met with, due probably to some slight nervous derangement. These may be diagnosed from their disappearance within a few hours, and the acceleration of the pulse being absent.

The pulse is a most valuable indicator, and should always be closely watched. From 60 to 90 beats per minute may be taken as the range of safety. If, shortly after labour, it is found to be quick, *i.e.* over 100, hæmorrhage is to be suspected; while, if the like occurs later in the puerperium, even though unattended with an elevated temperature, inflammatory mischief is to be apprehended.

As a broad rule, therefore, it may be said that, if the pulse and temperature are under 100 beats and degrees respectively, the patient is in a satisfactory condition.

The diet cannot be laid down in definite form, as it must be regulated very much according to the patient's wish. Immediately after labour, some warm soup or milk may be given if desired, this liquid form of food generally sufficing for the first two days, the appetite during this time being usually feeble. Should the appetite be keen, it is well to restrict the diet to white meat, chicken, rabbit, and fish, combined with milk puddings and other light dishes. After the third day, when passage from the bowels has been obtained, and in the absence of exhaustion, fever, bad digestion, or loss of appetite, ordinary diet may be commenced, keeping in mind, however, that if the mother be

nursing, milk and farinaceous food, viz. bread, corn flour, tapioca, etc., should form by far the greater proportion. No stimulants are to be given unless medically ordered. For at least the first week, the patient ought to be kept very quiet, no one but the husband and nearest relatives being allowed access to the room, gossiping neighbours being rigorously excluded. Absolute rest in bed must be enjoined for at least nine days. From this cause, the bed cannot be properly "made," but one side can be shaken up while the patient lies on the other, clean bedclothes being substituted for soiled ones with as little disturbance to the patient as possible. After rising on the tenth day, great caution must be observed, exertion being gradually increased, and fatigue avoided for at least a month.

Too great stress cannot be laid upon the rules of rest above mentioned, their adoption being the great secret of success in the treatment of the puerperium, while their infringement is the most potent cause of most of the pelvic troubles to which parous women are liable.

The bowels in lying-in women being generally confined, a purge should be given if they have not acted spontaneously within forty-eight hours; castor-oil (small tablespoonful), Gregory's mixture (small teaspoonful), or a simple enema of soap and water, is generally efficient. Should the patient be troubled with painful piles, they should be fomented with an antiseptic lotion, and a medical man should be consulted.

Attention to the voidance of urine is very essential, special care being taken to secure that this takes place

within eight hours of delivery, and every eight hours subsequently. If this does not occur spontaneously, means for its accomplishment must at once be had recourse to (*see Retention of Urine, Chapter XVI.*).

Before leaving this important part of the work, apology need not be sought for again impressing the necessity of cleanliness and antiseptic precautions throughout the entire lying-in period. Their strict observance without doubt plays the most important part in the management of labour and the puerperium, and by attention to them, the practice of midwifery has been robbed of its most potent attendant risks; and from them, almost from them alone, the would be successful attendant must look for her prosperity.

When the child is still-born, or where, for some other reason, the milk has to be put away, the patient must take as little fluid food as possible. Unless the tension of the breasts be very great, it should not be relieved by the breast pump, as this simply causes more milk to be secreted, and renders it more difficult eventually to disperse the milk. To relieve tension, hot fomentations applied every few hours are most useful, the breasts at the same time being covered with lint soaked with eau-de-Cologne and water (1 part eau-de-Cologne to 4 of water), and covered with oiled silk. It is, as a rule, advisable to administer a dose of opening medicine at the same time—for instance, one or two ounces of Henry's solution of salts; this however, should be seen to by a doctor.

Belladonna plasters (*Chapter XXIII.*), or some extract of

belladonna and glycerine, applied to the breasts, greatly assist the dispersion of the milk. Two belladonna plasters, each 6 inches by 6 inches, will be enough for the breasts; the nipple must not be covered, and the plasters should be left on for a week. The breasts may also be bandaged (*see* Chapter XXIII.). The removal of the plasters is most easily and painlessly effected, by raising the edge and sponging them off with a swab of cotton wool soaked in turpentine, the skin being afterwards well washed with soap and warm water.

Points to be noted at least twice daily by the nurse, during the first week or two of the puerperium:—

1. *Pulse.*
2. *Temperature.*
3. *Evacuations of Bladder and Bowels.*
4. *State of Breasts and Nipples.*
5. *State of the Abdomen*; if swollen or tender on pressure.
6. *General Condition of the Patient—Pains, Shivers, Appetite, Condition of Tongue, Expression and Colour of Face.*
7. *Condition and Size of Uterus.*—There should be no tenderness on pressure over the uterus. The uterus is pushed up by a full bladder or rectum.
8. *Character and Amount of Lochial Discharge.*—Watch especially the amount of discharge during the first three hours after labour. There should never be a foetid odour at any time in the puerperium.
9. *Amount of Sleep.*—In addition to her night's rest, the patient should sleep for an hour or two every afternoon during the puerperium.

CHAPTER XVI.

COMPLICATIONS OF THE PUERPERIUM.

1. *After Pains.*—These are due to intermittent uterine contractions, the result of some clot, piece of membrane, or fragment of placenta being retained in the cavity of the uterus, and causing irritation of that organ. They are occasionally very severe, many women dreading them even more than the pains of labour.

They may generally be avoided, or at least lessened, if care be taken to have permanent and complete contraction of the uterus after labour. Multiparæ suffer from them much more frequently than primiparæ, their occurrence in the latter being rare. Being the efforts of nature to prevent hæmorrhage, and expel coagula from the uterus, they must be looked upon as salutary. The application of the child to the breast is apt to increase their severity.

They are generally most effectually alleviated by compression of the uterus, and a teaspoonful dose of ergot, as described in the chapter on Delivery of the Placenta; should this fail, a quarter-grain morphia suppository introduced per rectum will frequently be found to give immediate relief.

2. *Retention of Urine.*—This is a common complication, and one which the nurse should always be on the lookout for, especially in primiparæ. The causes are numerous, but it is generally due to swelling and tenderness of the vulva, the result of the stretching and pressure exerted upon it by the head of the child. It may also be due to tears of the perineum, and even to simple nervousness or hysteria.

From the want of desire of the patient to voluntarily pass water, the condition is frequently overlooked. Therefore it must specially be impressed on the attendant to see that the patient has passed water at least once within eight hours of the termination of labour. Always make sure that the patient has really passed urine, as she may think she has done so when she has really passed none.

If the urine be retained for over twenty-four hours, a distinct tumour will be found occupying the lower part of the abdomen, while retention much beyond this time occasions a dribbling away of water,—giving rise to an erroneous impression of “incontinence,” instead of “retention.”

The treatment consists, first, in stimulating normal micturition by means of warm antiseptic fomentations applied to the vulva, suprapubic pressure, the sound of running water, rectal injections of warm water, or turning the patient carefully round on her hands and knees; and, secondly, if these means are unsuccessful, in drawing off the water by means of a catheter. The latter should, however, on no account be attempted till a fair trial has been given to the

former. In severe cases, voluntary micturition is often not performed for over a week, under which circumstances the water must be regularly drawn off every eight hours at least. Should "catheterisation" be required, the most scrupulous care must be taken in regard to cleanliness, as many serious consequences, "cystitis," &c., owe their origin to the use of a dirty catheter. The instrument should therefore be thoroughly washed in solution of carbolic acid (1-40), immediately before and after use (*see* Chapter XXIII.).

3. *Pelvic Inflammation*.—This complication is of comparatively frequent occurrence, and is the result of a variety of causes, perhaps the most frequent being the absorption of septic matter. In fact, in many cases, it may be looked upon as an abortive puerperal fever. It also may be caused by excessive exertion soon after delivery, too early rising, chills, &c.

The symptoms are, pain over the lower part of abdomen, or localised in one or other side, which is exquisitely tender to the touch; elevation of temperature to over 100° F., and increase of the pulse rate from 100 to 120; suppression of lochia, and a number of other local and general symptoms more or less constant, such as nausea, vomiting, painful micturition, and straining at stool.

These symptoms may show themselves within a few days of delivery, but they may not be manifested for weeks, even months. Occasionally there is little or no pain, or other symptom, with the exception of a raised temperature, and

increased frequency of pulse, specially marked in the evening. Should these conditions exist, mischief is to be apprehended, and the patient is on no account to be allowed to rise, as abscess formation may occur at any time. For the above reason, it will be seen how important it is to take the pulse and temperature morning and evening, till the patient is quite convalescent.

Should the inflammation go on to abscess formation, the temperature and pulse will probably be found to rise suddenly higher ; while, later, there may be a discharge of pus from the vagina, rectum, or bladder. The condition of the patient, even at the best, is serious, not so much perhaps from any immediate danger to be apprehended, as from the tedious nature of the disease, many cases of permanent ill-health owing their origin to this cause.

The treatment should always be relegated to qualified persons, but much temporary relief may be given by the application of hot turpentine stupes to the abdomen ; rest, absolute quiet, and light diet being, of course, necessary adjuncts.

4. *Mammary Complications.*

(a) *Excoriation of Nipple (an abrasion of the surface).—*A most painful affection, frequently occurring in cases of insufficient projection of the nipple, but also due in a number of cases to want of cleanliness. It is the general starting-point of that still more painful affection,

(b) *Fissure of Nipple.*—This is a crack, generally situated at the base of the nipple, often so small as to require minute

examination for its detection, yet so exquisitely painful that the application of the child to the breast causes the mother unbearable anguish.

The treatment consists in brushing the surface of the excoriations with tinct. benzoin co., borax and glycerine, or dusting with tannin powder, while suckling should be performed through a shield. In treating fissures, nothing will be found more effective than touching them very carefully with a nitrate of silver pencil.

Prevention, however, being better than cure, it is well to recommend the mother, during the later months of pregnancy, to prepare her nipples for nursing, by bathing them daily with weak whisky and water, a weak solution of alum, or some other mild astringent, and by anointing them daily with cold cream.



FIG. 23.
Nipple shield.

During nursing, the utmost cleanliness must be exercised, the nipple being carefully sponged with boracic acid solution before and after each application of the child to the breast.

(c) *Abscess of Breast*.—This may occur at any time during lactation after the first ten days, but is most frequent during the first two months. Its causes are various, and sometimes trivial, but by far the most frequent is fissure of the nipple.

It is generally ushered in by some shivering, headache, and rise of temperature and pulse, the affected breast feeling tense, painful, and throbbing. At first no change is to be

recognised, but shortly a localised swelling appears, over which the skin becomes red and fiery. The affection is most painful, and its treatment is the work of a medical man, from whom advice should at once be sought, as energetic treatment may arrest its progress.

The hard, tense condition of the breasts so frequently met with at the commencement of lactation should not be mistaken for a commencing abscess. The rise of temperature and pulse when present are transitory, and the condition is most efficiently treated by gently rubbing the breasts with warm oil. An inflamed breast, however, must not be rubbed. Support by means of a bandage is useful when the breast is over-distended, and the application of the breast pump is necessary if the child is unable to draw off sufficient milk to relieve the discomfort.

5. *Phlegmasia alba dolens*, or white leg, is a most painful affection, occurring most frequently during the second week of the puerperium in women previously debilitated, or who have been subjected to excessive loss of blood during labour. It is characterised, first, by intense pain; and secondly, by swelling of one or both legs. It is ushered in by a rigor or a shiver, rise of temperature and pulse, general feeling of uneasiness, and other symptoms of inflammation. The pain usually commences in the groin, and spreads downwards over the thigh and leg, following closely the course of the large vein and its branches; occasionally, however, the pain is first felt in the calf, from whence it spreads upwards towards the groin. After about twenty-

four hours, swelling of the limb commences, generally associated with slight abatement, though by no means entire removal, of the pain. The affected limb soon acquires a characteristic condition, becoming tense, brawny, and exquisitely tender to the touch, and of a white, shining appearance, while running over the surface may be seen a number of red lines, marking the course of the inflamed vessels.

This acute condition having lasted for a week or a fortnight, the pain and symptoms of inflammation decrease, while the swelling slowly goes down; this latter is at the best an extremely slow process, and takes many weeks to be completed.

The disease is due to an inflammation of the veins, with a clotting of the blood in their interior, which gives rise to more or less blocking of the circulation through them.

The treatment locally consists primarily in absolute rest, and alleviation of the pain by the application of flannel cloths wrung out of hot water, and sprinkled with laudanum; after the pain has subsided, the foot is to be kept raised, and the leg bandaged from the toes upwards with flannel or elastic bandages. On no account is rubbing to be practised.

Undue haste in attempting to exercise the leg, by walking or otherwise, is to be avoided, first, on account of the frequent occurrence of relapse; and secondly, from the fact that a piece of the clotted blood may be thus forcibly

detached from the walls of the vein, and carried by the circulation through the heart into the lung, giving rise to

6. *Embolism of the Lung*.—This most terribly fatal complication often comes on with appalling suddenness in a person apparently in good health, and gives rise all at once to an intense feeling of suffocation; the patient gasps for breath, becomes intensely white or purple, and dies in a few minutes, before aid can be got.

This complication is occasionally not quite so rapid in its course, but the same feelings of suffocation are experienced, associated with an intense feeling of weight in the chest, bounding, irregular pulse, and livid countenance. A perfectly clear mind is associated with this condition, and increases the suffering from the fear of impending death, which eventually takes place from suffocation in the majority of cases. Recoveries are, however, recorded, though rare. Strict rules for treatment, which is generally inefficacious, cannot, of course, be laid down. The great thing is to keep the patient absolutely quiet in bed for the first week, at least, after delivery; allow her to make no efforts of any kind, and by so doing, the risk of this complication is greatly diminished.

7. *Puerperal Insanity* may be of one of two varieties—mania and melancholia.

Mania, which is the commoner type, generally manifests itself during the first fortnight of the puerperium.

The patient, having suffered for several nights previously from sleeplessness, commences to show signs of irritability and excitement, laughing at one time inordinately without

cause, crying with equal unreason at another, sometimes accusing her friends and attendants in the most absurd manner, and generally having a strong antipathy to those who are nearest and dearest to her, and especially towards her infant. In many cases there are marked symptoms of febrile disturbance.

Melancholia is generally met with later on in the puerperium, after the first month. It is more insidious in its onset. The patient becomes morose in temper, seeking solitude to brood over her imaginary woes, perhaps the most frequent of which is the thought of having committed some unpardonable sin, which has effectually placed her beyond the pale of salvation. The love of life, both as regards herself and others, is generally lost, while the presence of relatives and friends is odious and irritating.

Of the two forms thus described, the latter is by far the graver, being more apt to result in permanent insanity; mania, on the other hand, generally runs its course in a few weeks, restoration to health being generally complete. Unfortunately, however, it has a decided tendency to recur with each successive pregnancy, each succeeding attack being more severe and prolonged, and tending towards permanent madness.

The treatment, as far as the nurse is concerned, consists in the strictest watchfulness, to prevent bodily harm being done by the patient to herself or others. The child especially should be removed, as hatred towards it is one of the most frequent symptoms. Attempts to occupy the

mind by means of reading, working, or recreation should be insisted on, while nourishing and stimulating diet is required, there being, as a rule, a great falling off in bodily strength.

8. *Puerperal Septicæmia*.—Properly known as “child-bed fever,” is an infectious disease, brought about by the absorption of poisonous material into the system through wounds in the genital canal, the result of childbirth.

As has been already shown in Chapter II., this poisonous matter may, on the one hand, be formed by the decomposition of blood clot, or fragments of placenta or membranes which have been retained in the uterus, the patient becoming thus self-infected; or, on the other hand, it may be brought to the patient by the attendant in numerous ways.

Different though the poisons are, they all seem to agree in giving rise to an affection similar in character in all cases. The symptoms are very varied, the most constant being a peculiar sunken expression and a high pulse rate. The temperature frequently is high, but may be below the normal. Pain is variable, both as regards severity and locality. Occasionally, in the severest cases, no pain whatever is experienced; while, on the other hand, its intensity may be extreme all over the abdomen (peritonitis). Pain may also be experienced in the joints or chest only (pyæmic variety).

It is generally ushered in about the third day of the puerperium by a severe shiver, attended with fast pulse, high temperature, and more or less sickness. It may run a fatal

course within a few days, but more frequently continues over two or three weeks, death generally resulting from exhaustion. Delirium and unconsciousness are nearly always present before a fatal termination. Recovery is happily now much more frequent than formerly, through the improved methods of antiseptic treatment; but, unfortunately, a large percentage of cases still prove fatal. Those patients who are most liable to puerperal fever are—

1. Those who have had tedious labours.
2. Primiparæ, because they have usually more wounds.
3. Those who have required a great deal of operative interference.

It must be borne in mind, however, that it may occur in the simplest and easiest labour if care be not taken.

Enough has already been said as regards preventive treatment in Chapter II. But no apology need be offered for again impressing on the nurse the absolute necessity of thorough cleanliness and antiseptic precautions being observed in all cases, whereby the risk is reduced to a minimum,—prevention, in all cases, being infinitely better than cure.

CHAPTER XVII.

ABNORMAL LABOUR — CAUSES OF DELAY DURING FIRST STAGE, DUE TO FAULTS IN THE POWERS, PASSAGES, AND PASSENGER.

ABNORMAL labour is divided by authors and teachers into a number of groups, which renders a thorough knowledge of the subject both tedious and difficult. To overcome this difficulty as far as possible, it is perhaps well for practical purposes to consider it under three heads only, viz. :

1. Precipitate labour.
2. Delayed labour.
3. Complicated labour.

A precipitate labour is one in which the process of parturition is terminated too rapidly. It is the result of increase of the powers, diminution of resistance, or both combined.

That a speedy termination should be considered abnormal, at first seems strange ; but when it is explained that in these cases there is much danger of prolapse and inversion of the uterus, ruptured perineum, and post partum hæmorrhage, it will be evident that it has been properly

classified. Little treatment is applicable beyond telling the patient to refrain from bearing down; and if time allows, the application of counter pressure by the hand on the presenting part of the foetus as it passes through the vulva, to try and prevent tearing of the perineum.

Labour may be terminated before any assistance is at hand, or even before the patient has time to reach her bed, with the result that the child and placenta are expelled on to the floor. Should the child be expelled and the placenta retained, the cord may be torn. Sometimes, however, the cord is strong enough to bear the weight of the falling child, in which case the strain on the uterus is often sufficient to cause prolapse or inversion of that organ.

Delayed Labour.—To give a strict definition of delayed labour is perhaps impossible; but, as a rule, it may be laid down that such is present if the first stage exceeds eight hours, the second stage three and a half hours, and the third stage half an hour.

From its very indefinite nature, and the large number of causes of a more or less dangerous character to which the delay may be due, a thorough knowledge of these causes is required. When the cause of delay and the amount of difficulty thereby occasioned are recognised, early assistance can be sought when necessary, and thus many a dread complication may be averted, and many a life, both maternal and foetal, saved.

The causes of delay will be more easily understood if they are considered as they occur during the first, second,

and third stages of labour respectively, the delay in each of which being described in order, as due—

First, to the powers.

Second, to the passages.

Third, to the passenger.

We shall therefore proceed to consider the causes of delay due to the powers, which, being the same in all three stages, need only be considered here once and for all.

Delay on the part of the powers is due to deficiency in contraction of either the uterus itself, or the accessory muscles (abdominal muscles). The former is by far the more important, the action of the accessory muscles being of very secondary value, many labours terminating satisfactorily without their aid.

Weakness of the uterine contractions is called "*inertia uteri*." It is the commonest of all causes of delay, and is most frequently met with in women who have had several pregnancies in rapid succession, and in elderly primiparæ. In many cases a definite reason for its occurrence cannot be found.

The contractions of the uterus are frequently temporarily suspended by mental shock; thus the abrupt entrance of the nurse or doctor has often the effect of staying the pains for a more or less lengthened period.

Inertia also frequently occurs secondarily, as a sequel to delay from other causes, the uterus becoming exhausted from over-exertion. If occurring during the first stage of labour, before rupture of the membranes, little danger is to

be apprehended, but should rupture of the membranes have taken place, sloughing of the maternal soft parts is apt to occur from the prolonged pressure upon them by the foetal head. The same danger applies with even greater force to inertia during the second stage of labour.

Its occurrence during the third stage, or shortly after its completion, is one of the greatest causes of anxiety to every conscientious attendant. This, however, will be fully described in the chapter on Post Partum Hæmorrhage, with which it is intimately connected (Chapter XXI.).

Treatment.—During the first stage, before rupture of the membranes, nothing in the way of treatment is required. Rest and sleep at this time, during the absence of the pains, are to be encouraged, the patient generally awaking refreshed, and the pains returning with renewed vigour.

Should prolonged inertia occur, however, after rupture of the membranes, or during the second stage, attempts must be made to stimulate the uterus to contract, by means of compression of the organ through the abdominal walls. This is to be performed as follows:—The patient is placed on her back, and the attendant places her hands flat over the fundus and body of the uterus, and presses at intervals firmly downwards and backwards in the line of the axis of the inlet. If there be slight pains, pressure is to be made during them, as their efficacy is thus much increased. Should this treatment prove unavailing, help must be sent for.

The use of ergot, so much practised in these cases, is

bad ; under these circumstances, a nurse should never give this drug on her own responsibility. Ergot acts, by not only causing the uterus to contract more firmly, but by changing the character of the contractions, from intermittent to constant. Thus, should there be some other cause of delay preventing a speedy termination of the labour, the mother will rapidly become exhausted from the want of the rest which she usually has during the intervals of the pains. The life of the foetus is also seriously involved, from the fact that, during contraction of the uterus, the foetal circulation is arrested. Thus, during a prolonged contraction, death of the foetus is apt to occur from suffocation. From these results, besides others, such as rupture of the uterus, &c., it will be apparent how dangerous ergot is in these cases, and how carefully it is to be avoided.

Delay is occasionally the result of irregular or partial uterine contractions, which are extremely painful, and of little value in forwarding the labour. They are most commonly the result of a loaded rectum or full bladder, which conditions should at once be attended to. Should these feeble and painful efforts, however, still continue, 20 drops of laudanum, or $\frac{1}{4}$ gr. morphia suppository, will generally be found to be of service. Hot water enemata sometimes stimulate the pains.

Delay in first stage, from faults in the passages.

1st. *Rigidity of the Cervix.*—This may either be simple organic, or spasmodic, the former being met with most frequently in primiparæ, while the latter is more apt to

occur in multiparæ. The simple organic variety may be diagnosed by the edges of the os uteri being found, on vaginal examination, to be thin, sharp, and tense, while numerous successive pains make little or no change in the extent of dilatation. In the spasmodic type, the edges of the os will be found to be thick, flabby, and irregular, from the constriction being due to spasm of the internal os only.

Simple rigidity is of much more gravity than spasmodic, especially if associated with strong pains and ruptured membranes, as rupture of the uterus is very liable to occur.

Treatment.—Should the pains be slight, and membranes intact, little is to be done beyond enjoining rest, and telling the patient not to bear down during the pains. If the membranes be ruptured, or the pains strong, the introduction of a $\frac{1}{2}$ gr. morphia suppository per rectum will often be found to be most efficacious, both in subduing the severity of the pains and promoting dilatation of the os. Should this fail, the inhalation of chloroform will frequently work wonders; but before this is tried, assistance must be sought. Frequently dilatation can only be effected by means of special instruments, such as Barnes' dilators, and even then with difficulty.

There are other less important varieties of rigidity, due to cancer and inflammation of the cervix, which need only be mentioned in a work such as this.

2nd. *Obliquity of the Uterus.*—Due to anteversion, or pendulous belly.

In these cases, the anterior lip of the cervix is nipped between the foetal head and pelvic bones, and becomes thickened, swollen, and flabby—dilatation of the os being thus much impeded. The swollen lip has frequently much resemblance to the bag of forewaters, for which, in fact, it has occasionally been punctured. The treatment is extremely simple and efficacious, and consists in placing the patient on her back, and adapting a binder tightly round the body, by which means the uterus is pushed backwards, and retained in its normal position.

Delay in first stage due to passenger.

1st. *Early Rupture of Membranes.*—This may be caused by the attendant making an examination too energetically, or may be the result of the membranes being abnormally thin, rupture sometimes taking place several days before labour commences. This is called a “dry labour.”

Delay from this cause is due to the absence of the flexible wedge which the membranes and liquor amnii form together, the flexed head only very inefficiently acting as a dilator. Also the liquor amnii having escaped, irregular and extreme pressure is exercised upon the cervix, which is thrown into a state of spasmodic contraction, dilatation being thus rendered not only slower, but much more painful.

Should dilatation in these cases be much delayed, injury may be done by the presenting head severely jamming the tissues against the pelvis, and causing them to slough.

2nd. *Malpresentation of the Fœtus, and Deformed Pelves.*

—In these cases, the membranes, as a rule, present in a sausage-like form, the normal wedge shaped dilator being absent, and dilatation thus delayed. Early rupture of the membranes is also frequently associated with these conditions, and thus adds to the difficulty and delay occasioned by the malposition or deformity. Early recognition of the presentation by palpating the abdomen is of great importance (*see* Chapter XIV.).

3rd. *Hydramnios and twins* tend to cause delay, by the over distension of the uterus, preventing dilatation of the cervix.

Delay in the first stage of labour must be looked upon as of more or less importance, according to the condition of the membranes and the pains. Should the membranes be entire, little danger is to be apprehended, unless the pains be strong and persistent, when the patient rapidly becomes exhausted, and artificial delivery becomes necessary.

Should the membranes be ruptured, delay in all cases becomes of serious importance, and must be treated at once—qualified assistance being in most cases necessary.

CHAPTER XVIII.

CAUSES OF DELAY DURING SECOND STAGE OF LABOUR.

From faults in the passages.

1st. *Full Bladder*.—Delay from this cause is frequently met with, and is very apt to be overlooked. It may be diagnosed by inspection of the abdomen, when the distended bladder will be recognised as forming with the uterus a distinct double tumour. Also, by vaginal examination, there will frequently be found a distinct bulging of the anterior vaginal wall in front of the presenting part of the foetus. Care must be taken not to mistake this for the bag of membranes, to which it has a decided resemblance.

The treatment consists in drawing off the water by means of a catheter—voluntary micturition during the second stage being generally difficult. The catheter, in these cases, has to be passed in much farther than ordinarily, before the bladder can be emptied, therefore it is necessary that a long gum elastic catheter be used. Occasionally, from the extreme pressure of the presenting part of the foetus on the neck of the bladder or urethra, “catheterisation” is very difficult.

2nd. *Loaded Rectum*.—This is a very common and potent

cause of delay, the early recognition of which is of great importance. Its diagnosis and treatment have already been fully described, and need not again be gone into in detail (p. 112).

3rd. *Rigidity of Vaginal Walls and Perineum.*—These are most frequently met with in primiparæ, and are of much the same character as rigidity of the cervix already described. In multiparæ, rigidity of the vagina is generally the result of cicatrices, formed from sloughs, which have occurred in some previous prolonged labour.

The treatment which perhaps is most beneficial is, to lubricate the vagina with carbolic oil, 1-20, apply warm antiseptic cloths to the perineum, and exercise as much patience as is consistent with safety.

Specially to be avoided is the habit of making frequent vaginal examinations, as they only tend to irritate the parts, and keep up their rigidity.

Rigidity of the perineum, associated with strong pains, is the most frequent cause of ruptured perineum, the foetus being expelled before the vaginal orifice is sufficiently dilated for its passage. Should rupture occur, it is necessary that the nurse send promptly for help, as the tear must at once be repaired.

4th. *Tumours of Pelvis and Vagina.*—Of these tumours there is a great variety, but in a work such as this it is only necessary to mention two particularly, viz. ovarian tumours and vaginal hæmatomata.

Ovarian tumours, when small, delay labour by being

pushed down in front of the fœtus, and thus retarding its progress. They may be recognised by the presence of a firm elastic body, felt through the vagina, remaining in the pelvis after the bladder and rectum have been emptied. When diagnosed, it need hardly be said that assistance must be sought at once.

Vaginal hæmatomata are blood tumours, formed by the bursting of a blood vessel in the vaginal walls. They frequently attain a considerable size, and thus impede labour by blocking the vagina. The effused blood having a tendency to sink, the lower portion of the tumour may generally be seen protruding from the vulva, and may be recognised by its dark purple colour. They not unfrequently give rise to no further trouble beyond delay, but if large, are apt to be burst by the advancing fœtus, and may thus be the cause of serious hæmorrhage.

5th. *Deformed Pelvis*.—These deformities are of endless variety, and of all grades of severity. Fortunately, they are less frequently met with in this country than in Germany, France, and other European countries, but yet they occur sufficiently often to require a constant outlook for their presence.

They interfere with the normal course of labour, by modifying the shape of the pelvis as regards the diameters of the brim, cavity, or outlet.

They are either the result of disease of the pelvic bones themselves, or of the vertebral column, or both combined.

By far the most common cause is rickets, a disease of

early childhood, in which the bones become softened, and are thus easily moulded into abnormal shapes by the action of the muscles during exertion, and by the weight of the body while sitting.

Although rickets is the main cause of a large variety of deformed pelves, there is one distinct form which bears the name of "rickety pelvis."

Rickety Pelvis (Fig. 24).—This deformity consists in a shortening of the conjugate diameter of the brim, due to the jutting forward of the promontory of the sacrum towards

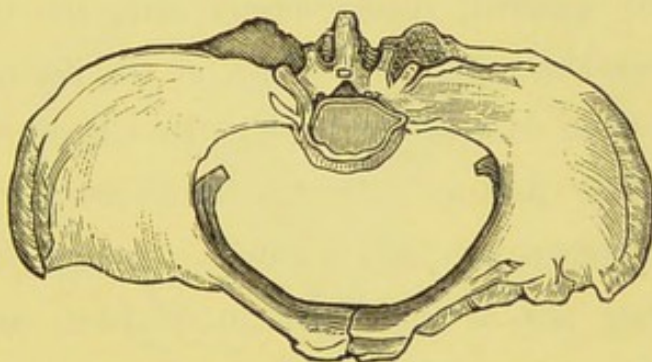


FIG. 24.—Flat pelvis (rickety).

the symphysis pubis. The other diameters of the brim, and those of the cavity and outlet, are in no way diminished in size, frequently they are increased, especially the transverse; from this increase in the transverse diameter, the pubic arch is wider than normal. The pelvis, as a whole, has a flattened appearance, which gives rise to its more distinctive name of "flat pelvis." The mechanism of labour is much changed in this form of pelvis, by the head of the foetus tending to pass through the transverse diameter of the brim extended instead of flexed—the anterior fontanelle

being thus on a level with, or lower than, the posterior. After having passed the brim, however, the process of labour is little affected, the pelvis now being in no way diminished in size.

The diagnosis of flat pelvis is made on vaginal examination, by the head of the fœtus being found high up, unengaged, and lying in the transverse diameter of the brim; by the low position of the anterior fontanelle, which shows an attitude of extension; and by the comparative ease with which the promontory of the sacrum may be reached. By external measurement also, the relative distance between the spines and crests of the ilia respectively, is of great value in the diagnosis. In Chapter III. it was shown that the distance between the crests exceeded that between the spines by quite an inch. In the present case, however, they are of equal distance apart, or even the measurements betwixt the spines may exceed that between the crests.

Justo Minor Pelvis.—This is merely a small pelvis, the result of some arrest in development; the diameters being all uniformly contracted at the brim, cavity, and outlet.

It is usually met with in females of small stature, and may be suspected from the general outward shape, especially the narrowness of the hips. It thus differs greatly from the "flat" pelvis, which is frequently met with in broad, and, to all appearances, finely developed women.

The mechanism of labour in this class is exactly the

reverse of the "flat," the foetal head being pushed through the brim in an attitude of extreme flexion.

The diagnosis is made by the head of the child being felt high up, and much flexed, the posterior fontanelle being very easily felt in the centre of the brim, while the anterior fontanelle is quite inaccessible. Even after having passed the brim, the delivery of the head is much delayed by the small size of the cavity and outlet, thus differing in a marked degree from the mechanism in a flat pelvis.

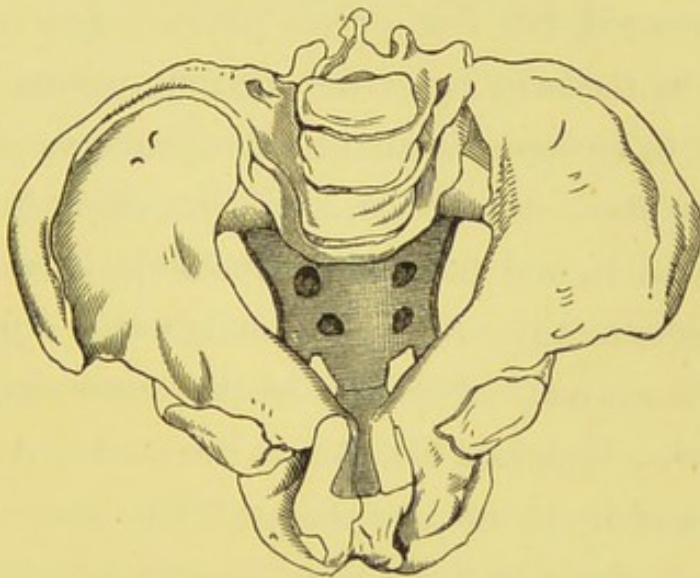


FIG. 25.—Malacosteon pelvis.

Malacosteon Pelvis (Fig. 25).—This is also known as the "osteomalacic" pelvis, so called from the disease (osteomalacia), which has occasioned the deformity. This disease, like rickets, gives rise to a softening of the bones, but as it occurs during adult life, the forces which act on the softened bones are both stronger and more numerous, and therefore give rise to greater deformity and distortion.

Unlike the flat pelvis, the contractions in this variety are

chiefly met with in the transverse diameters. This is due to the force exerted on the softened bones of the pelvis by the thigh bones, which, when the person is in the erect posture, tend to press the side walls of the pelvis towards one another. By this means, in severe cases, the side walls of the pelvis may be approximated to within an inch of each other, and the pubic arch occasionally completely abolished.

The conjugate diameters of the brim and cavity are but rarely contracted, but that of the outlet is generally much shortened by the bending of the sacrum, causing the tip of the coccyx to be approximated to the symphysis pubis.

From the above description, it will be evident how serious the condition is, and how it is impossible in well-marked cases for a foetus to be delivered through such a pelvis.

The "Masculine" Pelvis. — As the name implies, this form of pelvis is shaped like that of the male. At the brim the diameters are in no way changed, but, from its greater depth, the converging ischia come closer together, and thus narrow the transverse diameter of the outlet; the sacrum being less curved, causes narrowing of the conjugate of the cavity; while the pubic arch is narrower than usual. From this it will be seen that the normal mechanism of labour is impeded in the cavity and at the outlet, while at the brim it does not differ from the normal.

There are a number of other forms of deformed pelvis which delay labour, and affect its mechanism to a more or less marked degree, which require only a brief description.

They are due either to disease or deformity of the vertebral column which encroaches on the pelvis, or to disease of the pelvic joints, which may be associated with arrest in development, causing various degrees of obliquity.

The deformities or diseases of the spinal column are named—

- 1st. Lordosis.
- 2nd. Scoliosis.
- 3rd. Kyphosis.
- 4th. Spondylolisthesis.

Lordosis is a bending forward of the lower lumbar vertebræ, causing contraction of the conjugate at the brim.

Scoliosis.—Lateral curvature, causing contraction of one or other oblique at the brim.

Kyphosis.—A backward curvature of the lower lumbar and upper sacral vertebræ, which drags on the side walls of the pelvis, and causes contraction of all the transverse diameters ; while, at the same time, from the jutting forward of the coccyx, the conjugate of the outlet is also diminished.

Spondylolisthesis is a sliding forward of the lumbar vertebræ in front of the sacral promontory, due to disease of the intervening joint (lumbo sacral). This seriously diminishes the conjugate at the brim.

The deformities due to disease of the joints are named Naegele's and Roberts' pelves respectively. The former is due to disease of one, and the latter to disease of both, sacro-iliac joints.

Deformed pelves do not only influence labour by delaying

the passage of the foetus, they also prevent the head from filling the lower part of the uterus, and so blocking the descent of the liquor amnii; thus the latter gravitates as a whole into the lower segment of the uterus, and pushes the membranes in front of it in the form of a sausage. This is ineffectual in dilating the cervix thoroughly, and also predisposes to early rupture of the membranes, with escape of the entire liquor amnii.

It may be well to notice here that this sausage-shaped presentation of the membranes is indicative also of malpresentation of the foetus, and is a valuable sign for the nurse that she should send for help, as it is highly important that in such cases the doctor be called before the membranes rupture, as "turning" (a method of operating) is often necessary, and is much more easily and satisfactorily accomplished before rupture has taken place.

The management in cases of deformed pelvis must always be undertaken by a qualified person.

If the deformity be slight, labour, though delayed, may often end naturally. In many cases, however, various methods of operating must be had recourse to (forceps, turning, induction of premature labour).

When the deformity is great, the unpleasant duty of breaking up the child's head is often necessary for its delivery (craniotomy); while in other extreme cases, delivery by the natural passages becomes impossible, and this necessitates the removal of the child through the abdomen (abdominal section).

CHAPTER XIX.

CAUSES OF DELAY DURING SECOND STAGE—*continued.*

Delay in second stage due to faults in the passenger.

1st. *Large Size of Fœtal Head.*—This is of two varieties, natural and unnatural. The natural variety is generally associated with advanced development of the cranial bones.

It may be recognised by the hardness of the bones, and the small size of the fontanelles and sutures.

The cause of delay is twofold, viz. the large size of the head, and the difficulty of moulding, as the small sutures prevent the usual free movement of the bones.

The unnatural type is due to a disease called hydrocephalus (water in the head). Here the head is distended by fluid, and becomes so expanded, that in some cases the bones are widely separated from one another.

Should the head present, it may be recognised by its soft consistence, wide sutures and fontanelles, and the ease with which the cranial bones can be depressed.

Frequently, however, these cases present by the breech, which makes the diagnosis only possible after the birth of the body, and then only with great difficulty.

The body, however, is often shrivelled, which is a valuable indication.

Cases of a minor degree may be delivered spontaneously, or by the aid of forceps, but in the severer forms it is necessary to puncture the head, and let the fluid escape, which causes the death of the foetus. After the fluid has escaped, the head collapses, and delivery is generally easily effected. This is, of course, the duty of a medical man alone.

The danger to the mother is considerable, rupture of the uterus being a frequent complication. From the statistics collected by Keiller of Edinburgh, this occurred sixteen times in seventy-four cases.

Labour may be delayed by accumulation of fluid in other parts of the foetus, viz. chest, abdomen, and bladder; also, by large foetal tumours, and by distension of the abdomen by gas in a dead and decomposing foetus. These are merely mentioned as rare causes of delay, descriptive details being unnecessary.

2nd. *Shortness of Umbilical Cord.*—This may be due to an actual shortening of the cord, but much more commonly is the result of a reduction in its length from twisting round the foetus, generally round the neck.

3rd. *Occipito-posterior Positions of the Head.*—Already described, page 105.

4th. *Malpresentations of Foetus.*—By malpresentation is meant, the presentation of any part except the vertex. This occurs in about three per cent. of all cases, and may be divided into three groups:

1. Face presentations, including brow.
2. Breech presentations, including knee and footling.
3. Transverse presentations, including elbow and hand.

Perhaps it may be too sweeping a statement to call all malpresentations causes of delay, for occasionally in such cases delivery is more rapid than in a normal labour, but there can be no doubt that such is exceptional, and not to be relied on. They may, as a rule, be suspected if the hard head be not felt presenting on vaginal examination, if the membranes are found presenting in a sausage-like form, and if, on abdominal palpation, the foetal head cannot be felt at the pelvic brim. Should such be the case, skilled assistance should be sent for, as early interference is sometimes of great importance. Although interference may be occasionally unnecessary, the slightest hitch in the mechanism is apt to give rise to serious complications, which render artificial delivery absolutely essential.

Face Presentations.—Presentation of the face is met with in the proportion of 1 in 250 cases, and is the result of extension taking the place of flexion in the normal mechanism of labour.

Like the vertex cases, from which they are derived, there are four different positions—the denominator mento (*mentum*, a chin) being now, however, substituted for the occipito, by which the vertex positions are named.

For illustration, suppose an L.O.A. (first vertex position) is prevented from becoming flexed while entering the brim of the pelvis, and becomes completely extended—*i.e.* the

occiput pushed upwards towards the nape of the neck ; the forehead will now occupy the usual position of the occiput, viz. forwards, and to the left of the symphysis pubis ; and the chin naturally will thus be directed backwards, and to

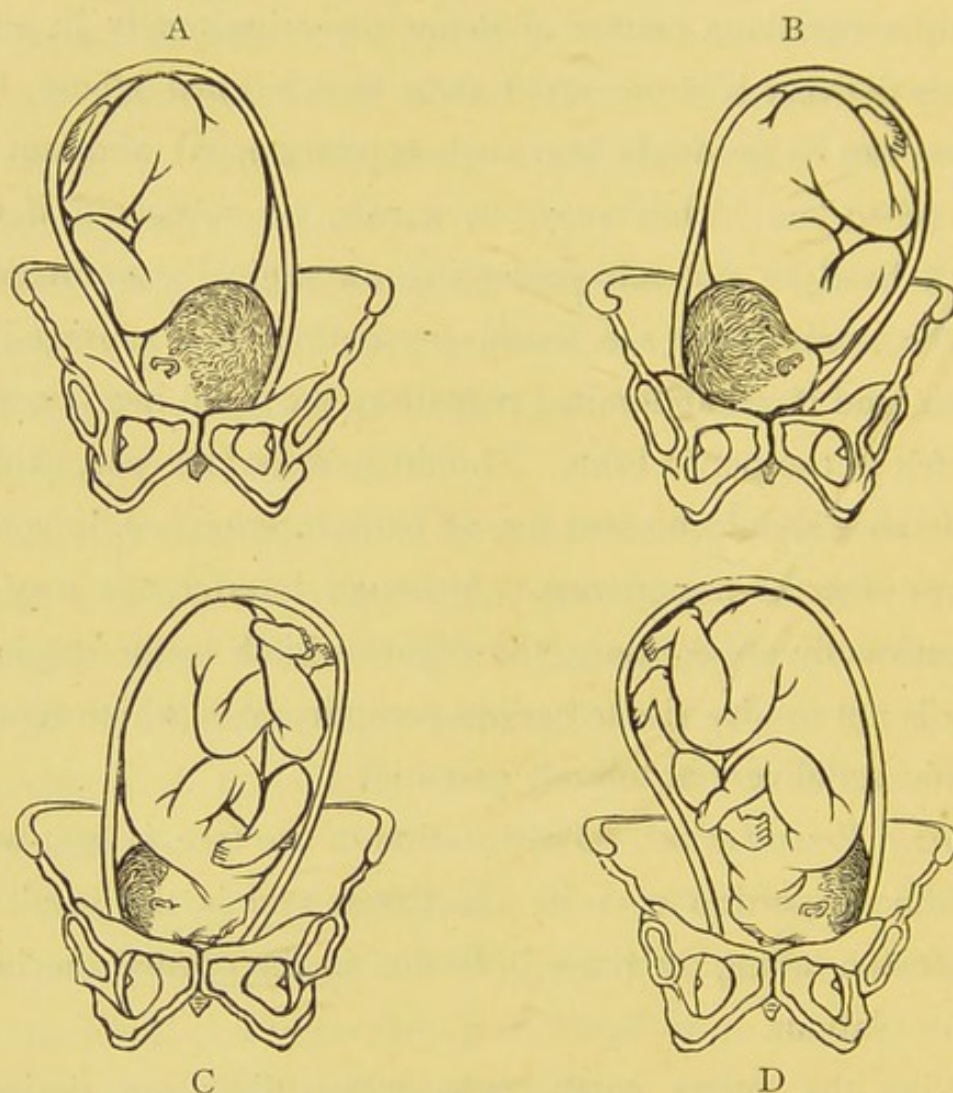


FIG. 26. —Diagram of face positions.

A, Right mento posterior.

B, Left mento posterior.

C, Left mento anterior.

D, Right mento anterior.

the right of the sacral promontory. As the position derives its name from the situation of the chin or mentum, it will be thus called right mento posterior, or first face position

(Fig. 26, A), being formed from the L.O.A., or first vertex position.

In a similar manner, the three remaining face positions are derived from the corresponding vertex positions,—left mento posterior (B), the second face position from R.O.A., the second vertex, and so on.

The diagnosis is, as a rule, simple, the nose, eyes, and mouth being generally easily recognised by vaginal examination. Should, however, the membranes have been ruptured for some time, and a well-marked caput succedaneum have formed, difficulty may be experienced in distinguishing the face from the breech. This can, however, be at once decided by abdominal palpation.

The mechanism of face cases is similar to that of vertex presentations—the movements of the chin being substituted for those of the occiput. One point of difference, however, must be remembered, and this occurs at the outlet, viz. the chin having become fixed under the symphysis pubis, a movement of flexion instead of extension takes place, the mouth, nose, forehead, and vertex passing successively over the perineum, and being born.

The great essential of the mechanism of face cases is the rotation forwards of the chin under the pubic arch; without this, unaided birth is impossible.

The cause of delay in face cases is due to the irregular outline of the face not forming such an efficient dilator as the wedge-shaped vertex; also, the bones of the face being

hard and immobile, adaptation to the passages by moulding is impossible.

The danger to the mother is slightly increased from the lengthened nature of the labour, and the irregularity and hardness of the face tending to cause extreme pressure on, with subsequent sloughing of, the soft parts of the pelvis ; also from the frequent occurrence of non-rotation forwards of the chin, necessitating artificial interference. To the child the danger is great, from the severe strain on the neck by extension of the head ; 13 per cent. are born dead.

Management.—In making vaginal examinations, caution is necessary, to prevent damage to the eyes of the foetus. Frequently, labour ends spontaneously ; therefore, in all cases, leave to nature. Examinations should be made at intervals, to ascertain if rotation forwards of the chin is taking place. If so, it may be considered that all is right. Should there be prolonged delay in the rotation forwards of the chin, difficulty is to be apprehended. It is well to warn the friends that the child, when born, has generally a most repulsive appearance, the head being flattened out and lengthened, while the face is swollen and congested. This disfiguration, as a rule, passes off within forty-eight hours, no treatment being required.

Breech Presentations (Fig. 27).—They occur about once in fifty cases, and are the most common of the mal-presentations.

They are frequently met with in connection with premature labours and twins, but also occur in otherwise normal

pregnancies. Their assigned causes, such as contracted pelvis, excess of liquor amnii, &c., are numerous, but for practical purposes unimportant.

Like vertex and face cases, they have four positions, which

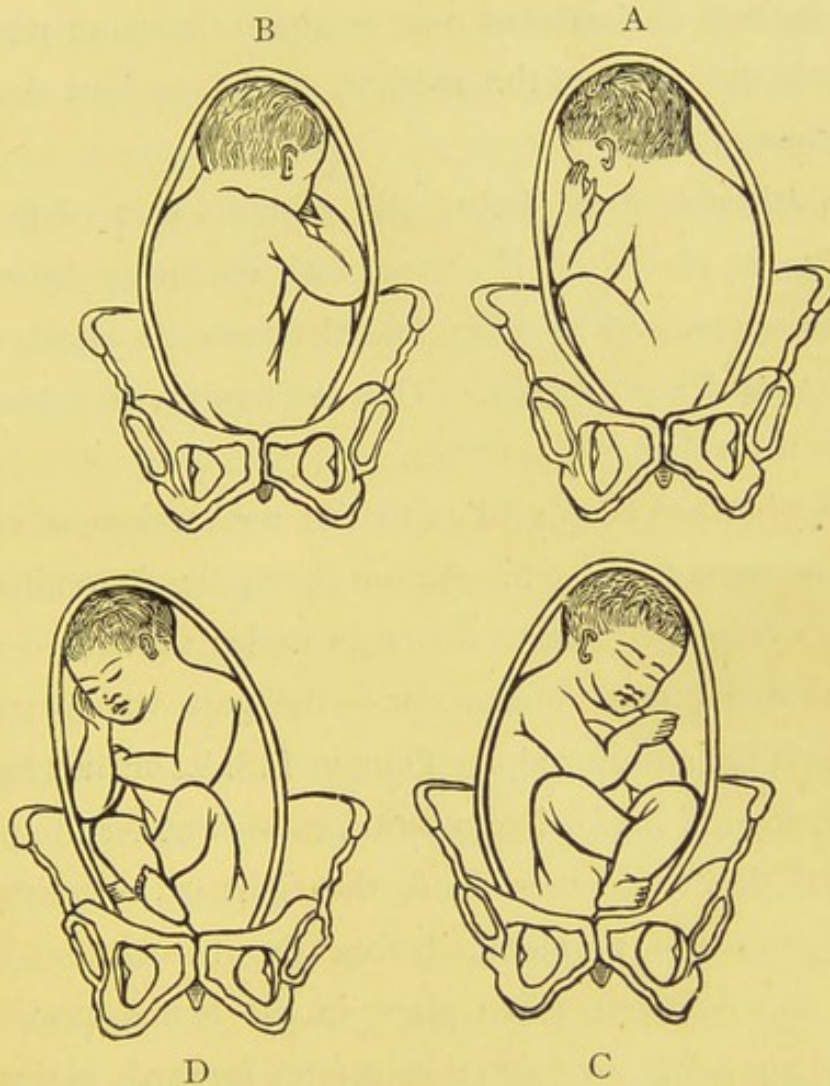


FIG. 27.—Diagram of breech positions.

- | | |
|---------------------------|----------------------------------|
| A, Left sacro anterior. | B, Right sacro anterior. |
| C, Right sacro posterior. | D, Left sacro posterior.—(KING.) |

are, however, named from the position of the sacrum, which is the denominator.

The same order is maintained as in vertex cases, in

naming the positions—left sacro anterior (A), being the first breech position ; right sacro anterior, the second (B) position ; right sacro posterior, the third (C) ; and left sacro posterior, the fourth (D).

The sacrum of the foetus now occupies the same position as regards the pelvis of the mother, as the occiput does in vertex cases.

The attitude of the foetus still remains that of flexion. The foetus is placed as if sitting, with its knees drawn up to its abdomen, and its arms folded across its chest, upon which its head is also bent. The mechanism is somewhat different from that of the vertex.

From what has been said as to the mechanism of vertex cases, one would expect the sacrum (being the denominator), like the occiput, to rotate forwards under the pubic arch. Such, however, does not occur—the part which rotates forwards is the anterior hip. Thus in L.S.A., or first breech position, the left hip, being anterior, rotates under the pubic arch, and there becomes fixed, the right or posterior hip passing over the perineum before the breech is born. Exactly the converse takes place in the R.S.A. positions: the right hip being now anterior, rotates forwards under the pubic arch, and there becomes fixed, while the left or posterior passes over the perineum.

After the birth of the breech, external rotation takes place, to allow the shoulders and head to be born. The birth of the head is effected by the nape of the neck becoming fixed under the pubic arch, this being followed

by the head becoming firmly flexed upon the chest, and the mouth, nose, forehead, and vertex appearing successively over the perineum.

The diagnosis of breech presentations by vaginal examinations is, as a rule, easy ; the softness of the presenting part, its rounded shape, and the cleft of the buttocks, are difficult to mistake. Also, on withdrawal of the fingers, they will frequently be found covered with meconium, which is a valuable sign.

If doubt should exist, external palpation is to be practised, when the position of the hard head at the fundus uteri will at once settle the question.

The dangers to the mother are in no way increased, but to the child are extreme—the mortality being four times greater than in vertex cases.

This is chiefly due to the cord becoming squeezed between the bones of the pelvis and the foetal head after the birth of the breech, whereby the circulation through the cord is arrested.

Management.—Leave to nature till the breech is born ; then, after pulling down a loop of the cord, envelope the child's body in a warm cloth, and assist the expulsion of the head by suprapubic pressure. This is most easily accomplished by placing the patient on her back. Never try to deliver the foetus by pulling on the legs, a method which is so tempting ; by so doing, the natural mechanism is upset—extension instead of flexion of the head being favoured.

After the head has entered the pelvis, delivery should be

completed within three minutes, if a living child is to be expected, as extreme pressure on the cord has now commenced. Should no pulsation be felt in the cord after the birth of the breech, haste in delivery is unnecessary, the foetus being already dead. The birth of the head is best assisted by pressing firmly upon it from above through the mother's abdomen (suprapubic pressure).

Difficulty in the delivery of the head is frequently the result of insufficient flexion, and this movement must therefore be assisted. It is most satisfactorily performed by passing two fingers of the left hand into the vagina or rectum, and placing them firmly on the upper jaw of the foetus, one on each side of the nose, by which means flexion is induced. It may be further assisted by upward pressure of the occiput with two fingers of the right hand. By now pushing the body of the foetus forwards, the face will be made to roll over the perineum. Should, as occasionally happens, the occiput be turned towards the perineum, this process must be reversed, the body of the foetus being thrown backwards, while the fingers of the left hand push up the occiput, and those of the right hand press upon the upper jaw. From the great risks the foetus runs during delivery, special care is necessary to have everything in readiness for its resuscitation (*see* Chapter XXII.).

Knee and footling presentations are much more rarely met with than those of the breech. Their mechanism is similar, and therefore does not require to be gone into in detail.

The mortality of the foetus in these cases is even greater than in breech presentations.

Transverse Presentations.—These occur on an average of 1 in 230 labours, the foetus presenting broadside on to the os uteri, instead of endways, as in other labours. They are classified also into four positions, two with the back of the foetus towards the symphysis pubis (dorso anterior), and two with the back towards the promontory of the sacrum (dorso posterior), the head of the foetus being directed to the right or left side of the mother respectively in both varieties.

The diagnosis is difficult, as the presenting part is high up and difficult to reach. The shoulder, arm, or ribs may present, most frequently the shoulder. Abdominal palpation is a great help in making the diagnosis (*see* Chapter XIV.).

After rupture of the membranes, there is a great tendency for the hand and arm to be forced through the os uteri into the vagina, the hand occasionally being found projecting from the vulva.

The hand is apt to be mistaken for a foot, but may be recognised by the fingers, which, unlike the toes, are of irregular lengths, by the absence of the prominence of the heel, and by the fact that the thumb may be easily bent over the palm.

The mechanism need not be described, as spontaneous delivery is extremely rare, and not to be expected. Artificial delivery by turning is in all cases called for. The earlier this is done, the easier it is, which shows the absolute necessity for at once sending for help when the condition is recognised.

CHAPTER XX.

COMPLICATED LABOUR : ECLAMPSIA—PROLAPSE OF THE CORD—INVERSION—RUPTURE OF UTERUS—TWINS.

Eclampsia.—This is the name given to peculiar fits, of an epileptiform nature, which may occur in the later months of pregnancy, during labour, or in the puerperium. As they frequently commence during labour, they may be here considered as forming one of its most severe complications.

They are nearly always associated with albumin in the urine, a condition which may be suspected from puffiness of the eyelids, and swelling of the arms and hands. The urine is also generally scanty.

The presence of albumin may be detected by boiling the urine in a spoon held over the gas, when a white, milky turbidity will be formed, which is not cleared up on the addition of a few drops of vinegar.

Albumin in the urine does not necessarily cause fits ; in many cases in which the urine has been found to be highly albuminous, no symptoms of eclampsia whatever have been manifested. Its presence, however, must always be a cause of great anxiety, and demands medical treatment.

Preceding the fit, there are nearly always some premoni-

tory symptoms, which should be carefully noted. Severe headache, impairment of sight, passing giddiness or momentary unconsciousness, are all most suspicious symptoms of an impending fit.

The fit proper commences with a sudden, strong, constant contraction of the muscles, which causes complete rigidity of the body and limbs. The contractions then become of a jerky nature, often accompanied by dreadful contortions, rolling of the eyes, protrusion of the tongue, grinding of the teeth, and general irregular movements of the body, arms, and legs. These, associated with the purple colour due to congestion, give the patient a repulsive appearance, the features sometimes becoming so altered that recognition is well-nigh impossible. The breathing is irregular and hurried, and frequently there is a voidance of urine and fæces. The fit is of short duration, seldom lasting more than three minutes; during its continuance the patient is totally unconscious. One fit is usually followed by others, at more or less lengthened intervals, their number and rapidity in succession varying with the severity of the seizure.

During the intervals of the attacks, consciousness, though of a dazed type, is restored. Should, however, the fits return in rapid succession, the patient eventually becomes comatose, and death frequently supervenes. As many as sixty fits have been known to occur in one person, with subsequent recovery.

During a fit, uterine contraction is increased, and the child

may be born unexpectedly, while the attendant is devoting attention to the mother.

The mortality as regards the mother is as high as 14 per cent., death occurring during a fit, or afterwards from exhaustion.

The infant mortality also is greatly increased, as many as 40 per cent. being born dead. This is probably due to the deficient aeration of the foetal blood, from the maternal blood being impure and insufficiently aerated.

Medical assistance should be sent for at once if convulsions threaten. Before the doctor's arrival the patient should be kept lying flat, with all tight clothing loosened, and plenty of fresh air. Never attempt to force fluids of any kind down the throat of the patient while she is struggling and unconscious, as it can do nothing but harm. A purgative enema may be given with advantage before the doctor comes. The treatment generally adopted is the inhalation of chloroform, which allays the excessive muscular contractions. Gagging the mouth by means of a piece of flannel or other soft material is of great service in preventing damage to the tongue by biting.

Strong purgatives and blood letting are also of value, but the treatment of such cases is only to be undertaken by a qualified person. Rapid delivery is of great importance for the safety of both mother and child. Preventive treatment is secured by a careful examination of the urine by a medical man during the last month or two of pregnancy.

Prolapse of the Cord.—This is a condition in which a

loop of the umbilical cord falls in front of the presenting part. In fact, the cord itself presents.

During labour the prolapsed portion of cord becomes squeezed between the foetus and the passages, with the result that the placental circulation is arrested, and death of the foetus ensues.

This complication may be met with in otherwise normal labours, but is specially common in malpresentations and contracted pelves.

The diagnosis is made simple, after rupture of the membranes, by the cord being distinctly felt presenting. Before rupture of the membranes, the diagnosis is more difficult. In the majority of cases, no prolapse of the cord takes place till the membranes rupture ; the gush of the liquor amnii at this time carries the cord down, and is by far the most frequent cause of the complication. Thus it will be evident how important it is to make a vaginal examination whenever the membranes are ruptured, to ascertain if prolapse of the cord has taken place.

The treatment consists in immediately trying to replace the cord above the presenting part, a process which is frequently much simplified by placing the patient on her elbows and knees, as in this position there is a tendency for the cord to fall back into the uterus spontaneously. Should attempts at reposition fail, help must at once be sent for, rapid delivery being essential to ensure the birth of a living child.

Upon examination, if the cord be found pulsating, it

will be evident that the foetus still lives ; should, on the other hand, pulsation be absent, the chances of the birth of a living child are small. The dangers as regards the mother are in no way increased.

Multiple Pregnancy.—The existence of two or more foetuses in the uterus at the same time.

The presence of twins is met with about once in between eighty and ninety births, triplets being much more uncommon, occurring only once in about every seven thousand births.

Multiple pregnancies do not, as a rule, delay labour to any great extent. Slight delay may occasionally be caused by the over-distension of the uterus, preventing its sufficiently powerful contraction, but this is generally more than counterbalanced by the smaller size of the foetuses. The diagnosis is, as a rule, only made after the birth of the first child ; previous to labour it is extremely difficult, but it may be suspected from the unusually large size of the abdomen.

The presentations and positions are of all varieties. In some cases, both may present in the same manner, by the breech, vertex, or transversely ; in others, the presentations differ : one may present by the vertex, and the other by the breech, and so on.

The mechanism in no way differs from what has already been described when treating of the various presentations.

After the birth of the first foetus, there is usually a cessation of labour pains for an interval of at least fifteen minutes ; upon their resumption, however, the second

foetus is rapidly born, the passages having been thoroughly dilated by the birth of the first foetus.

Frequently there is a long interval between the delivery of the children, cases being cited where even days have intervened. Labour is occasionally seriously impeded when both foetuses are forced into the pelvis at the same time. Another serious complication arises when, in a breech and vertex presentation, the chins become caught on one another (locked twins).

The management differs little from that of ordinary labour. After the birth of the first child, carefully tie the cord, taking care that the end of the portion which passes into the uterus is firmly secured, as there may be an intimate connection between it and the remaining foetus.

It is well, on recognition of the presence of another foetus, to inform the friends ; the mother, however, is better to be kept ignorant of the fact, as delayed labour from mental shock may be occasioned by the knowledge. An interval of half an hour should be allowed, for the return of uterine contractions, before any attempt to stimulate their recurrence be made. Gentle rubbing of the fundus uteri will now, as a rule, be found sufficient to start the pains ; if this prove unavailing, an attempt to express the foetus by suprapubic pressure should be made.

The second foetus being generally within a separate bag of membranes, artificial rupture of the latter may be required.

The greatest caution must be observed, after the birth of the second foetus, to keep the uterus well contracted, as the

previously over-distended uterus and the large placental site predispose markedly to post partum hæmorrhage. As to the management of triplets, nothing more need be added, as it is merely a continuation of the same process.

A most serious complication is that in which, through a freak of nature, there is a distinct union between two or more foetuses *in utero* (monster).

This condition forms one of the most difficult complications, both as regards diagnosis and treatment, which the obstetrician has to deal with, and therefore requires nothing more than passing mention in the present work.

Rupture of the Uterus.—Under this heading is meant rupture of the body of the organ, a most serious, though fortunately rare, complication.

Laceration of the cervix, of a more or less marked degree, is, on the other hand, an almost constant result of labour, and is seldom of any serious importance.

Rupture of the body of the uterus is met with on an average once in 1300 labours, and the seat of rupture is most frequently found at the junction of the body and cervix. It is generally caused by excessive uterine contractions vainly attempting to overcome some obstruction to labour, due to disproportion between the passages and passenger, specially in contracted pelvis and hydrocephalus. It may also be caused by the efforts of nature to deliver spontaneously a foetus presenting by the shoulder.

Being generally associated with excessive uterine contractions, the danger of giving ergot, already so strongly

denounced, is demonstrated—a number of cases of rupture being found to be directly attributable to the use of this drug during the second stage.

The symptoms are, as a rule, well defined: the patient suddenly feels an excruciating pain as if something had given way, the formerly strong pains suddenly cease, and signs of collapse rapidly appear—thready pulse, cold sweats, vomiting, and quickened breathing. Upon vaginal examination, there may be felt, either a total absence of the presenting part of the foetus, or the substitution of the former presentation by another. Occasionally the rupture will be felt, with now and then a portion of bowel projecting through it.

The danger to the mother must be evident, if one considers the shock that must follow from the passage of the foetus through the tear into the abdominal cavity, also the serious hæmorrhage which must occur from the torn edges of the uterus.

To the child the danger is also excessive—few surviving.

The treatment, as far as the nurse is concerned, consists in keeping the patient quiet, applying hot bottles to keep up the body heat, and stimulating by means of hot drinks and brandy. Immediate medical assistance is, of course, urgently demanded.

Inversion of the Uterus.—By inversion of the uterus is meant a turning inside out of that organ. This is met with occasionally quite independently of labour, but most frequently occurs in connection with it, and immediately after the birth of the child.

It may be of all degrees of severity, from a slight inflection of the fundus, to the entire inversion of the organ.

Among the most common causes are, pulling on the umbilical cord in the delivery of the placenta, and ill-managed suprapubic pressure, the tips of the fingers being used to press on the fundus of the uterus, instead of grasping it with the whole hand.

By both these faulty methods, it will be apparent that a part of the uterine wall is apt to be forced into the uterine cavity, and there acting as a foreign body, causes the rest of the uterus to contract upon it to procure its expulsion. By this means it becomes more and more inverted, till in severe cases the entire organ is forced inside out.

Cases also occur where no such mismanagement has been the primary cause, the assigned reasons for which are more difficult to understand.

The symptoms and signs are characteristic, if the inversion be well marked. The patient suddenly shows symptoms of shock, viz. small, rapid, thready pulse, cold sweats and faintness; this is associated with more or less severe pain in the lower part of the abdomen of a bearing down character, and hæmorrhage, generally of an alarming nature.

On vaginal examination, if the inversion be complete, the vagina will be found to be occupied by a globular mass, to which the placenta may or may not be attached; carrying the fingers up along the sides of the mass, the roof of the vagina will be reached, and to this the mass will seem to be attached, no rim of cervix being evident. The hand

placed over the abdomen will fail to discover the usually well-marked ball-like uterus.

Should the inversion, though well marked, be incomplete, the same round mass will be found in the vagina, but on tracing it upwards, it will be found to pass through the cervix uteri, the edges of which will be distinctly felt surrounding it. The absence of the uterus suprapubically will again prove conclusively the nature of the complication.

Upon diagnosing inversion of any degree, assistance should at once be sent for, and the vagina thoroughly plugged, to prevent hæmorrhage. Stimulants and outward application of heat are, of course, also necessary in the treatment of the shock from which the patient usually suffers.

In the foregoing chapters, reference has frequently been made to the fact that labour should be terminated as quickly as possible. This is generally effected by one of two methods, instruments or turning. Delivery by *instruments* may conveniently, for descriptive purposes, be divided into two groups: one, in which an attempt is made to deliver the child alive; the other, in which mutilation and destruction of the foetus is necessary before delivery can be accomplished.

The most common method in the first group is by means of instruments called forceps, which are applied to the presenting part, and delivery by pulling attempted.

In the second group, as it is generally the foetal head which is the offending member, a variety of formidable-looking instruments are used for breaking it up, so as to allow of its delivery: this operation is called craniotomy.

By delivery by *turning* is meant the artificial substitution of one presenting part of the foetus for another.

To describe the above operations is, of course, quite uncalled for in a book of this kind, as they are entirely beyond the nurse's duties; but, on the other hand, the assistance of a skilled nurse (especially in instrumental deliveries) has undoubtedly the effect of changing what, under ordinary circumstances, would be in many cases a difficult operation into one of easy performance.

Management of Forceps Cases.—Before the operation, it must be ascertained that the patient's bladder and rectum are empty. Two basins of hot antiseptic solution are then to be got ready and placed at the side of the operator: in one of these the forceps are to be placed; in the other a Higginson syringe.

The position of the patient is now to be attended to (Fig. 28). She is to be placed obliquely across the bed, lying on her left side, with the knees drawn up to the abdomen, and the buttocks pulled so far over the edge of the bed that they require to be supported. The nurse should stand behind the patient, whose buttocks should be supported on her left knee. Her hands are thus both free, the right to assist the operator, and the left to compress the uterus from above during the extraction of the foetus.

A pillow placed between the knees is of service in keeping the thighs apart, but during the passage of the head over the perineum the nurse may be required to raise the patient's right thigh.

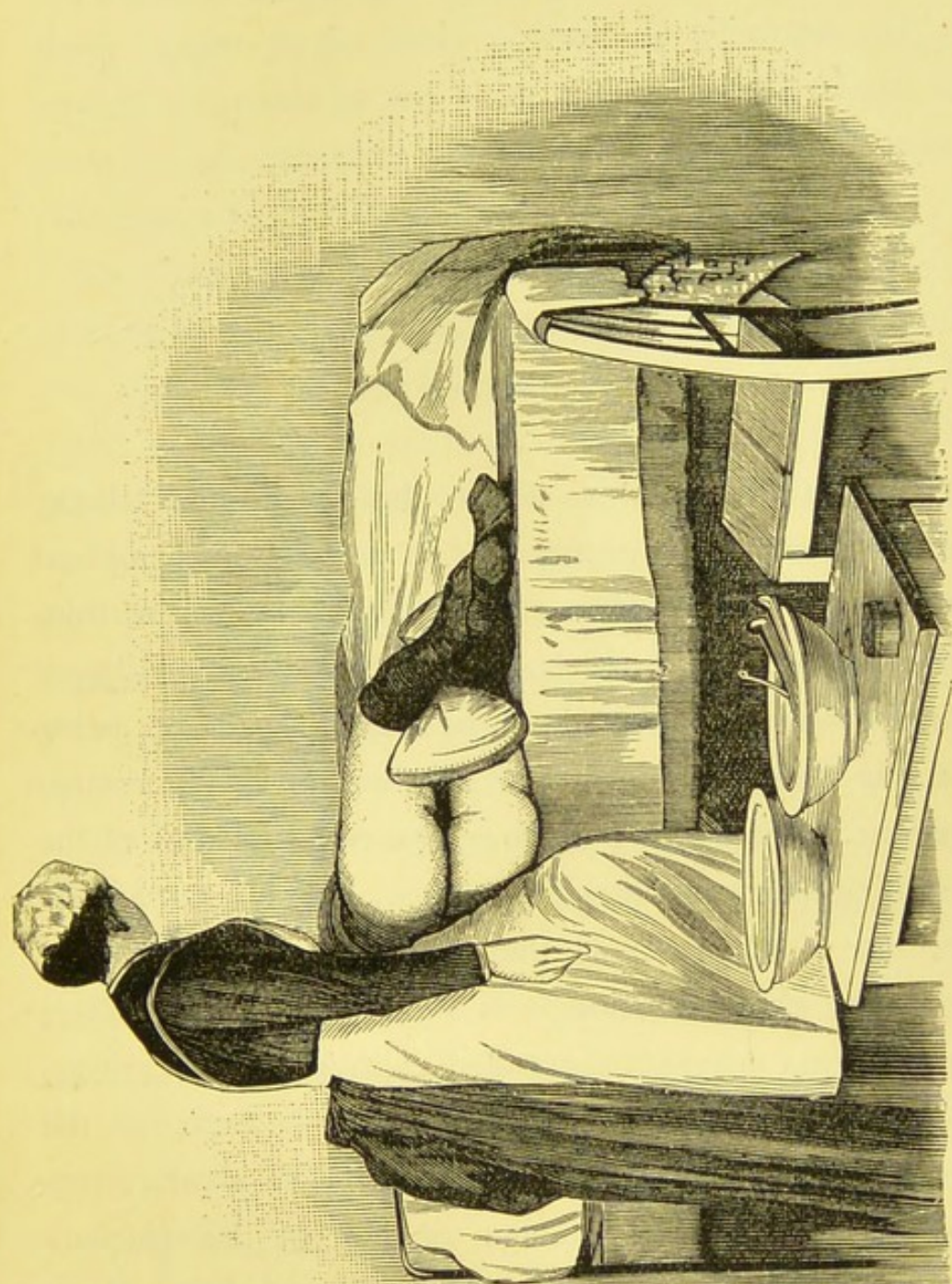


FIG. 28.--Showing position of patient and nurse for the application of forceps.

CHAPTER XXI.

COMPLICATED LABOUR, *continued*—HÆMORRHAGE— FAINTING.

HÆMORRHAGE may occur before, during, or after labour, and it is always to be regarded as a most serious complication. Hæmorrhage before and during labour may be from two causes—placenta prævia, and accidental hæmorrhage.

In *placenta prævia*, the placenta, instead of being attached near the fundus of the uterus in its normal situation, is situated in its lower portion, in front of the presenting part of the child, either entirely or partially over the os uteri. It is thus attached to that part of the uterus whose function it is to expand. Hæmorrhage from placenta prævia is also called unavoidable hæmorrhage. The reason it is called *unavoidable* is because, as the uterus begins to dilate, and the cervix to shorten, preparatory to the second stage of labour, the placenta necessarily becomes partially detached, and hæmorrhage must result from the separation.

Placenta prævia rarely occurs in primiparæ. It usually occurs in women who have borne many children, or who have had repeated miscarriages, for in such the cavity of

the uterus is roomy and relaxed, and the ovum, instead of being caught in the folds of mucous membrane at the fundus, falls down to the lower portion of the uterus, and there becomes attached. A low attachment of the placenta predisposes to abortion and premature labour.

The hæmorrhage in placenta prævia usually shows itself as early as the sixth or seventh month. Sometimes, however, there is no bleeding till labour has set in at full time. If a vaginal examination be made, the os uteri will generally be found more or less dilated, and some part of the placenta may be felt intervening between the finger and the presenting part of the child. The hæmorrhages from placenta prævia are generally sudden, and occur without any previous warning; the patient often waking up in the middle of the night and finding herself in a pool of blood. The hæmorrhage is usually more severe during the continuance of labour pains, and somewhat less during the intervals.

The hæmorrhage may be so sudden and profuse as to be rapidly fatal to the patient; at other times it is comparatively slight at first, even disappearing for a time, but becoming more copious with every recurrence.

Accidental Hæmorrhage, so called to distinguish it from the unavoidable hæmorrhage of placenta prævia, is hæmorrhage from a normally situated placenta, which in some way has been partially detached from the uterine wall. This may occur before or during full time labour, and is often caused by accidents or undue exertion on the part of

the patient. During the occurrence of labour pains, the bleeding will usually be observed to be almost absent, starting afresh in the intervals.

A woman may, however, be suffering from severe accidental hæmorrhage, and yet no blood appear externally—the blood collecting in the uterus between the membranes and the uterine wall. This is called concealed hæmorrhage. It is recognised by observing that the patient becomes collapsed and exhausted, and has all the symptoms of severe loss of blood, namely, ¹coldness and ²pallor of the body, ³restlessness, ⁴quick and sighing breathing, ⁵yawning, ⁶rapid weak pulse, and great mental anxiety. At the same time, the patient may complain of more or less uterine pain of a tearing or colicky nature, and in some cases unusual distension of the uterus can be readily made out.

Both placenta prævia and accidental hæmorrhage are extremely dangerous conditions, and it is the nurse's duty to send at once for skilled assistance on the very first manifestations of hæmorrhage, however slight.

Of course a nurse is not expected to treat these cases, nor would it be safe for her to attempt to do so. Thus the necessity of sending promptly for a medical man cannot be too strongly impressed upon her, as, apart from the danger of hæmorrhage, the operation of turning, which is often necessary, can only be performed safely at an early stage of labour.

In all cases of hæmorrhage, however slight, the patient

must be put to bed, and kept perfectly quiet in the recumbent position, with the head low and hips raised. The latter can be secured by raising the foot of the bed. If the hæmorrhage be very severe, and medical aid not at once forthcoming, the nurse must do her best to prevent the patient from bleeding to death before the arrival of the doctor. For this purpose, she must plug the vagina (Chapter XXIII.), and apply a firm binder round the patient's abdomen, so as to prevent any blood from accumulating in the uterus. If, after the hæmorrhage has been stopped, the patient remain in a faint condition, with pallid face and feeble pulse, energetic attempts at invigoration must be had recourse to. This is to be effected (1) by the gradual application of warmth, (2) by rigidly maintaining the patient in the recumbent position already described, (3) by the slow injection into the rectum of at least one pint of warm water, to which has been added common salt in the proportion of one teaspoonful to each pint. Care must be taken in giving stimulants after hæmorrhage, as they often tend to cause a recurrence. In very severe cases it may be necessary to bandage the limbs.

Post partum hæmorrhage, or hæmorrhage after the birth of the child, is one of the gravest complications of labour. It may take place either before or after the expulsion of the placenta.

It usually comes on so suddenly, and so unexpectedly, that there is no time for consultation or deliberation, and, to save the patient's life, the treatment must be prompt and

immediate. It is absolutely criminal for anyone to undertake the responsibility of a midwifery case who is not thoroughly competent to treat post partum hæmorrhage.

Nothing is more satisfactory in obstetrics than the good results obtained by the skilful and prompt treatment of such a complication; whereas, when untreated, or improperly managed, there is no more sad or terrible spectacle to be witnessed. The patient, in a moment, and with little warning, yields up her life, while the incompetent and nerveless spectator stands helplessly by. Such an event will test the capabilities and resources of a nurse to their utmost, and at no time will coolness, presence of mind, and a sound knowledge of her work, be of more importance than when dealing, or helping to deal, with this critical emergency.

Source of the Bleeding in Post Partum Hæmorrhage.—On the separation of the placenta by the last pains, a large raw surface, with torn blood vessels, is left in the cavity of the uterus. In normal cases, the hæmorrhage from these torn blood vessels is arrested by the firm contraction of the muscular fibres of the uterus, which, by compressing the blood vessels, and obliterating their channels, totally prevents the copious outflow of blood which would otherwise occur.

The cause, then, of post partum hæmorrhage is the want of proper contraction of the uterus after the birth of the child, and this is called *inertia uteri* (see page 146).

Inertia uteri usually follows labours which have been unduly protracted, or in cases where the uterus has been too

rapidly emptied of its contents. It is apt also to occur in those cases where the uterus has been over-distended, as in hydramnios and twins. It is also prone to occur where pregnancy has taken place in young girls before the uterus has become properly developed, and in multiparous women whose pregnancies have succeeded one another too rapidly. It is, however, to be borne in mind that post partum hæmorrhage may occur in the most unexpected cases.

Treatment.—If the second stage of labour be conducted according to the rules laid down for its proper management in Chapter XIV., post partum hæmorrhage will rarely, if ever, occur. Placing the hand over the patient's abdomen to follow out the body of the child, and then grasping the uterus, is the surest means of ensuring uterine contraction.

If there be a threatening of hæmorrhage, the patient should have some ergot administered, either by the mouth, or in the form of ergotin injected deeply into the buttock with the hypodermic syringe. The hypodermic method acts much more quickly and surely. Two teaspoonfuls of the liquid extract of ergot can be given by the mouth, or a syringe-ful of the ergotin solution can be given hypodermically. At the same time, the pillows should be drawn from beneath the patient's head, and the window opened. Never for a moment must the grasp on the uterus through the abdominal wall be relaxed. The application of the child, or the breast pump, to the breast is likewise a useful means of stimulating the uterus to contract.

If the hæmorrhage still continue, and no assistance is at hand, the nurse must pass one hand into the vagina, and firmly compress the uterus against the other hand which is on the abdominal wall. When the uterus is so compressed between the two hands, hæmorrhage from it becomes impossible. She must hold it in this position till the arrival of the doctor, who will now become responsible for the

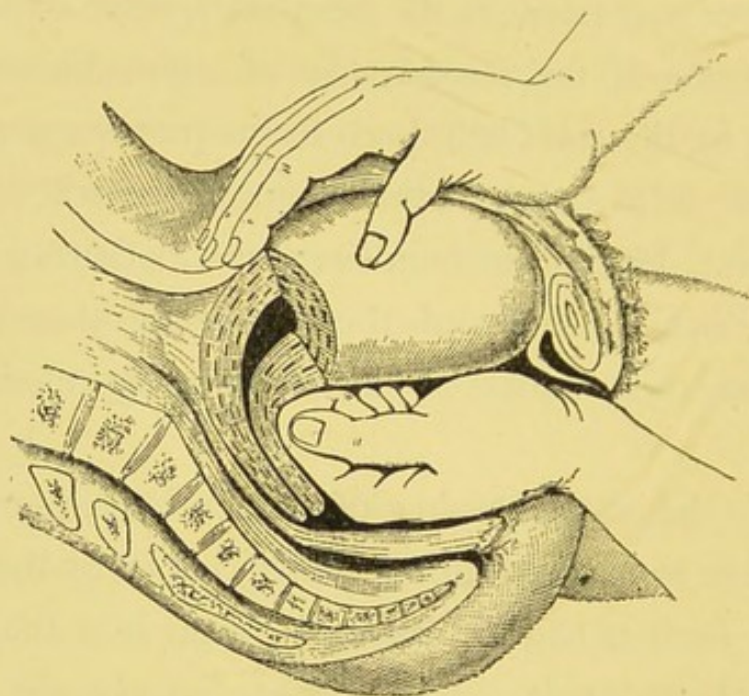


FIG. 29.—Compression of the uterus with both hands in post partum hæmorrhage (Herman).

case. The doctor will, in all likelihood, have recourse to the injection of hot water, of which there must always be a plentiful supply in the room. Hot water of a temperature of 120° F. (that is, as hot as it is possible to bear one's hand in) is the best means of securing permanent uterine contraction, and so arresting hæmorrhage. It should, of course, be rendered antiseptic, and may be injected into the

uterus itself, or into the vagina. In many cases it is only necessary to inject it into the vagina, and this should be done with the douche or an ordinary Higginson's syringe. The patient will complain of little or no discomfort from the hot water in her vagina, as the vaginal walls can stand a great deal of heat without causing pain. As the hot water escapes from the vagina, however, it will cause extreme discomfort should it come in contact with the skin of the vulva or perineum. This should be kept in mind, and a folded wet towel should be arranged in such a way as to prevent the out-flowing water from scalding, and possibly blistering, the external parts.

Patients who have suffered from post partum hæmorrhage, and who have been promptly and successfully treated, usually make excellent recoveries, even though they have lost a great deal of blood.

In all cases where there has been a threatening of hæmorrhage, the uterus should be firmly grasped through the abdominal wall for at least an hour after the hæmorrhage has ceased, to make sure that its contraction is permanent. As long as the pulse remains over a hundred, hæmorrhage should be suspected, and the patient watched. The binder must never be put on till persistent uterine contraction has set in.

In certain rare cases, considerable hæmorrhage may occur though the uterus is firm and well contracted. In these cases the bleeding is not from the cavity of the uterus, but proceeds from a tear in the cervix, or a laceration in the

neighbourhood of the clitoris. In the absence of a doctor, the nurse should in such cases plug the vagina.

Hæmorrhage sometimes occurs during the puerperium, within a few days after labour. This may be due to too early exertion, straining at stool, or to portions of placenta or membranes having been retained in the uterus.

Retained placenta is usually due to improper management of the third stage of labour, *e.g.* not pressing the uterus in the axis of the pelvis. An adherent placenta is not of very common occurrence, and demands the careful treatment of a medical man. For management of retained placenta, *see* Chapter XIV.

Fainting during or after labour suggests hæmorrhage, either internal or external. If fainting should occur, send at once for medical assistance. In the meantime keep the patient flat in bed, with the head low, and firmly grasp the uterus through the abdominal wall, if there be the least threatening of hæmorrhage after the child is born. Sprinkle some cold water on the face, and see that there is abundance of fresh air. Hæmorrhage is to be treated as described earlier in this chapter.

CHAPTER XXII.

MANAGEMENT OF THE CHILD.

THE newly born child ought to cry loudly and move its limbs freely. After the cord has been tied and divided as described in Chapter XIV., the child should be wrapped up in a blanket, and laid aside in a warm and safe place till the mother has had all her wants attended to. After the mother has been made comfortable, and the immediate danger of hæmorrhage is past, the child must be washed. First of all, its face should be cleansed, and especially its eyes, which are to be carefully washed with lukewarm corrosive sublimate lotion (1 to 2000), and then thoroughly dried. If there be any appearance of ophthalmia, a great deal of care will be necessary. This will, however, be referred to later on (*see* page 211).

The nurse should now rub the child's body over with vaseline or olive oil, to facilitate the removal of the *vernix caseosa*, and then place it in a warm bath at a temperature of 90° F.,¹ where it is to be well washed with Castile soap and water. The duration of the bath should not exceed

¹ Cold water should always be put into the bath first, then the hot water, for if the hot water be poured in first, the bottom of the bath is apt to be unduly heated, and may seriously burn the child.

five minutes, and the bath should be placed in a warm corner near the fire. The temperature of the room should never be below 60° F. The child's head should be supported above the water by a hand placed under it, and its body should not be completely covered with water. A new sponge, or a piece of clean, soft flannel, should be used to wash with, and care must be taken to see that the scalp is thoroughly cleansed. The child is then to be dried thoroughly with a soft towel, avoiding much friction, and powdered from head to foot with rice powder or boracic acid powder. Care must be taken that all the folds of the skin are perfectly cleansed and dried. It is often good to rub a little oxide of zinc or boracic ointment into the folds of the skin. The cord must then be dressed, and examined carefully to see that there is no tendency to bleeding, and if such be the case, it must be tied again.

The dressing of the cord is accomplished by cutting a hole in the centre of a piece of clean linen, through which the cord is drawn, the linen being then folded on itself so as to envelop the cord, and this is again covered by a pad of salicylic wool. Over this is placed the binder of thin, soft flannel, which must not be too tight, and ought to be fastened with needle and thread, not with pins. The child is then dressed in the usual way, great care being taken that it *be kept sufficiently warm and free from chills*. All the clothing should be loose enough to admit one passing two or three fingers underneath it. All under-clothing should be woollen.

Sometimes the child is born feeble, or even apparently dead ; its limbs are motionless, its head droops, the mouth gapes, and the pulse in the umbilical cord is only faintly and occasionally felt. Such is the condition known as "*still-birth*." In spite of this, however, life may often be restored.

The treatment consists in clearing the mouth of mucus by means of a feather, or the finger covered with a soft handkerchief. If the child's face be very blue, cut the cord at once, and allow a teaspoonful or so of blood to escape before tying it. Sprinkle cold water on the face and chest, and slap the buttocks gently to stimulate the child to cry, or rub a little brandy or whisky into its chest. If these measures do not cause the child to breathe, dip it alternately into basins of hot and cold water, or hold it up by the feet for a few seconds, so as to send more blood to its brain, and allow of the escape of any fluids from the windpipe. If none of these means suffice (and they are unlikely to do so if the child is very white in colour), some form of artificial respiration must be proceeded with. The following method can be tried first:—Let someone hold the child's body, with the head slightly bent backward and the mouth kept open. After cleansing the face, spread a fine handkerchief over it ; then press one hand firmly over the child's stomach, and close the nostrils with the other hand. The nurse must then apply her mouth over the child's mouth, and gently force air into the lungs through the handkerchief at intervals of about twenty times a minute, while, between times, the chest must be gently

pressed to imitate expiration and empty the lungs. Sylvester's method of artificial respiration is to lay the child on its back, with its head and shoulders slightly raised; now grasp the arms above the elbows, and draw them steadily upwards to the sides of the child's head, and keep them so stretched for a few seconds. This movement expands the chest, and draws air into it. The arms are then to be slowly brought downwards and forwards, and pressed firmly against the sides of the chest, so as to expel the air from the lungs. These movements should be repeated at the rate of about twenty times a minute. By this method the natural movements of inspiration and expiration are imitated, and persevering efforts should be made, even for an hour or more, to induce the child to breathe naturally. For so long as there is a single beat of the heart, so long is it possible to restore suspended animation.

There are many other methods of artificial respiration and resuscitation, but their enumeration is not necessary here. A child who cannot be restored by the persevering use of the means just described, will not likely recover under any other treatment. Feeble children should be bathed with care in water at a temperature of 100° F. The chances of rearing feeble and premature infants are greatly increased by the use of an incubator (*see* page 226), and feeding them with mother's milk (*see* page 206).

After the child has been washed and clothed, it should be put into its cradle, and surrounded, especially in

winter, with hot-water bottles. It should be bathed every evening, while in the morning only the face, hands, and buttocks should be washed. The room should be kept well ventilated and warm, but not stuffy.

The cord falls off about the fifth day, and, till it separates, the dressing round it must be carefully changed daily. If it develop any foetor, or show any tendency to hæmorrhage, or if there be any undue projection of the navel after the cord has separated, the doctor should be told. The binder ought to be worn for some weeks after the cord has dropped off, but it is not really necessary after the navel has healed unless for warmth. The child's napkins must be changed as soon as they are soiled, and the soiled portions of the child's body bathed with tepid water, and then anointed with boracic ointment. Dirty diapers are a frequent cause of restlessness, sleeplessness, and irritation on the part of the child.

As soon as the mother has rested a little, the child should be put to the breast for ten or fifteen minutes at a time, once every four hours till the milk comes, and afterwards once in two hours. Very often there is no milk in the breasts till the third day, and, in such cases, an occasional teaspoonful of warm water, with or without a little milk added to it, will temporarily satisfy the infant's appetite. No sweetened food should be given unless ordered. The first milk in the breasts is called *colostrum*. It has a purgative action on the child, whereby the meconium is all cleared out of the bowels. It is watery in appearance.

After the secretion of milk has become thoroughly established, the child should be put to the breast, for the first two months or so, every two hours during the day, and perhaps once or twice through the night. When three months old, the interval can be increased to three hours. The mother's milk becomes too rich if the nursing be too frequent, and too poor in quality if the intervals are too long.

It is of the utmost importance to get the infant into systematic habits, as it quickly accustoms itself to regular ways, especially as regards feeding, sleeping, and the action of its bowels. If it have sufficient food, it falls asleep after being nursed, and wakes up again in two or three hours. A healthy child usually satisfies its appetite in about fifteen minutes. It is more comfortable for the mother to put the child to both breasts at each nursing. During the first three months it should sleep about twenty hours daily, and when one year old, about fourteen hours' sleep is required. The child should not be put to sleep in the nurse's arms, but it should be put into its cradle awake, and taught to sleep by itself, which it soon learns to do, if taught from the first.

The child must not be fed every time it cries, though unfortunately this is too often the case, and there can be no doubt that this is a frequent cause of infantile disorders.

The child's bowels should move from two to four times in the twenty-four hours. The motions should resemble

thick mustard in appearance, have hardly any smell, and should contain no curdled milk. After the first two weeks the child may be taken out of doors for an hour or two daily if the weather is fine.

If the mother be able to suckle the child entirely, so much the better, and no other food is to be given. Sometimes, however, through deficiency of milk, the breast requires to be supplemented by the bottle; in other cases, where, for some reason, the mother is unable or unwilling to nurse, and a wet nurse cannot be procured, or is not considered desirable, the child must be fed entirely on the bottle. A wet nurse should never be chosen without the approval of a doctor.

For the bottle, fresh cow's milk should be used.¹ Cow's milk must be diluted in the proportion of a third part of milk to two-thirds of water or lime water, slightly sweetened, and warmed to 99° F. A pinch of common salt and a pinch of baking soda ought to be added to each bottle. After the first two or three months the proportion of water may be gradually lessened, till eventually, at nine or ten months, pure cow's milk, warmed and slightly sweetened, can be given with safety.²

It is always better to boil or sterilize the milk, especially in hot weather and in towns, and the water which is added

¹ In towns it is best to use the ordinary mixed milk of the dairy, and not the milk from one cow.

² Sterilization appears to render milk more digestible. Undiluted sterilized milk is even recommended by some as suitable for feeding infants from birth.

to the milk should also be previously boiled. Boiled milk is not really more constipating ; it is more easily digested, and it is much safer for the child. Unboiled milk, being more indigestible than boiled milk, and more apt to turn sour, tends to irritate the bowels, and to produce frequent motions. Boiled milk, on the other hand, does not provoke this unnatural irritation in the bowels, hence the idea that it is constipating. Should constipation arise, it can be easily treated. If the milk be boiled, no complicated sterilization is necessary.¹ The skin which forms on boiled milk can be rubbed into the milk again with the back of a spoon. Barley water is also a good diluent for the milk, and is often preferable to lime water, especially if there is constipation. It is prepared by putting two teaspoonfuls of pearl barley into a pint of water, boiling down to two-thirds, and then straining. Robinson's patent barley can also be used. Instead of the lime water or barley water, a teaspoonful of thin gelatine jelly, added to the mixture of milk and plain water, is often equally serviceable in aiding the digestion of the milk, by mechanically preventing the formation of too thick a curd in the child's stomach. The barley water and gelatine jelly must be freshly made each day. Some fresh cream is a necessary adjunct to the cow's milk bottles. A graduated glass measure should be used for making up the bottles. The following tables give, as nearly as possible, the quantities suited to infants at different ages. They are subject, however, to modifications necessitated by the varying constitu-

¹ See Sterilization of Milk, Chapter XXIII. page 229.

tions of different children. The amount of cream can be modified as directed :—

GENERAL RULES FOR FEEDING (adapted from ROTCH).

	¹ Intervals of Feeding.	Amount at each Feeding.	Number of Feedings in 24 hours	Average Amount in 24 hours.
	Hours.	Ounces.		Ounces.
First week, . . .	2	1	10	10
One to six weeks,	2½	1½ to 2	8	12 to 16
Six to twelve weeks, . . .	3	3 to 4	6	18 to 24
Fourth and fifth month, . . .	3	5	6	30
Sixth month, . .	3	6	6	36
Seventh month, .	3	6½	6	39
Eighth to tenth month, . . .	3	8	5	40

Diet during first week :—

Milk, 1 part.
 Diluent, 2½ parts.
 Thin Cream, 1 teaspoonful.
 Milk Sugar, ¼ teaspoonful.
 One ounce every two hours.

From second till twelfth week :—

Milk, 1 part.
 Diluent, 2 parts.
 Thin Cream, 2 teaspoonfuls.
 Milk Sugar, ½ teaspoonful.

One and a half to four ounces every two or three hours.

¹ During day only : at night the intervals ought to be longer.

From third to fifth month :—

Milk,	1 part.
Diluent,	1 part.
Thin Cream,	1 tablespoonful.
Milk Sugar,	1 teaspoonful.

Four to five ounces every three hours.

Fifth and sixth months :—

Milk,	1½ to 2 parts.
Diluent,	1 part.
Thin Cream,	1 tablespoonful.
Milk Sugar,	1 teaspoonful.

Five to six ounces every three hours.

Ordinary sugar is just as good as milk sugar for the bottles, and if used, only a quarter of the quantity is required, as it is much sweeter. From the sixth to the tenth month, the proportion of milk to diluent can gradually be increased, and the amount of each feeding can be raised by one ounce in each successive month. One or two teaspoonfuls of Mellin's, Nestlé's, or Savory & Moore's food, heated with the milk, can be given once or twice daily.

If, at eight months old, the child be strong and healthy and have cut a few teeth, it may have, in addition, one or two meals a day of milk slightly thickened with good, well-baked bread, a teaspoonful of Chapman's entire wheaten flour, specially prepared, or well-boiled porridge made with sifted meal. It must have besides plenty of breast or cow's milk.

Meigs' milk mixture does admirably for many children. It can be easily prepared according to Meigs' plan under the

direction of a doctor.¹ The humanized milk of the Aylesbury Dairy Company is a satisfactory preparation, but it is not improved by a long railway journey.

Many children seem to thrive on condensed milk. From one to two teaspoonfuls in a teacupful of tepid water (previously boiled) is sufficient for each meal, and it should be always replaced by cow's milk in three months. Condensed milk, however, cannot be recommended.

The feeding bottles and tubes must be kept thoroughly clean, and free from any sour smell. Any milk remaining over from the child's meal is to be thrown out, and the whole apparatus must be carefully washed with hot water and baking soda immediately after use. For this purpose the tubes and fittings are to be taken to pieces, and, after

¹ Meigs' mixture consists of—

Fresh milk,	one tablespoonful.
Thin cream,	two tablespoonfuls.
Lime water,	two tablespoonfuls.
Milk sugar solution,	three tablespoonfuls.

This quantity will satisfy the child for the first few weeks, afterwards double the quantity must be prepared for each feeding. The quantity is increased as the child gets older, but the mixture must not be made any stronger till the child is eight or nine months old at least.

The milk sugar solution consists of $17\frac{3}{4}$ drachms (which should be carefully weighed) of milk sugar dissolved in a pint of pure water, which has been previously boiled. It must be frequently prepared, as, though milk sugar keeps well when dry, it is apt to become sour when in solution if kept more than a day or two. It should be kept in a pint bottle and in a cool place.

The above quantity of milk sugar is required for the *American pint*, which is sixteen ounces. If the milk sugar solution is made in an *ordinary beer pint bottle*, only $13\frac{1}{2}$ drachms of milk sugar are required, as the *beer bottle only holds 12 ounces*. The *British Imperial pint* measures 20 ounces, and would require 22 drachms of milk sugar.

being well washed, they are to be rinsed with cold water, and when not in use, are to be kept constantly lying in a basin of clean cold water, to which some baking soda or salicylate of soda or boracic acid has been added, in the proportion of a teaspoonful to a pint. Immediately before use the bottles should be rinsed in plain hot water.

Feeding bottles with tubes are the most natural substitutes for the human breast, but they are more difficult to keep clean than those without tubes, and therefore the latter are to be preferred.

The fittings (if any) must be of glass, china, or india-rubber, which can be more easily cleaned than cork. It is an advantage to have three bottles in use, so as to allow a longer interval between the use of each bottle, and so, as far as possible, to secure thorough cleanliness. Fresh nipples should be supplied once a fortnight for each bottle. It is a good plan to boil the nipple for ten minutes before using it. If tubes are used, they should be freshly renewed once a month. Bottle brushes should be used with care, as the bristles are apt to become detached, and may be sucked into the child's throat. The infant should be lifted out of its cradle every time it is fed, and should on no account be allowed to have the bottle constantly lying beside it. Each bottle must be prepared freshly for each feeding. Bottle babies are frequently troubled with constipation, the treatment of which will be dealt with later on.

A very large number of the children who are brought up

by hand, die in infancy, and this mortality is for the most part due to the practice of beginning too soon with gruel, corn-flour, bread, &c. Such food is not proper nourishment for children under seven months old, and should never be given. *Children under seven months must be fed on nothing but milk*, unless by a doctor's orders.

At nine months old, as a rule, the infant should gradually be weaned, and some simple farinaceous food, such as bread jelly or fine gruel, added to its diet. At ten months the child may once a day have a little meat-broth with rice or barley, but without vegetables, and the yolk of an egg and raw beef juice may be given occasionally. Oatmeal porridge, simple farinaceous food, and revalenta¹ are now allowable. Till the child is two years old, no solid animal food should be given, and even then milk should be its chief food.

Raw beef juice is prepared as follows:—Mince finely a piece of the best rump steak, then add cold water in the proportion of one part of water to four of meat, mix well together, and let it stand for half an hour in the cold; then squeeze the whole through muslin by twisting it. Two or three ounces of this may be given daily. It must be fresh, and should be prepared twice a day when required. It can be mixed with milk, and is easily taken, as it has no unpleasant taste.

To prepare *bread jelly*:—Take a thick slice of stale

¹ Revalenta can be made cheaply by mixing two parts of red lentil flour with one part of barley flour, and adding salt to taste.

bread (preferably of seconds flour), allow it to soak in a basin of cold water for six or eight hours, then take it out and squeeze all the water out of it. Gently boil the pulp in a pint of fresh water for an hour and a half. Rub the fine gruel thus obtained through a fine hair sieve, and allow it to grow cold, when it will set into a smooth jelly. This can be mixed in the proportion of one part of the jelly to eight parts of the contents of the ordinary bottle.

Premature and feeble children require to be fed oftener, and in smaller quantities. If they are unable to suck, they must be fed with a spoon, or the teat of a nipple-shield may be inserted into the child's mouth as it lies on its back, the shield being filled with milk mixture, or some mother's milk, which will gently drop into the infant's mouth without any effort of suction on its part. Ten or twenty drops of brandy may be given, if necessary, along with the food every two or three hours.

Peptonized milk and "strippings" may be used where the digestion is feeble. "Strippings," or "afterings," is obtained by re-milking the cow after the ordinary supply has been drawn, and is richer in cream. It should be diluted with an equal quantity of barley water.

A well-nourished child gains about five ounces weekly during the first five months.

Crying is the way in which a child makes known its wants. It is a great mistake to suppose that every time a child cries it is hungry; some other cause is often present, and it is the duty of the nurse to find out what that cause

is. Crying from hunger is recognised by the length of time since the last meal, and by some of the movements of the child, such as sucking the fingers. Crying from pain may be brought about by a pin, a tight string, a hard fold rubbing against a tender spot, or various disorders of the bowels, such as flatulence and colic. The child also usually cries when its napkin is soiled.

If the crying be accompanied by a distressed countenance, hot and dry skin, with rapid breathing, no time is to be lost in sending for medical advice.

A healthy child ought to cry occasionally, as by so doing its lungs are exercised and expanded; if, however, there be nothing wrong with it, it soon falls asleep. Children often cry when they are sleepy. It is apt to be forgotten that a child may be thirsty, and the administration of a teaspoonful of cold water now and again is often most grateful.

Temporary *retention of urine* is not uncommon in infants, and is often due to acidity of the urine. It usually passes off in a few hours, and the application of a warm fomentation, as a rule, gives relief. If, however, the child still pass no urine within a reasonable time, and is evidently in distress and pain, a doctor should be sent for at once.

Swelling of the Breasts.—The breasts of newly born children occasionally swell up, become red and tender, and secrete a little milky fluid. This condition soon disappears, and the breasts must on no account be squeezed or rubbed. A warm water fomentation may be applied.

Flatulence and *colic* are recognised generally by the pain

coming on immediately after meals. The child becomes restless and pale, and begins to cry loudly. This usually ends in a little vomiting and escape of flatulence by the mouth, especially if the child be set up and gently patted on the back, and, as digestion goes on, the pain ceases. Gentle rubbing and warm linseed poultices over the child's abdomen, a teaspoonful of dill water in each bottle of food, and attention to the condition of the bowels, are the best means for relieving such symptoms. The usual cause of colic and flatulence is improper feeding, and the child's diet, of course, must be carefully attended to. If the child be on the bottle, the milk must be still further diluted, usually by the addition of a little more lime water or barley water, and a pinch of baking soda should be put into each bottle. The child must be kept warm.

Constipation may be due to an imperforate anus, which, of course, ought to be examined for carefully. It generally, however, arises from a disordered state of the bowels, often from improper feeding. A child on the breast suffering from constipation can be treated through the mother by giving her a saline aperient, such as a seidlitz powder, or two teaspoonfuls of cream of tartar.

Castor-oil (about half a teaspoonful for a dose) is a very safe medicine to give to the child itself, as is also Dinneford's fluid magnesia (a teaspoonful dose to begin with), the latter of which can be mixed with the milk in the child's bottle.

Manna is likewise useful and safe. It is sweet, and a

piece as big as a pea can be dissolved in the bottle, once, twice, or thrice daily, as required.

Phosphate of soda is one of the best laxatives for the nursery. As much as will lie on a threepenny-piece can be given as often as three times daily, if necessary, dissolved in the food.

A soap suppository often acts well on an infant's bowels. It is made by cutting off a piece about two inches long and half an inch thick, from a bar of soap. Scrape it smooth, and slope it down at one end to a point. Only insert the point of it into the anus.

When the child is a few months old, and is being brought up on the bottle, a teaspoonful of fine oatmeal or Mellin's food in its morning bottle is often sufficient to cause action of the bowels.

If, however, in spite of this, the constipation still prove obstinate, medical advice must be sought.

Diarrhœa, the opposite of constipation, is one of the commonest affections of infancy. In the great majority of cases it is due to improper dieting (either in quantity or quality), which causes indigestion of the food, when it is often associated with green-coloured motions, containing much mucus and undigested milk, which smell disagreeably. It may also be caused by improperly cleansed feeding bottles.

In cases of *diarrhœa*, the diet must be carefully attended to, and the milk (which should always be boiled) freely diluted with lime water when the child is on the bottle.

If the child be on the breast, and much reduced by diarrhœa, it must be removed from the breast, and fed on boiled milk, and lime or barley water, only a few teaspoonfuls being given at a time. Raw beef juice is often of extreme value in such cases.

Great attention is to be paid to keeping the child warm and thoroughly clean. It must be enveloped in flannel and cotton wool, and its feet must not be allowed to become cold.

In all cases of severe diarrhœa in children, medical advice should be at once procured, and the child's motions must be kept for the doctor's inspection.

Vomiting occurs naturally in healthy children to relieve over-feeding. It is called "possetting," and usually takes place soon after a meal, without causing any discomfort. The quantity so rejected is merely a mouthful or two, and the child's health does not suffer in the least. Vomiting may, however, become excessive, especially in improperly hand-fed children, and as this is usually serious, no time should be lost in seeking medical advice.

Jaundice in the newly born child is extremely common, and is called *jaundice neonatorum*. As long as the stools are not white, the whites of the eyes not yellow, and the urine does not discolour the napkins, the condition is of no importance.

Thrush, or white mouth, in a child, is a sign that the food disagrees. The diet must be carefully regulated and the bowels attended to, while glycerine of borax should be

applied to the mouth and tongue. All bottles and fittings must be kept scrupulously clean. If, however, the thrush persist, and especially if there be diarrhœa as well, and an eruption around the anus, no time should be lost in sending for a medical man.

Convulsions, or *Fits*, in infants, should always be regarded as serious. They may be caused by the irritation of teething, by a disordered state of the stomach or bowels, and by many other conditions. The first thing to do when a fit comes on, is to put the child into a hot bath for five minutes, to which some mustard has been added in the proportion of a tablespoonful of mustard to the gallon of water, and at the same time give it a good dose of castor-oil. A doctor should at once be sent for.

Inflammation of the eyes (ophthalmia) may be brought about by the entrance into the child's eyes of unhealthy vaginal discharge from the mother, by the irritation of soap, or possibly by cold. Prevention is better than cure, and the greatest caution ought to be taken in washing the infant's eyes at the time of birth with some lukewarm corrosive sublimate solution (1 in 2000). If, in spite of every precaution, symptoms of inflammation show themselves, the doctor should at once be communicated with, as the eyesight is apt to be destroyed unless prompt measures be taken. It is of the utmost importance to remember that the discharge from one eye will cause inflammation of the other healthy eye, if it should chance to touch it, and will also infect other people, if through carelessness any of the

matter should come in contact with their eyes. In the absence of medical advice, constant washing with the corrosive sublimate lotion must be had recourse to, and this, to do any good, must be continued at short intervals night and day. The rags or cotton wool used for sponging the eyes must be burned after use. Vaseline should be applied to the edges of the eyelids to prevent their sticking together.

Teething.—Children usually begin to get their temporary or milk teeth from the seventh to the ninth month. Sometimes the teeth begin to appear earlier than this, and often later. The complete set of milk teeth (20 in number) is generally cut by about the end of the second year. During this period of teething, the successive teeth make their appearance at intervals, those in the lower jaw usually preceding the corresponding ones in the upper jaw. There is generally an excessive dribbling of saliva from the mouth, and the child likes to bite some hard object to relieve the irritation of the gums. Rubbing the gums with the finger dipped in fresh lemon juice often soothes wonderfully.

Some children suffer comparatively little discomfort during teething, while others are afflicted with disorders of various kinds, such as convulsions, diarrhœa, bronchitis, &c. The mortality of children during teething is high. Medical advice should be at once sought on the child showing signs of being really ill, as it is easier to avert many infantile disorders, than to cure them when they are once fairly developed.

A word of warning may here be inserted with regard to all "soothing medicines," "sleeping draughts," "cordials," "teething powders," &c., for infants. Such preparations do an immense amount of harm ; they cannot be too strongly condemned, and their employment should be strictly forbidden. Many people have a profound prejudice against "baby comforters" in the shape of indiarubber teats. These, however, are quite harmless so long as they are not perforated, and are of special value for delicate children, as they prevent undue crying, and thus lessen the possibilities of rupture. It is absurd to think that they create flatulence. They must, however, be kept clean, and should not be so heavy as to drag down the lower lip.

If the child be *tongue-tied*, and thus prevented from sucking properly, a doctor should be consulted as soon as possible.

CHAPTER XXIII.

DESCRIPTION OF CERTAIN METHODS AND APPLIANCES.

By an *enema* is meant a liquid injection into the rectum, either for the purpose of emptying the lower parts of the bowels, or for the purpose of administering nutriment when the patient is unable to swallow or to retain food given by the mouth.

Enemata, for inducing action of the bowels and emptying the rectum, should consist of a pint or more of fluid ; while those intended for nutriment, and which are therefore to be retained in the bowel, should be much smaller in quantity, not more than two to four ounces—in other words, about a teacupful at most. An ordinary enema, or Higginson's syringe, should be used, which must first be emptied of air, and the nozzle, previously oiled, is to be gently introduced into the anus.

A good purgative enema may be made as follows :—Castor-oil, one tablespoonful ; olive oil, two tablespoonfuls ; turpentine, one teaspoonful ; and warm water, one pint. A pint or more of this, injected into the rectum, will cause a thorough evacuation of the lower bowel. Soapy water also makes an

excellent purgative enema, of which a pint or more can be injected. Pure glycerine has lately come into vogue as a means of emptying the lower bowel. About a teaspoonful is the quantity to be injected into the rectum, and it usually acts satisfactorily. A special glycerine enema syringe is used for the purpose.

Nutritive enemata may consist of a great variety of substances. They are most commonly composed of beef juice, port wine or brandy, and a raw egg. They must be warm, and are to be injected very slowly and cautiously, so as not to irritate the bowel, otherwise they are apt to be expelled at once, which of course renders them useless. When a nutritive enema is ordered, the medical man will tell the nurse how he wishes it to be made, and how often it is to be repeated. It is possible to keep patients nourished for many days by means of nutrient enemata alone.

Suppositories are conical bullet-shaped bodies made of Cacao butter, and impregnated with some medicinal substance. They are for introduction into the rectum. Vaginal suppositories are known as *pessaries*.

The body heat causes the butter to melt, and the drug contained in the suppository is gradually absorbed into the system through the mucous membrane of the rectum. Suppositories are used when we wish the drug to act specially on the parts in the pelvis, or when for some reason it is not desirable to administer the medicine by the mouth. Morphia is very frequently administered in a suppository. Suppositories should never be used continuously, except

under medical direction. Glycerine can be conveniently administered in the form of a suppository, to bring about an action of the bowels.

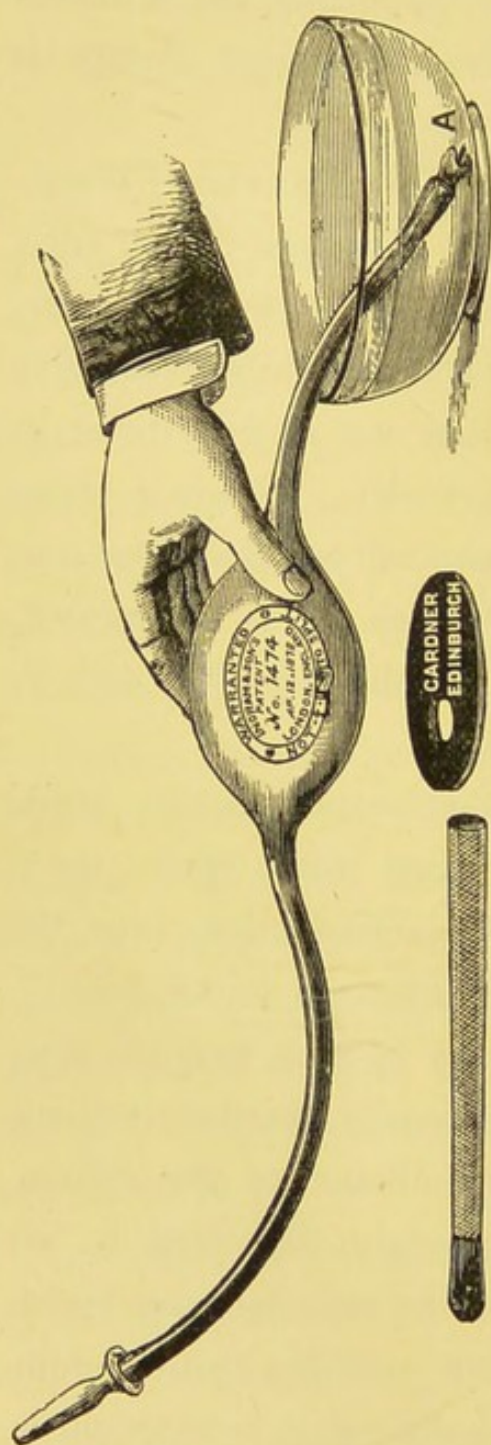


FIG. 30.—Higginson's syringe.

Irrigation of the Vagina is performed either by means of douching or syringing.

The douching apparatus (Fig. 31) consists of a vessel made usually of tin, for holding lotion. This is placed at a convenient height above the patient, and to it is attached an indiarubber tube, with a vaginal piece through which the lotion is allowed to flow into the vagina in a continuous stream. As this apparatus is somewhat cumbersome, it is often convenient to substitute for it the *syphon* douche (Fig. 32), which is easily portable and equally satisfactory.

In *douching*, the patient must lie on her back, with the hips well elevated upon a suitable pan or bed bath (Fig. 33), placed in such a way as to receive the water as it

flows out of the vagina. To this pan a waste-pipe may be attached, leading to a bath or other receptacle below the bed. As the introduction of air into the vagina is dangerous after labour, the tubing from the douche can is to be emptied of air by allowing the water to run through it till it comes out warm, and then the vaginal tube must be introduced very gently, and kept with its point directed

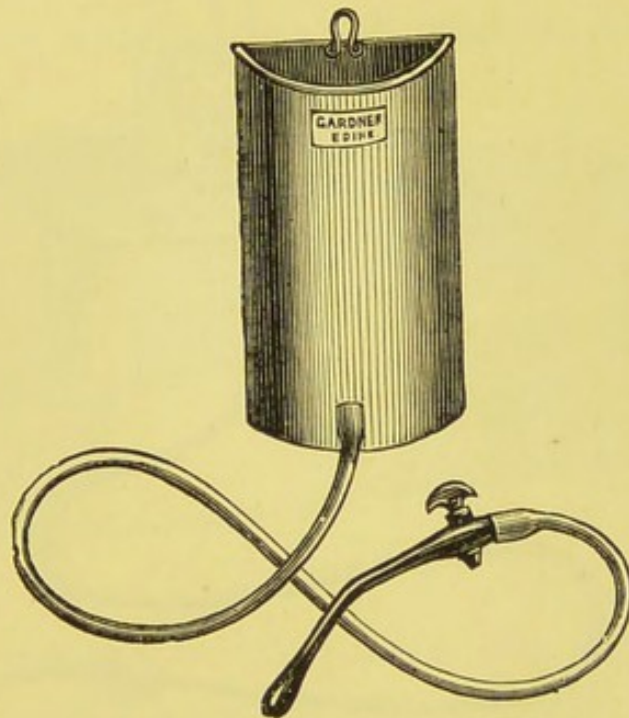


FIG. 31.—Vaginal douche.

against the posterior vaginal wall. This precaution is necessary to prevent its introduction into the cervix, and the passage of fluid into the cavity of the uterus, an accident which has been attended with serious results. The vaginal tube, which can be made of gum elastic, vulcanite, or glass, should have no perforation at its extreme point, otherwise fluid is apt to be forced into the uterus (Fig. 31).

For vaginal douching, hot water, as hot as the patient can bear (from 110° to 120° F.), is to be used. To this may be added some antiseptic, such as carbolic acid, Condy's fluid, &c., or one of the many medicinal substances which may be

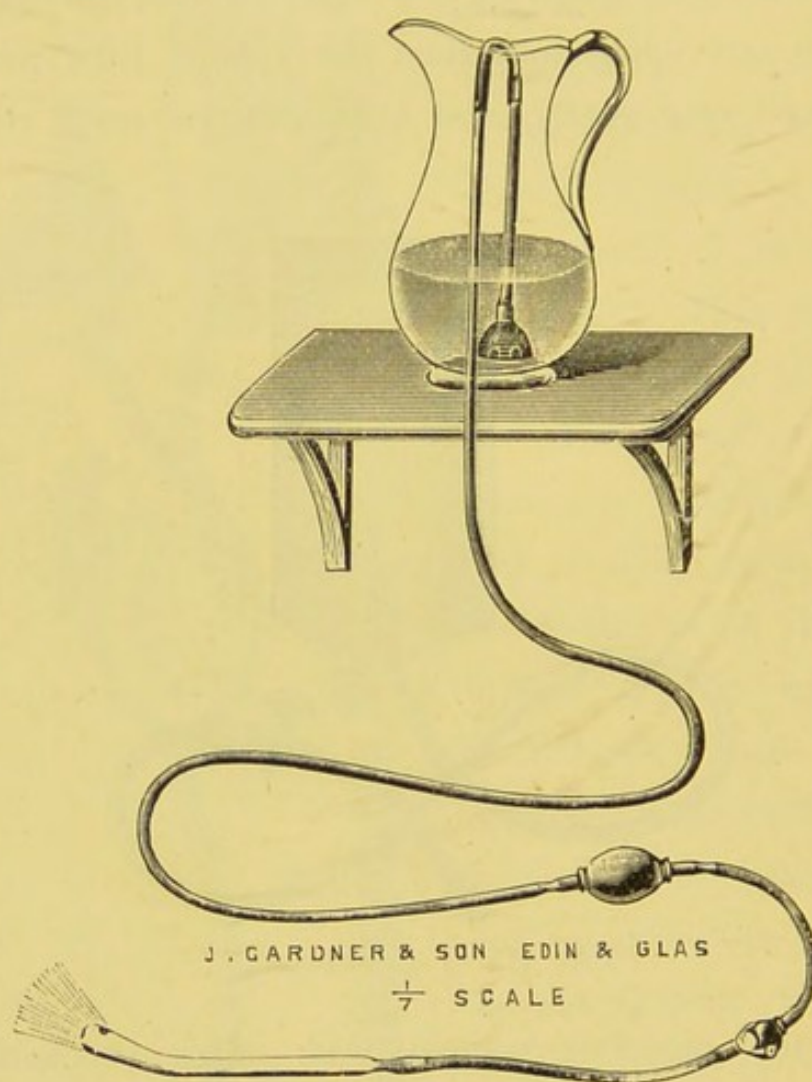


Fig. 32.—Syphon douche.

ordered by the physician. The douche can should not be at too great a height above the patient, otherwise the force of water will be stronger than is either necessary or safe. The bed should be guarded with a waterproof placed below

the patient, in case of any water being accidentally spilled. Such an accident, however, should not occur in the hands of a careful nurse. In hospitals, each patient requiring douching should have her own vaginal tube, preferably made of glass.

In pelvic inflammation, hot vaginal douching is a most valuable means of treatment. Its benefits entirely depend on its proper use. It is essential that the patient should lie on her back, with the hips well raised on a bed bath,

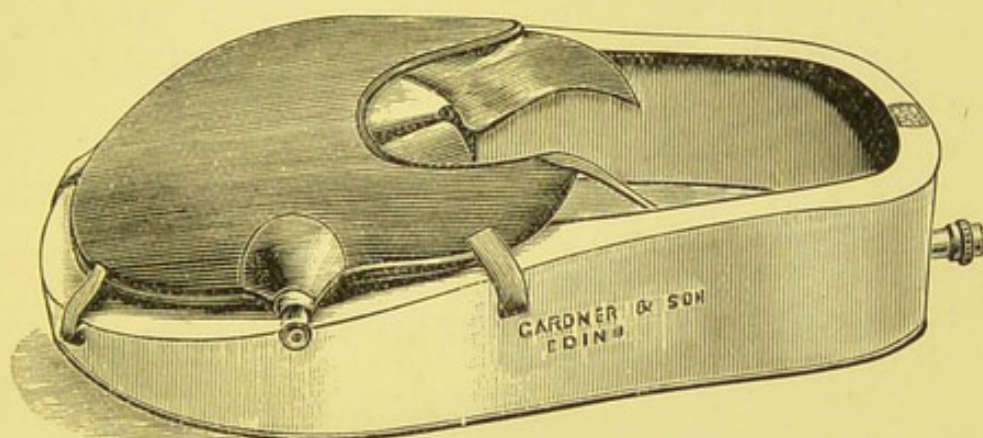


FIG. 33.—Bed bath.

and her head low. In this position (Fig. 34), the roof of the vagina is on a lower level than the vulva, and thus a constant pool of lotion fills the upper part of the vagina during the continuance of the douche. By this means the hot lotion acts continuously and beneficially on the surrounding pelvic organs. Quite a small and gentle stream of hot lotion is required to produce this result. It is usual to douche two or three times daily, for a period of twenty minutes or so on each occasion, the douche can being kept replenished with water at the proper temperature.

Syringing is performed by an ordinary Higginson's syringe (Fig 30), with a vaginal tube. Before use it must be emptied of air, and too much force must not be employed in working it. It is usually most convenient to make the patient lie on her left side, with the hips well over the edge of the bed.

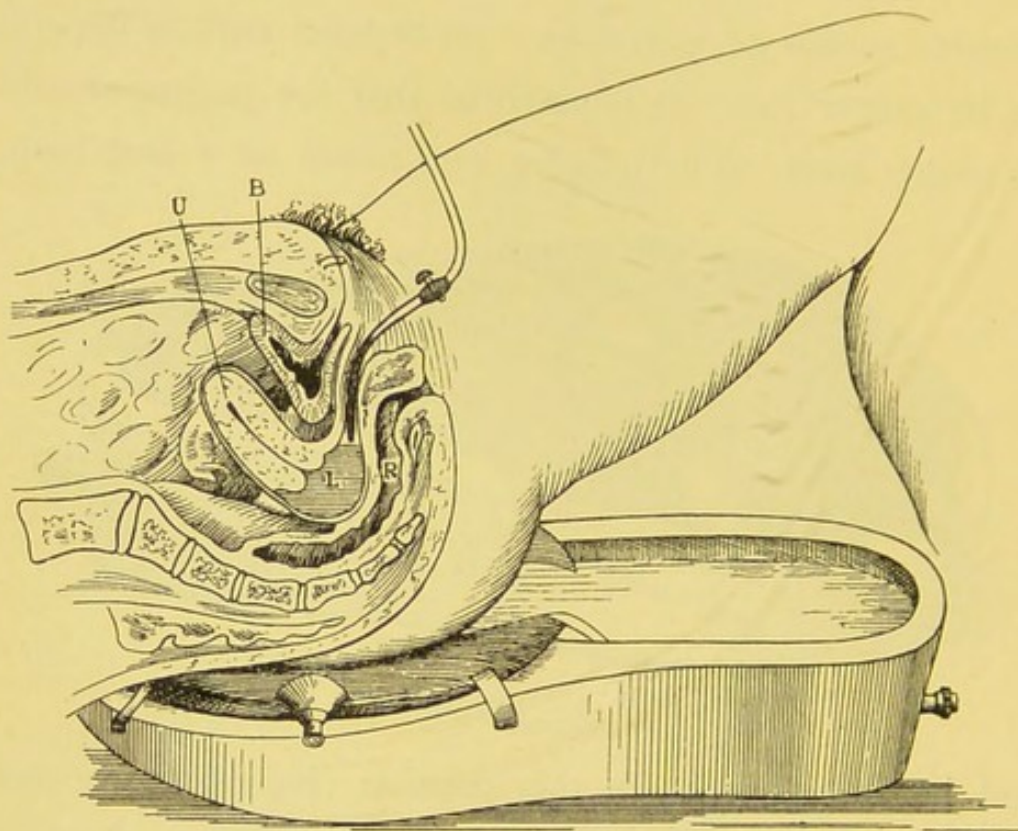


Fig. 34.—Diagram of patient on bed bath while douching, showing position of pelvic organs. *U*, Uterus. *B*, Bladder. *R*, Rectum. *L*, Pool of lotion in roof of vagina.

The vaginal tube of the Higginson's syringe, previously oiled with antiseptic vaseline, is then carefully introduced into the vagina, after seeing that all the air is expelled from the syringe. The lotion should be contained in a jug, not in a shallow basin, and the outflowing lotion is to be caught in a

basin held below the buttocks, and the bedding is thus kept perfectly dry. The syringe can also be used with the bed bath, the patient lying on her back. Syringing is usually employed for cleansing purposes and arresting hæmorrhage. It is most important, after labour, that the water used for syringing should be rendered antiseptic, by the addition of either carbolic acid, perchloride of mercury, Condy's fluid, &c. If perchloride of mercury be used, great care is requisite not to make the lotion too strong. It must never be stronger than 1 in 2000. Great care must be taken that the return flow from the vagina should correspond to the amount injected; otherwise the vagina may become over-distended with the lotion (ballooning of vagina), and there is danger in consequence of regurgitation into the uterus. Pulling back the perineum with the finger will, if necessary, prevent this.

Vaginal Plugs are constantly used in the treatment of abortion, and sometimes to temporarily arrest the hæmorrhage in cases of placenta prævia. The best material to plug the vagina with is cotton wadding. Corrosive or salicylic wool should be used if possible. Several pledgets of the wool, each about the size of a small hen's egg, should be soaked in carbolic lotion (1 to 40), and partially wrung dry. These pledgets are to be tied on to a long piece of string, at intervals of about six inches, in the manner of a kite tail. They are then introduced one after the other, and packed firmly till the vagina is entirely filled. Previous to introducing the plugs, the bladder and rectum should be

emptied, and the vagina syringed and cleared of all clots. With the vagina thoroughly plugged in this way, not a drop of blood can escape. The plug should not be allowed to remain in for more than from six to ten hours. It is easily removed by pulling on the end of the string to which all the pledgets are attached. It is generally necessary, as long as the plug remains in the vagina, to draw off the urine with a catheter. The bowels must not be allowed to act as long as the plug is in position. Strips of gauze are often used for plugging the vagina.

In cases of great emergency, an ordinary silk handkerchief can be used as a plug, but it is extremely unsatisfactory.

Glycerine Plug.—This is frequently used in the treatment of pelvic inflammation and congestion, and consists of a pad of cotton wool saturated with glycerine. It is introduced into the vagina, and should have a string attached to secure easy removal.

The Catheter.—For the purpose of drawing off the urine, a nurse must provide herself with a gum elastic male catheter, number 8 or 10. The ordinary silver female catheter is frequently of no use from its shortness. The greatest care must be exercised in keeping the catheters absolutely clean, and for this purpose they must be thoroughly washed, both before and after use, in a solution of carbolic acid. In prolonged cases, where catheterisation requires to be carried on for any length of time, the catheter, when not in use, should be kept constantly lying in a solution of carbolic acid (1 in 40). As soon as the

catheter becomes the least frayed or worn, a new one must be procured. If any impure matter be carried into the bladder by means of a catheter, inflammation of the bladder is apt to be set up. This is a most serious and painful disease, which is often incurable, and so every precaution must be taken to prevent its occurrence. A soft rubber catheter may also be used, which can be boiled for 10 or 15 minutes before use to ensure its cleanliness. It is especially suitable in the puerperium.

When it is necessary to pass the catheter after labour, it should be done by sight, and not by touch, so as to prevent the possibility of any discharge being carried into the bladder along with the catheter. The patient should lie on her back with her knees well separated. The labia should be held apart by the patient or an assistant, and the parts thoroughly cleansed with an antiseptic wash. The catheter can then be passed by the aid of the eye, with the precautions mentioned below, care being taken to prevent any urine entering the vagina, or coming in contact with the genital wounds.

The catheter may be passed without in any way exposing the patient, and can be done as follows:—Remove the wire or stilette, and see that the catheter has been well washed in carbolic lotion, and that the eye of the catheter is perfectly clean. Place the patient on her back, with the knees well drawn up, and a basin or bowl close to the vulva, which must have been previously cleansed with an antiseptic lotion. Oil the catheter with some antiseptic

vaseline or oil, and take it in the left hand. Stand on the right side of the patient, and oil the forefinger of the right hand, which is then to be passed into the orifice of the vagina under the patient's right thigh. Raise the finger, and feel gently for the under surface of the symphysis pubis, above and in front of which the pouting rim of the meatus urinarius is felt. The more this rim is pressed upon, the more distinct does it become, and this makes it comparatively easy to recognise. The forefinger of the right hand is kept steadily on the meatus, while the left hand is now passed over the patient's thigh, and the point of the catheter is gently guided into the urethra by means of the right forefinger. The thumb is then placed over the end of the catheter, before slipping it into the bladder. After the urine has been drawn off, the thumb must again be placed over the end of the catheter while withdrawing it.

Inexperienced persons are apt to slip the catheter into the vagina by mistake. When the catheter is passed properly, the finger easily recognises it through the anterior vaginal wall as lying in the urethral canal, and this verification of its position should always be made.

Bandaging the Breasts.—The breasts sometimes require to be bandaged when the patient is not going to nurse, in order to help to dry up the milk. This is best done by enveloping the breasts in cotton wadding, which is held in position by a tightly pinned bandage or slip-body placed round the patient's chest. This bandage should be kept

on for about a week, and should be tightened daily as it relaxes.

Sometimes belladonna plasters are ordered. These must be shaped in such a way as to completely cover the breast, leaving only the nipple uncovered. Two plasters, each measuring six inches square, are usually sufficient for both breasts. When the breasts are swollen and tender, great relief can generally be obtained by supporting them each in a soft handkerchief, which is tied round the neck.

The *Abdominal Bandage*, or *Binder*, is best made of a piece of unbleached muslin. It should be wide enough to extend from midway between the tip of the breastbone and the umbilicus above, to well below the hips. The ordinary bolster-case, which is commonly used, is too narrow. A folded towel is often placed above the symphysis pubis and below the binder, to act as a compress on the uterus. The binder should be fastened tightly with strong safety pins.

The *T Bandage* is used to keep applications in contact with the vulva. It consists of a band round the waist, and to this is attached, both in front and behind, another bandage or a handkerchief, which passes between the thighs. By this means, dressings, &c., can be kept firmly applied to the perineum and vulva.

The *Breast Pump* is occasionally required to temporarily relieve an engorged breast, or to draw out retracted nipples. If possible it should never be used if the milk is to be put

away, as its use simply encourages an increased flow of milk. In the absence of a breast pump, depressed nipples can

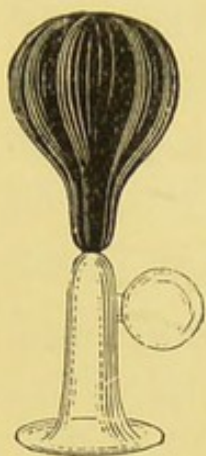


FIG. 35.
Breast pump.

sometimes be drawn out by filling a soda-water bottle with hot water, emptying it quickly and applying its mouth over the nipple. A cloth wrung out of cold water should then be rolled round the bottle, which, by cooling the air inside, causes the nipple to be sucked into the bottle's mouth.

The *Hypodermic Syringe* consists of a graduated glass tube, with a piston working inside it. To the nozzle of the syringe a hollow needle is screwed on, through which fluid can be injected underneath the skin. A nurse is sometimes entrusted with the use of a hypodermic syringe, for the purpose of injecting ergotin, &c. In doing so, she must see that the syringe is quite clean, and in good working order; and in filling it with the solution, all air must be carefully excluded. Ergotin should be injected deeply into a fleshy part of the body, usually the buttock. The hypodermic syringe must only be used under medical supervision. Great care must be taken not to pass the needle into a large vein.

Poultices and Fomentations.—To make a linseed meal poultice, pour boiling water into a bowl, then quickly sprinkle the meal into it, at the same time stirring, till a consistent doughy mass is formed. Spread this quickly and smoothly over a piece of linen, leaving a narrow border at

the edges of the linen uncovered, which can be folded over. This must be applied without delay, so that it may be as hot as the patient can bear.

A mustard poultice is made by mixing dry mustard and linseed meal together, in equal quantities, and then proceed as in the ordinary linseed poultice.

Fomentations are made as follows :—Into a basin is placed a large towel all spread out, and with its ends hanging over the edge of the basin. A piece of coarse flannel is then placed in the basin, and boiling water from a kettle is poured on it. The flannel is then lifted out of the basin by means of the towel which is underneath it, and it is quickly wrung perfectly dry, by twisting the dry ends of the towel. It is then to be applied as hot as the patient can bear it, and there is no fear of scalding the skin if it has been thoroughly wrung dry. A piece of dry flannel should be laid over it, and over this a piece of Mackintosh, so that the heat may be retained as long as possible. Turpentine or laudanum can be sprinkled over the fomentation when ordered by the medical attendant. When turpentine is sprinkled over the flannel in this way, it is called a *turpentine stupe*.

Incubator.—As feeble premature children possess but slight powers of maintaining their body heat, which is essential to the preservation of life, much may be accomplished towards this end by the use of a modification of Tarnier's so-called "incubator" (Fig. 36), which can be easily and inexpensively obtained.

This consists of a thick wooden box, divided by a shelf into two compartments, which freely communicate with

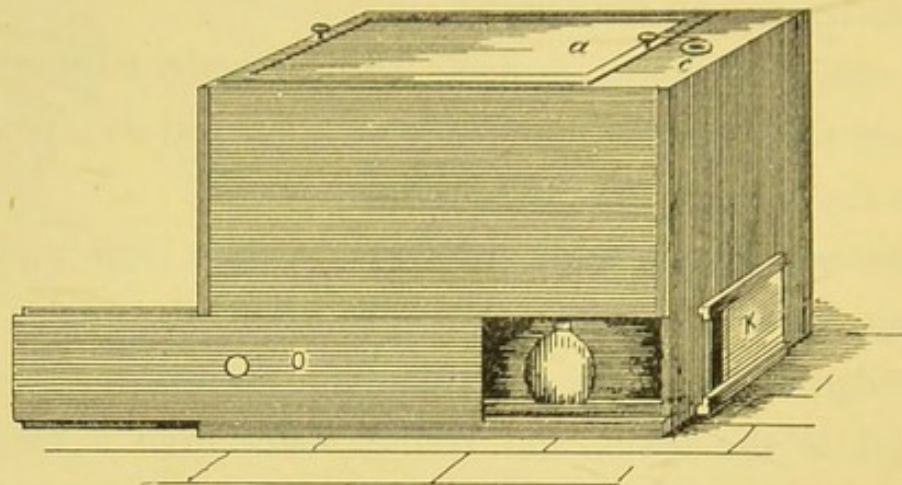


FIG. 36.—Incubator. *a*, Glass pane on lid. *c*, Opening for exit of warm air. *k*, Sliding door for entrance of air. *o*, Sliding door for inserting bottles.

each other at one end. The upper compartment, in which the infant lies, has in its hinged lid a glass window, and

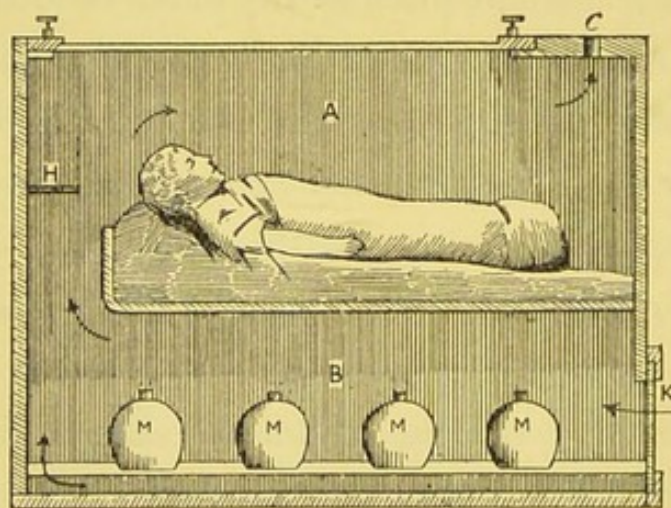


Fig. 37.—Section of incubator, showing interior.

a round hole $2\frac{1}{2}$ inches in diameter, and should contain a shelf for a thermometer to lie on.

The lower compartment should be large enough to contain four tin or earthenware hot-water bottles, to

which access can be obtained by a lateral sliding door, while at one end a permanent opening should be present,

regulated in dimensions by a small sliding door. By this means, when working, it will be seen that the air heated by the hot-water bottles in the lower compartment will rise to the upper compartment and pass outwards through the hole in the lid, a fresh current entering by the opening at the end of the lower compartment, and being heated as it passes over the bottles.

The temperature in the upper compartment should be maintained as nearly as possible about 90° F. This having once been acquired, can be easily regulated by filling in rotation each of the bottles with boiling water, one every two hours, when the child is fed. The children should be clothed in the usual way, and bathed in water at 100° F. The diapers must be changed six to eight times daily. For feeding of such puny children, see page 206. By the above means the authors have on several occasions successfully reared children weighing at birth 2½ to 3 lbs.

Sterilization of Milk.—Cow's milk is a fluid peculiarly liable to be contaminated by disease germs (bacteria), and is a most suitable medium for the growth and development of these bacteria. The greatest care must therefore be taken in the administration of milk, especially to infants (who, when artificially fed, depend almost entirely upon cow's milk), to see that it is as free from germs as possible. A few drops of milk may contain over a million bacteria of different kinds. As has been well said, "If we consider the insanitary conditions under which only too frequently milking is carried on, the stifling atmosphere of the ill-ventilated

milking-shed, rich in germ life, the carelessness as regards cleanliness, not only in the condition of the animals themselves, but only too frequently in those entrusted with the milking of them, as well as the number of different hands the milk passes through before it reaches the consumer,—if we take all these details into consideration, then indeed we shall cease to wonder that our milk in its raw condition can contain such multitudes of contaminating living centres.”

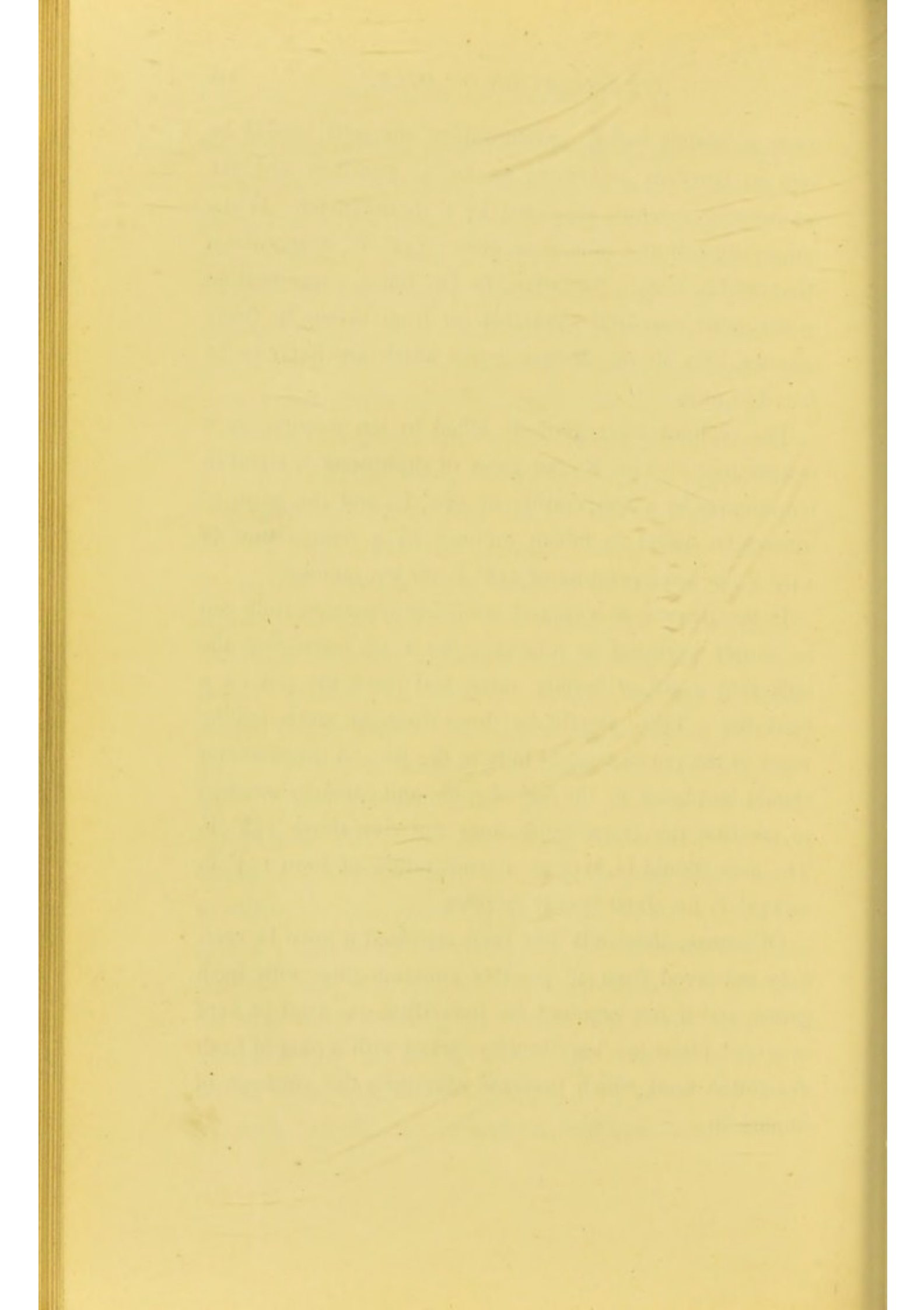
Further, it has been shown that a considerable proportion of cows (especially those that are stall-fed in towns) suffer from tubercular disease, and that the milk of about fifty per cent. of these tubercular animals contains the bacilli or bacteria of tubercle. The possible dangers of raw dairy milk are therefore obvious. To obviate the risk of disease being thus conveyed to infants through milk, the milk must as far as possible be rendered *germ-free*, and this is accomplished by sterilization. Complete sterilization of milk can only be secured by keeping it for some time at boiling point (212° F.), or even above it. As this produces the strong and peculiar taste which has brought boiled milk into such disrepute, a modified plan has been adopted, which has as its object the destruction of the germs by maintaining the milk at a temperature of about 156° F., which is a sufficient temperature to destroy most of the germs, and yet prevents the milk from acquiring the unpalatable flavour so much complained of in boiled milk. This process is usually carried out in a sterilizing apparatus, many varieties of which are sold. During this process of sterilization, or, as it is

more accurately called, pasteurisation, the milk should be kept in constant movement as far as possible, and the temperature carefully regulated by a thermometer. If the temperature of the milk rises above 158° F., it acquires a disagreeable taste. According to Dr. Bitter, pasteurisation in the most approved apparatus for from twenty to thirty minutes, kills all the disease germs which are likely to be found in milk.

The typhoid fever germ is killed in ten minutes by a temperature of 140° F., the germ of diphtheria is killed in ten minutes by a temperature of 149° F., and the germ of tubercle is killed in fifteen minutes by a temperature of 149° F., or a temperature of 158° F. for ten minutes.

In the absence of a special sterilizing apparatus, milk can be simply sterilized as follows:—Set a jar containing the milk into a pot of boiling water, and place the pot on a brisk fire. There should be three times as much boiling water in the pot as there is milk in the jar. A thermometer should be placed in the jar of milk, and carefully watched to see that the temperature does not rise above 158° F. The milk should be kept at a temperature of from 154° F. to 156° F. for about twenty minutes.

Of course, after milk has been sterilized it must be carefully preserved from all possible contamination with fresh germs, and if not required for immediate use must be kept in a cool place in clean bottles corked with a plug of fresh *dry* cotton wool, which prevents effectually the entrance of impure air.



APPENDIX.

MEMORANDUM BY THE BRITISH MEDICAL ASSOCIATION OF THE REGULATIONS PROPOSED FOR ADOPTION BY THE OBSTETRIC NURSES BOARD.¹

WOMEN who are registered as obstetric nurses in England, and who wish to act as such, must conform to the following regulations and instructions :—

SECTION A.—GENERAL.

1. The instruments, which an obstetric nurse must always keep carefully clean and in order, and take with her when called to a confinement, are the following :—

A medium-sized syringe with a vaginal tube, a flexible catheter, a pair of umbilical cord scissors, a clinical thermometer, and a nail brush.

Besides these, the obstetric nurse must take with her, in clean, well-stoppered bottles, the following or other antiseptics and lubricants which may be approved by the Obstetric Nurses Board :—

- (1) 3 oz. of liquefied carbolic acid, *B.P.*, for making a disinfectant solution of the strength of one tablespoonful to a pint of water (1 in 40).
- (2) 2 oz. of vaseline, with which is incorporated 5 per cent. of carbolic acid.

¹ *British Medical Journal*, 19th February 1898.

As carbolic acid in crystal and liquid state, and also in strong watery solutions, is corrosive when applied externally, and when given internally is a poison, the obstetric nurse must take particular care to avoid its misuse.

The obstetric nurse must not leave any of the above appliances with the pregnant or lying-in woman.

An official appointed by the Obstetric Nurses Board shall from time to time inspect the appliances, to see if they are kept in complete working order.

Every obstetric nurse must possess an approved book of instruction for obstetric nurses.

2. Obstetric nurses must keep themselves scrupulously clean, and avoid contact with sick persons and decomposing substances of every kind, so that their fingers, appliances, or clothes may not contain any infective material which might be conveyed to the lying-in woman during examinations, and thereby produce puerperal fever. Obstetric nurses are strenuously enjoined, before touching a lying-in woman, to wash their hands and instruments thoroughly with a disinfectant.

3. If an obstetric nurse has charge of a lying-in case, she must not leave during the delivery, and must stay with the woman at least one hour after the expulsion of the after-birth in a normal labour. In cases of abnormal labours, or in threatened danger, she must always await the arrival of the doctor, and remain with the case as long as he thinks necessary, and faithfully carry out his instructions.

4. In cases of threatened danger, or in abnormal conditions occurring to women either pregnant or in labour, or to their newborn children, or at the sudden death of a pregnant or lying-in woman, the obstetric nurse must at once see that a registered medical practitioner is called in.

5. In apparently dead children of viable age in whom no signs of putrefaction have developed, the obstetric nurse, in the absence of the medical practitioner, who must be summoned at once, should practise the methods for resuscitation taught her, for at least half-an-hour, or until the child breathes regularly.

6. Any obstetric nurse who procures the death or expulsion of a foetus, the substitution or changing of a child, or who is accessory thereto, is performing a criminal action.

7. Obstetric nurses must conscientiously guard the secrets of their patients, and must only divulge them if the law requires them to do so.

8. The obstetric nurse shall be responsible for the cleanliness, comfort, and proper dieting of the mother and child during the lying-in period, which shall be held in a normal case to mean the time occupied by the labour and a period of ten days thereafter.

9. If a registered medical practitioner be also in attendance, the obstetric nurse shall act in accordance with the instructions given by him, and shall be responsible for the carrying out of the same.

10. A "normal case of labour" (styled "natural labour" in the Act) shall, for the purposes of the Act, and of this its appendix, be held to mean a labour which occurs at full time, in which the presentation is that of the vertex, and in which there are none of the conditions specified in Section C.

SECTION B.—INSTRUCTIONS FOR OBSTETRIC NURSES.

Precautions for the obstetric nurse to avoid the risk of carrying infectious diseases, especially puerperal fever.

1. The obstetric nurse must be scrupulously clean in

every way, because the smallest particle of decomposing matter may set up puerperal fever.

It is particularly dangerous for an obstetric nurse who is attending a lying-in woman, where there are foul-smelling emanations, to go direct to another case without first thoroughly cleansing her hands and appliances, and changing her clothing.

Unless the cleansing process be thoroughly carried out, even after a healthy confinement, there will be remains of blood, lochia, or liquor amnii on the fingers, and especially under the nails, which will there decompose, and thereby be dangerous to the next case attended. The obstetric nurse must therefore keep her nails cut short, and preserve the skin of her hands from chaps, injuries, and indurations.

2. The obstetric nurse shall see to the proper ventilation of the lying-in chamber, and to the keeping of the bed and body linen in a thorough state of cleanliness.

3. An obstetric nurse must not attend cases of general illness of an infective or contagious character. In the case of a lying-in woman contracting puerperal fever or any septic condition whatever, the obstetric nurse must notify the same to the sanitary authority, and abstain from attending any other woman at the same time, until she have obtained the written permission of the medical officer of health for the district.

4. An obstetric nurse must not under any circumstances assist in the laying out of dead bodies.

SECTION C.—CONCERNING THE SUMMONING OF REGISTERED MEDICAL PRACTITIONERS.

1. An obstetric nurse is bound, in all cases of abnormal pregnancy, labour, or lying-in, as well as in illness of the

child, to demand medical assistance. She must, under the following circumstances more particularly, insist upon a registered medical practitioner being called :—

(a) *In the Case of a Pregnant Woman :—*

- (1) When she suspects, or has discovered, a narrow pelvis.
- (2) When there is hæmorrhage.
- (3) When the patient is threatened with an attack of any illness.
- (4) When the patient dies suddenly.

(b) *In the Case of a Woman during Labour :—*

- (1) In all cases of abnormal position of the child, if possible, before the liquor amnii escapes.
- (2) In presentation of hands, feet, or when the cord presents with the head.
- (3) In every case where, either from the smallness of the pelvis or largeness of the child's head, or from any cause whatever, the normal descent of the head is interfered with, by which undue pressure may be caused to the parts between the child's head and the pelvis.
- (4) In disturbance of the labour pains, leading to delay of birth, or in cases of excessive pains followed by exhaustion. To this category belong the cases where a child whose head has already deeply descended is not delivered for two hours after the opening of the mouth of the womb and the escape of the liquor amnii.
- (5) In hæmorrhage, at whatever time in the labour it may occur.
- (6) In presenting placenta, even when the obstetric nurse does not at the moment of the examination perceive any bleeding.
- (7) If the placenta be not expelled an hour after

the birth of the child, even if no bleeding has occurred.

- (8) In all cases of rupture of the perineum, as soon as such occurs.
- (9) In all cases where abortion or premature labour is threatening or has occurred.
- (10) In twins, or multiple births, or monstrosities.
- (11) In all cases of apparent sickness or threatened danger, as well as in the event of the sudden death of the woman.
- (12) In the apparently dead newborn child.
- (13) In all cases of still-birth, no matter what the stage of development of the child.

(c) In the Case of Lying-in Women and in the Case of Newly-born Children:—

- (1) In the lying-in woman, when she notices a rise of pulse or temperature, rigor, tender abdomen, stoppage of the lochia, or bad smell of the same.
- (2) In all cases of illness attacking the newly-born child.

2. When a doctor is sent for to a protracted labour, the obstetric nurse shall, when possible, send a written description in a few words of the cause of the delay, such as, narrow pelvis with head presentation, cross presentation, hæmorrhage during the afterbirth period, so that the doctor may at once know what it will be necessary for him to bring with him.

3. If a patient or her relations wish for the doctor to be called in, even if the obstetric nurse does not see any abnormal symptoms, she is not to object, or try to persuade them not to do so.

The choice of the medical practitioner rests with the patient or her relations, and the obstetric nurse is not to express any opinion unless requested to do so.

4. The obstetric nurse must inform the medical practitioner truthfully and accurately of all that she has observed about the case previous to his arrival, and stay as long as he wishes, to assist him, and conscientiously carry out his orders.

SECTION D.—CONCERNING THE DAY BOOK.

Every obstetric nurse must keep an accurate account in a day book of all the cases she attends in her capacity of obstetric nurse.

An official appointed by the Obstetric Nurses Board shall from time to time examine the day book, which must be delivered to him on demand.

Upon demand, the day book must be laid before the medical practitioner called in to the labour, who shall be at liberty to write his own remarks upon the same.



GLOSSARY AND INDEX.



GLOSSARY OF SOME OF THE TECHNICAL TERMS USED THROUGHOUT THE BOOK.

- Abdomen*—The belly.
- Abortion*—An untimely birth (before the sixth month).
- Accoucheur*—A man who assists women in childbirth.
- After pains*—Pains occurring after labour, caused by painful contractions of the uterus.
- Albuminuria*—The presence of albumin in the urine.
- Amenorrhœa*—Cessation of the monthly discharge.
- Amnion*—One of the membranes of the foetus.
- Anteversion*—A falling forwards (usually applied to the uterus).
- Antiseptics*—Chemical substances used to counteract putrefaction and infection.
- Anus*—The external orifice of the bowel.
- Areola*—The coloured circle round the nipple which darkens in pregnancy.
- Arteries*—Blood vessels carrying pure blood from the heart.
- Articulations*—Joints between bones.
- Aseptic*—Free from septic poisoning and the germs which cause it.
- Attitude of the Fœtus*—The posture of the child in the uterus.
- Auscultation*—The act of listening (generally through a stethoscope) for sounds developed in the interior of the body.
- Axis of the Pelvis*—The direction in which the child passes through the pelvis. *Curve of Carus*.
- Bacteria*—Disease germs.
- Ballottement*—One of the signs of pregnancy.
- Binder*—A bandage to put round the abdomen after labour.
- Bladder*—The receptacle in which the urine collects, before it is passed from the body.

Breech—The buttocks.

Bregma—The anterior fontanelle.

Brim of the Pelvis—The inlet of the pelvis.

Broad Ligaments—Folds of peritoneum on either side of the uterus.

Calcification—The deposit of earthy salts in the tissues, transforming them into bony material.

Capillaries—Small blood vessels intervening between the arteries and the veins.

Caput Succedaneum—A puffy swelling which forms on the foetal head during labour.

Catheter—An instrument for withdrawing the urine from the bladder.

Caul—Part of the membranes which sometimes envelope the head of a newly-born child.

Cervix—The neck of the uterus.

Chorion—One of the membranes of the foetus.

Cicatrix—The scar of a healed wound.

Clitoris—A small projection at the upper part of the vulva.

Coccyx—The lower part of the spinal column.

Colostrum—The first milk in the breasts after delivery.

Comatose—In a state of stupor.

Conjugate Diameter—The antero-posterior diameter of the pelvis.

Convulsions—Fits.

Cord (Umbilical)—The navel string.

Cystitis—Inflammation of the bladder.

Decidua—The thickened mucous membrane of the uterus in pregnancy.

Denominator—That portion of the presenting part of the foetus from which the positions are named; for example, *occiput*, *chin* (mentum), *sacrum*, in vertex, face, and breech presentations respectively.

Douche—A stream of water directed against some part of the body.

Douglas' Pouch—The pouch of peritoneum between the uterus and the rectum.

Drachm—60 grains—one-eighth of an ounce. In fluid measure, about a teaspoonful.

Dry Labour—A labour in which there is a very slight discharge of liquor amnii; or a labour in which the discharge of waters takes place before, or at the very beginning of the uterine contractions; or a labour where there are no "forewaters."

Dysmenorrhœa—Painful menstruation.

Eclampsia—A serious form of convulsion which may occur either before, during, or after labour.

Embryo—Name given to the developing child in the uterus during the early months of pregnancy.

Enema—An injection into the lower bowel.

Engagement of Head.—The entrance of the foetal head into the brim of the true pelvis.

Ergot—A drug which is administered to bring about contraction of the uterus after labour.

Extra-Uterine Pregnancy—Pregnancy occurring outside the uterine cavity.

Fallopian Tubes—Two canals, one on either side of the uterus.

Fetid—Having an offensive odour.

Fœtus—The child while still in the uterus.

Fontanelles—Membranous interspaces between the bones of the child's skull where the sutures join.

Foramen—A small opening, usually in a bone.

Forewaters, or *Bag of Waters*—That portion of the liquor amnii which is in front of the presenting part of the child, in labour.

Fourchette—A fold of skin continuous with the perineum.

Fundus—The base. *Fundus uteri* is the upper part of the uterus.

Funis—The umbilical cord.

Genitals—The sexual organs.

Germes—Small solid particles existing everywhere in the air, which cause putrefaction. They are living organisms, and multiply rapidly under suitable conditions. They infest all our surroundings.

Gestation—Pregnancy.

Gravid—Pregnant.

Hæmorrhage—Bleeding.

Hæmorrhoids—Piles.

Hydatid Mole—A condition where there is excessive growth of the chorionic villi.

Hydramnios—Excess of liquor amnii.

Hydrocephalus—Water in the head.

Hymen—A delicate crescentic fold of mucous membrane guarding the orifice of the vagina.

Ilium—The expanded portion of the innominate bone.

Incontinence of Urine—Inability to retain the urine in the bladder.

Incubator—An apparatus for keeping up the body heat; used with advantage in the rearing of premature infants.

Injections—The throwing in of liquids into any part of the body.

Innominate Bone—One of the bones which, along with its fellow, together go to form the pelvis.

Ischium—That part of the innominate bone upon which the body rests in the sitting posture.

Jaundice—A condition characterised by yellowness of the eyes, skin, &c., due to bile.

Labia Majora and Minora—Parts of the external organs of generation.

Lactation—The secretion of milk in the breasts.

Leucorrhœa—White vaginal discharge. “Whites.”

Ligaments—Strong fibrous bands which connect bones together.

Lochia—The discharge from the uterus during the puerperium.

Malacosteon—See *Osteomalacia*.

Mamma—The female breast.

Mania—Violent madness.

Meatus Urinarius—The external opening of the *urethra*.

Mechanism of Labour—The manner in which the child passes through the pelvis.

Meconium—The dark greenish material of which the first motions of the child's bowels are composed.

Melancholia—A more or less prolonged condition of undue mental depression.

Menopause—The change of life; the cessation of menstruation.

Menorrhagia—Excessive menstrual discharge.

Menses—The monthly flow.

Menstruation—The discharge of the menses.

Metrorrhagia—A red discharge occurring between the menstrual periods.

Micturition—The act of voiding urine from the bladder.

Mole—An irregular fleshy mass, the result of pregnancy, but where the foetus has not developed.

Mons Veneris—The cushion of fat over the symphysis pubis.

Mucous Membrane—The lining of the internal canals of the body.

Mucus—The slimy fluid which moistens the mucous membranes.

Multipara—A woman who has had more than one child.

Myxoma of the Chorion—See *Hydatid Mole*.

Nullipara—A woman who has never borne a child.

Nymphæ—The labia minora.

Obstetrics—The science of midwifery.

Obturator Foramen—An aperture in the innominate bone.

Occiput—The back part of the head.

Ophthalmia—Inflammation of the eyes.

Osteomalacia—A disease characterised by softening of the bones in the grown-up person. Also called *malacosteon*.

Os Uteri (*Internum* and *Externum*)—The mouth of the womb, internal and external.

Ounce—8 drachms. In fluid measure about two tablespoonfuls or 8 teaspoonfuls.

Ovaries—Two glands, one on each side of the uterus, where the ova are formed.

Ovum—*Ova*—An egg—eggs.

Pains, from an obstetric point of view, are contractions of the uterus.

Palpation—Examination by means of the hands, and sense of touch.

Parous—A parous woman signifies a woman who has borne children.

Parturition—The act of bringing forth young.

Pasteurisation of Milk consists in maintaining the milk at a temperature of from 154° F. to 156° F. for a certain time, so as to kill all disease germs in the milk.

Pelvis—The bony cavity at the lower end of the spinal column.

Peptonized milk—Partially digested milk.

Perineum—That part which intervenes between the lower end of the vagina and the lower end of the bowel.

Peritoneum—A delicate membrane which lines the abdominal cavity.

Peritonitis—Inflammation of the peritoneum.

Phlegmasia—A swollen condition of one or both legs, also called "white leg," due to obstruction of the veins.

Pigmentation—Coloration.

Pint—20 fluid ounces, or about 40 tablespoonfuls. Note, the ordinary beer bottle pint only contains about 12 ounces.

Placenta—The afterbirth.

Post Partum—After labour.

Premature Labour—Labour occurring after the child is viable, but before full term.

Presentation—That part of the foetus which lies over the os uteri.

Primipara—A woman who bears her first child.

Prolapse—A falling down or descent.

Puberty—The period or age at which persons are capable of begetting or bearing children.

- Pubes*—One of the divisions of the innominate bone.
- Pudenda*—The external genitals.
- Puerperal*—Relating to the puerperium.
- Puerperium*—The period between the completion of labour and the return of the sexual organs to their natural state. The *lying-in period*. About six weeks.
- Pus*—Yellow discharge which results from suppuration.
- Quarantine*—Isolation of infected persons from those uninfected.
- Quart*—Two pints. In the preceding pages it stands for two imperial pints, or 40 fluid ounces.
- Quickening*—The first perception by the mother of the movements of the foetus.
- Ramus*—A branching process of bone.
- Rectum*—The lower portion of the bowel.
- Retention of Urine*—Excessive accumulation of urine in the bladder, from inability to pass it.
- Retroflexion of the Uterus*—A condition where the uterus is bent back, so that the fundus uteri lies in the hollow of the sacrum.
- Rigor*—A shivering fit associated with chilly sensations.
- Sacrum*—That part of the spinal column forming the back wall of the pelvis.
- Salivation*—Excessive pouring out of saliva from the mouth.
- Secretion*—Glandular exudation, which is usually discharged from the body.
- Septicæmia*—Blood poisoning.
- Slough*—The dead matter resulting from ulceration, or low forms of inflammation of soft tissues ; for example, from too long pressure of the foetal head on the soft tissues of the mother in labour.
- Sphincter*—A circular muscle surrounding an orifice of the body.
- Sterilization*—The rendering free from germs.
- Striæ*—Scars or streaks which result from great stretching of the skin.
- Strippings*—Milk obtained by re-milking a cow some little time after the ordinary supply has been drawn. It contains much cream and but little curd.
- Stupe*—Flannel wrung out of hot water, plain or medicated, for application in painful conditions.
- Suprapubic*—Pertaining to that part of the abdominal wall directly above the pubes.

Sutures—The linear membranous intervals between the bones of the foetal skull, which unite in the fontanelles.

Symphysis Pubis—The joint between the two pubic bones just beneath the mons veneris.

Syncope—A faint or swoon.

Thorax—The chest.

Transverse Presentation—The presentation of the shoulder or hand of the foetus.

Tubal Pregnancy—Pregnancy occurring in a Fallopian tube.

Tuberosity—A bony prominence.

Umbilicus—The navel.

Ureter—The canal leading from each kidney to the bladder.

Urethra—The canal through which the urine escapes from the bladder. Its external opening is called the *meatus urinarius*.

Urine—The water which is separated by the kidneys from the blood and conveyed to the bladder.

Uterus—The womb.

Vagina—The front passage, or canal leading to the uterus.

Veins—Blood vessels conveying the impure blood back to the right side of the heart.

Vernix Caseosa—The white greasy material which covers the skin of the newly-born child.

Vertebrae—The small bones of the spine.

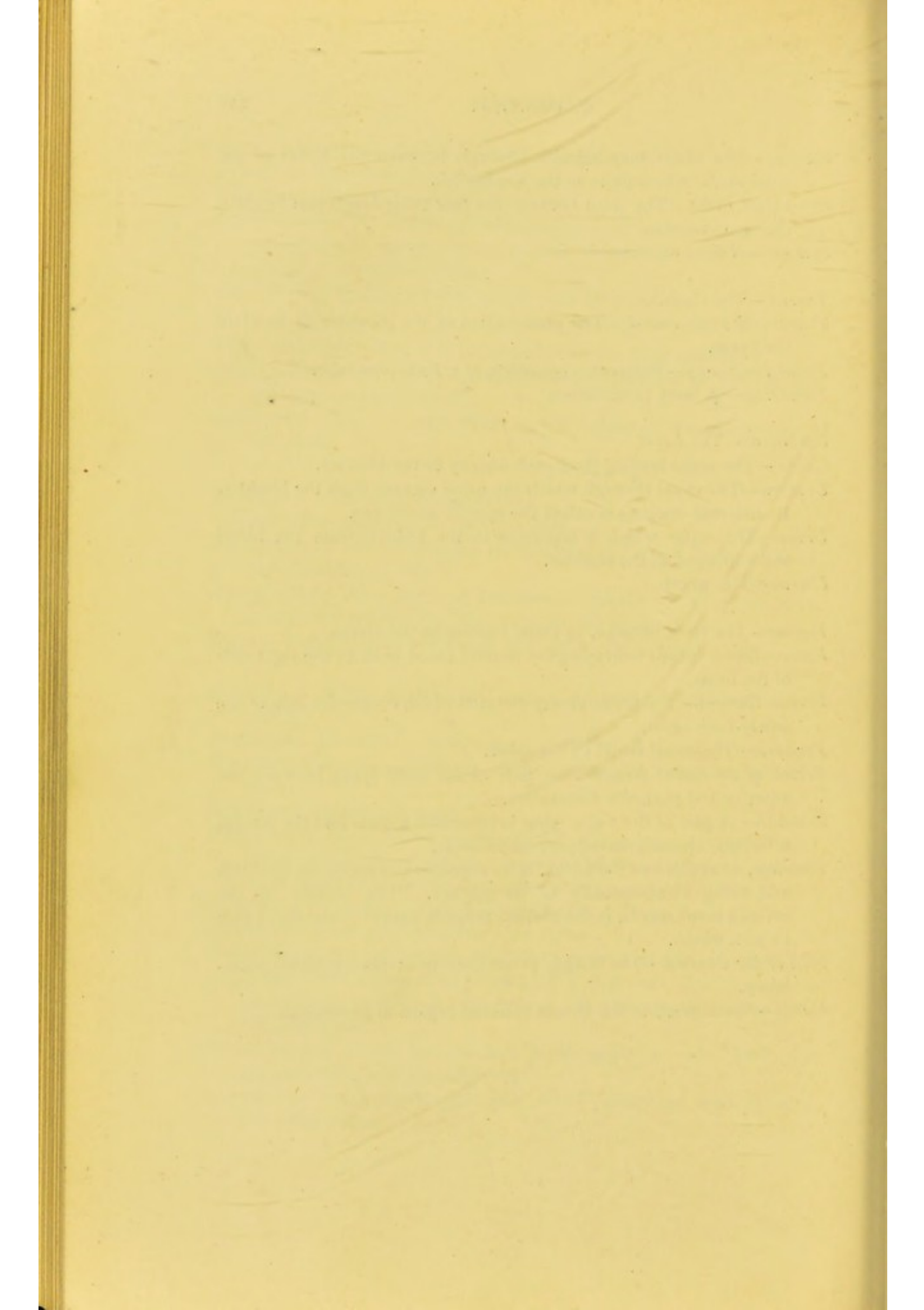
Vertex of the Foetal Head—That part of the skull lying between the anterior and posterior fontanelles.

Vestibule—A part of the vulva lying between the clitoris and the meatus urinarius, characterised by its smoothness.

Viability, as applied to the foetus, is its capability of surviving its birth and living independently of its mother. The middle of the seventh lunar month is the earliest possible period of viability (28th to 30th week).

Villi of the Chorion—The shaggy projections from the chorionic membrane.

Vulva—Name given to the female external organs of generation.



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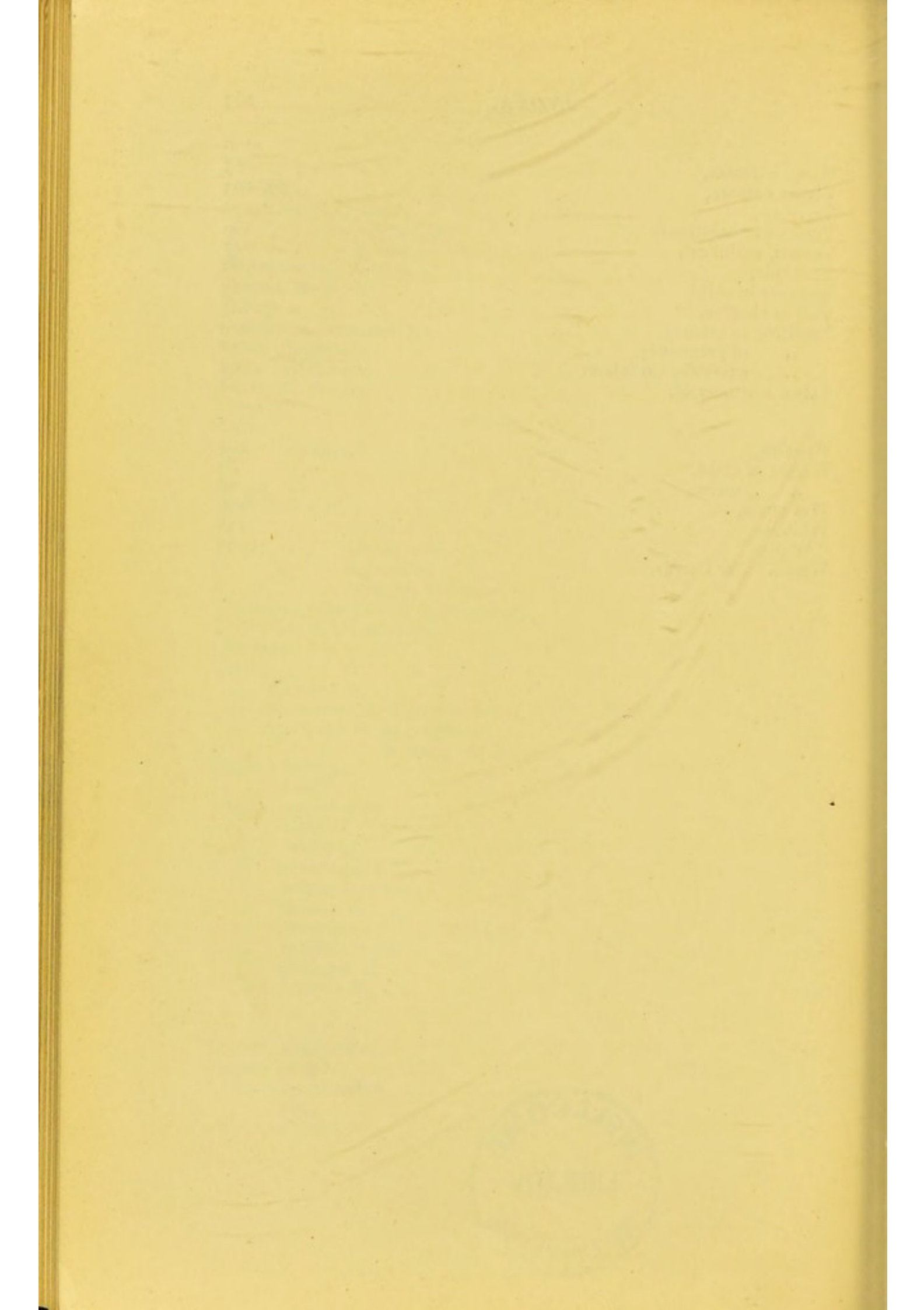
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