are difficult of ascertainment and there is always a probability that the incubation period may be shortened in the case of two organisms so intimately in contact with each other as those of mother and fetus.

Other instances are those in which a disease, caused by a special microbe, is transmitted from mother to fetus, as is proved by the discovery of the microbe in the placenta and in the tissues of the fetus if it should be born dead. Such maladies are fetal sepsis and fetal tuberculosis. It is true that the latter is extremely rare, but it is also true that a few absolutely proven cases have been recorded. Further, when the tubercle bacillus surmounts the placental barriers, there is abundant evidence that it finds in the fetal tissues a suitable culture medium, for in the authenticated instances of fetal tuberculosis the disease has been of that virulent type which is usually seen only in birds (avian tuberculosis). We are forced, then, to conclude that the placenta plays a strongly protective rôle in connection with the unborn infant of a tuberculous mother. Perhaps other microbes attack the placenta itself, rather than other tissues, and so more readily overcome its opposition while the tubercle bacillus is held in check by some chemical substance in the placenta or by an essential weakness in itself. The vitality of the placenta is probably very high, on account of the large amount of epithelial tissue it contains, and so perhaps its resistance to bacilli is great. If this be so, it will account for the ready passage of microbes which thrive in strong tissues and for the difficulty of passage of such as breed best on devitalized structures.

Again, there is another group of diseases which are not transmitted to the fetus in the same form as that which they exhibit in the mother. Typhoid fever, for instance, is known to have an effect on the fetus, for the germs of it have been found in the fetal tissues in cases in which the mother has suffered the disease and given birth to a dead infant. But, probably on account of the inactive state of the fetal intestine, or by reason of the umbilical mode of entrance of the germs into the fetal body, the malady takes the form of a general blood poisoning rather than that which is associated with typhoid in the adult. Here, then, it may be that the mother's disease causes morbid changes in the unborn infant which are not those occurring in the maternal organs, but which are due to the same microbe. Possibly, also, diseases not yet shown to be due to a microbe, such as eclampsia, influence the fetus in this obscure manner; perhaps toxins pass the placental barriers and disturb the nutrition of the fetus. It may be difficult to find a name for these diseased states, they are semi-diseases, but I think that their existence is undoubted, and I have given a chapter to their consideration in my recent work, "Manual of Antenatal Pathology."¹ The occurrence of morbid states in the fetus due to the passage of toxins from the mother, due in their turn to diseases of the mother, leads me to refer to fetal maladies caused by the invasion of the body of the unborn infant with toxic materials, such as lead, alcohol and mercury. There is every reason to believe that the placenta acts as a barrier to the passage of these substances also; but it occasionally fails, either by reason of the great amount of the poison or on account of the presence of disease in the placenta. The placenta also seems to save the fetus by storing up the poison in itself, as does the liver in the adult; and this fact, I think, explains how it is that the usual result,

when the placental safeguard is broken down, is the expulsion of a dead fetus and not a diseased one. The poison has spent its force on the placenta, and by destroying it has killed the fetus; there has been no time for the poison to produce its specific effects on the fetus.

It must never be forgotten in dealing with fetal pathology that the placenta is one of the fetal organs, and a very vital one, and that when it is attacked and injured the results to the unborn infant are very serious, much more immediately serious than if, for instance, the fetal lungs, stomach, brain or kidneys were grossly degenerated. This is probably one of the chief reasons why maternal syphilis has so terribly disastrous an effect on antenatal life, for it causes such marked lesions in the placenta.

I have here attempted the merest sketch of the influence which maternal maladies, alcoholism, drug habits and the like may have on the unborn infant; and I have not touched at all on the effects which these same morbid agents may have on the organism in the embryonic stage of its antenatal existence. I believe the latter changes to be teratologic, not pathologic; but into that very large question I do not propose to enter.

SUMMARY.

1. All diseased conditions of the mother in pregnancy, whether due to microbes, toxins, toxic agencies or diatheses, are, I believe, dangers to the fetus.
2. The fact that the fetus sometimes, perhaps often, escapes must be largely ascribed to the protective influence of the placenta.
3. The morbid influence may either force its way through the placental barrier and so reach the fetus and cause disease, etc., in it or, by destroying the integrity of the placenta itself, it may cause death of the fetus.
4. The laws that regulate the placental interchanges, normal as well as pathologic, have not yet been discovered.
5. The great safeguard of the fetus, if the mother be diseased, is a healthy placenta which opposes the passage of germs and toxins and which is not itself liable to the attacks of these morbid agencies.
6. We do not yet know if there are any medicines which act, as it were, as placental tonics; perhaps potassium chlorate and mercury are of this nature and possibly some of the organic extracts may be found to have this action.

SURGICAL ANESTHESIA,

WITH SPECIAL REFERENCE TO POSTANESTHETIC NAUSEA AND VOMITING.

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Much has been said and written on the important subject of anesthesia. Still there has been one particular point that has as yet never been satisfactorily settled, so far as I am able to learn. I refer to the distressing nausea and vomiting that so often follows the administration of ether and chloroform.

After having exhausted such methods as lavage, filling the stomach with water prior to the operation, pungent odors to nostrils, hypodermic medication, etc., without any apparent beneficial result, I began experimenting with a measure at once simple in use, logical, harmless and, to my mind, expedient.

1. Illustrative instances of the statements made in this article will be found in abundance in this work, especially in Chapters XI to XVI.

We know that vomiting may be caused by a drug irritating the vomiting center directly, by being conveyed to it by the circulation or irritating it reflexly from the stomach when conveyed there by the circulation. Also that substances may be ingested which are irritating to the mucous membrane of the stomach and cause vomiting (reflexly) independently of the circulation, but not independently of the vomiting center.

It is my opinion that postanesthetic nausea and vomiting are due to the irritation of the vomiting center in the medulla by either the unchanged ether, or the alcohol radical when oxidation is incomplete, which still remains in the circulation in concentrated form after the reflexes return.

Ether and chloroform act on the brain as an alcohol. The motor and sensory areas are paralyzed by an anesthetic dose. The products of oxidation of ether or alcohol are carbon dioxid and water. As neither of these substances cause nausea or vomiting when introduced in the organism, it is my aim to oxidize the ether as soon as the anesthetic effects are no longer required by the surgeon.

This is accomplished by oxygen inhalations, begun immediately on suspension of the anesthetic and continued until consciousness is regained, and in some cases even longer.¹ The changes which take place when we are dealing with ether might be stated thus:

It will be seen that the irritating drugs are reduced to harmless products, and this before the reflexes are fully restored if we are to accomplish the desired end.

In the event of chloroform being used, I am not prepared to state what the result of oxidation is. Probably formic acid, carbon dioxid, water and chlorin, the latter immediately combining to form dilute HCl and other compounds

In giving oxygen inhalations, I am in the habit of using the 40-gallon jar, which weighs only 10 pounds and is, therefore, easily handled. The apparatus which comes with it is so arranged as to first allow the oxygen to escape into an elastic bag, from which it passes to a ten- or twelve-ounce wash bottle containing water to about one-third of its capacity. It is then conveyed by suitable rubber tubing, having a glass tip, to the nostril. The anesthetizer holds the tip in place and regulates the amount of oxygen so that a slight pressure is maintained at all times.

The conditions under which I have so far used the method are as follows:

Preparation of Patient.—The preparation of all patients begins not later than the day preceding the operation and is carried out diligently by the nurses without variation. The same routine prevails as in the hospitals of the East and elsewhere. Suffice it to say the alimentary canal is practically empty when the patient enters the operating room.

Choice of Anesthetic.—Ether, exception, infants.

Administration.—The open method as carried out at the Mayo and Ochsner clinics. I take it that few are unacquainted with this method and, therefore, do not dwell on it except to express the belief that it is far superior to any method now or heretofore in use.

Surgical Procedures Attempted.—These have ranged through operations on the neck, face, brain, stomach,

intestines, appendix, gall bladder, liver, kidneys, rectum, cystic bladder, prostate, urethra, tubes, ovaries, uterus, vagina, amputations and plastic work.

Time Consumed.—This has varied from fifteen minutes to two hours.

Thus it will be seen that the conditions vary little from those found in most hospitals. The choice of the anesthetic and method of giving it may differ, but, inasmuch as I have used the other methods and varied my anesthetic in the past with the same result, I see no reason why postanesthetic nausea and vomiting can not be done away with in a very large majority of instances.

In the past two years that I have been using this method at the Ozark Sanatorium as a routine practice I have not had one patient that has been disturbed by nausea or vomiting where the conditions have been properly met, and in some of the patients nausea and vomiting of a reflex character have been incessant prior to going on the table.² It is presumed that the surgical procedure removed the cause, but it is also presumed that such a patient would more often have vomiting following an anesthetic than one whose stomach was previously quiescent, yet such patients have not even had nausea.

Whenever there have been two patients bearing the same characteristics of temperament and having the same surgical lesion, to one I have administered oxygen and to the other nothing except air, after the anesthetic, and invariably has the one receiving the oxygen had no disturbance, while the one receiving only air has had both nausea and vomiting on regaining consciousness. Just so did vomiting occur in those patients who did not receive the oxygen until some time after the anesthetic had been withdrawn.

It may be that the method of arriving at this conclusion is faulty, but I do not think the conclusion itself, that oxygen eliminates post anesthetic nausea and vomiting, is.

Inasmuch as the method is at once simple to operator and patient alike, having practically no disagreeable features, and harmless to the last degree, I can fearlessly recommend it to any and all, and sincerely trust that some observer with unlimited clinical material for investigation will take up the subject and give it a convincing test.

THE FUNCTION OF THE PREFRONTAL LOBES.

APROPOS OF THE PATHOLOGIC FINDINGS IN A CASE.*

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Comparative anatomy teaches that the frontal lobes of ascending types of animals are found gradually increasing in size. In anthropoid apes, the brain, which is very similar to that of man, is distinguished from the latter by the development of the frontal convolutions; they are all short and the inferior one, particularly so. In the studies by morphologists and neurologists, considerable attention is given to the question of the localization of psychic functions. Researches in comparative and experimental physiology, clinical ob-

2. If any great amount of saliva and mucus has been swallowed, it will often be expelled, at one effort, as soon as the patient begins to wake up. No nausea accompanies or vomiting follows.

* Presented before the Philadelphia Pathological Society, Nov. 22, 1906.

1. The anesthetic is often discontinued before the subcutaneous sutures are in place and always before the dressings are adjusted.