ANTISEPTIC MIDWIFERY.

BY

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In order that we may fully appreciate the subject with which I have to deal to-night, it will be necessary for us to consider three periods:

1st. The Pre-Antiseptic period.

2nd. The Antiseptic period.

3rd. The Post or true Antiseptic period.

1. The consideration of healthy and sick lying-in women has interested the obstetrician from the earliest times, and the history of puerperal infection forms one of the most interesting chapters in medical literature. Dating from the time of Hippocrates, who records eight unmistakable cases, we can trace it as a black strand running through the woof of obstetrical writings, down to the present half century, when it first begins to pale, and is finally well nigh lost to sight. We see in it, depicted from the beginning, the struggle of ignorance against an unknown foe, with a product of frightful mortality, and a final resignation to what was considered the inevitable. Even up to the present quarter century, writers were wont to consider puerperal fever as a special dispensation of Providence, with which there was very little use to meddle, as the results, in either case, were always the same. There was even a quarrel as to whom belonged the honor of having first given the disease a name. Was it Morton (1718) or Strother?

In 1837 Eismann recorded the eight prevailing opinions which had descended from antiquity, as to the cause of the disease. Of these may be mentioned† as curious the milk theory. In this there was supposed to exist a milk metastasis—a sup-

*Read before the Detroit Medical and Library Association, November 21, 1887.

†Winckel. "Die Pathologie und Therapie des Wochenbetts." Berlin, 1878, p. 316.

pression of the lacteal fluid in the gland threw that secretion into the other organs of the body, with a disastrous, and generally fatal result. One Rommel claimed that he had made butter from this erratic fluid taken from the intestine, and the corpse of a woman who had died of puerperal fever was said to smell of decomposing milk.

The inflammatory theory was divided in its adherents, some believing in a metritis with affection of the neighboring organs as a source of the disease, while others looked upon inflammation of the intestines and omentum, or, as declared by Johnston to be the opinion of William Hunter, peritonitis, as the cause. As recently as 1836, Simpson and others attempted to associate the condition with hospital typhus, while intermittent fever, occurring during the puerperium, was looked upon by some as one and the same thing.

The relation of puerperal fever and erysipelas is to this day a moot-point in the minds of a few, and there are doubtless many instances when the poison of erysipelas has given rise to puerperal infection, and the secretions of an unhealthy lying-in woman resulted in erysipelas. But this—as Hugenberger has pointed out in his admirable paper upon the subject*—only goes to prove the exceeding virulence of the erysipelatous poison, and the inflammatory action of lochia upon broken skin. To one looking back in the light of our present knowledge, this diversity of opinion seems strange, since as early as 1770 White noticed that puerperal fever prevailed especially in lying-in hospitals, and was of the opinion that foul matter was either generated in the individual's organism, or was conveyed there by the putrid laden air.

Writing at a somewhat later period, of the epidemic of puerperal fever which occurred in 1789 and 1792, at Aberdeen, Scotland, Dr. Alexander Gordon said: "That the cause of the disease is a

*_Archiv. fuer Gynekologie_, Bd. xii. p. 387.

specific contagion or infection, I have unquestionable proof,"* and then goes on to relate cases of the disease propagated by personal contact of physician, midwife and nurse.

Although as early as 1836, de la Tour, and at the same time, though independently, Schwann, of Berlin, discovered the cells of the yeast plant, and soon after Schwann, by a series of experiments with a decoction of meat, established a connection between putrefaction and microscopic life,† no connection whatever seemed to have been considered between the latter condition and septic infection. According to Tyndall, Kircher expressed, and Linnæus favored the idea that "epidemic diseases might be due to germs which float in the atmosphere, enter the body, and produce disturbance by the development within the body of parasitic life."

It was not, however, until Semmelweis became attached to the Vienna clinic in 1848, that any conception of the ætiology and prophylaxis of puerperal fever began to dawn upon the human mind. It would be eminently proper that the public square of every city in the civilized world should be decorated with the statue of this remarkable man, this benefactor of the human race, that the women of succeeding generations might look upon it and remember him in gratitude. This man, with the awful gloom of hundreds of years of suffering and death behind him, surrounded by pestilence and dying women, threw himself into the breach, and single-handed attempted to stem the tide which had rolled, a sullen stream, since the beginning of time. In 1861 Semmelweis taught that every case of puerperal fever was to be looked upon as an absorption fever, which arose from taking into the system decomposed animal matter. He found that from August, 1784, to December, 1822, there had been no autopsies made by the

*"A Treatise on the Epidemic of Puerperal Fever of Aberdeen."
†Tydall. "Floating Matter of the Air." New York, 1882, p. 7.

physicians of the Vienna clinic; that during that time 71,395 women had been delivered in the maternities, with a mortality of 895, or 1.25 per cent.

From January, 1823, to January, 1833, after the establishment of the Anatomico-Pathological Institute post mortems were frequent, and from 28,429 deliveries, 1509 deaths resulted, a mortality of 5.30 per cent.; while for the six years preceding the arrival of Semmelweis at Vienna, the death rate ran up to 9.92 per cent. Semmelweis therefore conceived the idea that there must be some connection between the autopsy room and the increasing death rate. He hit upon the plan of thoroughly cleaning the hands, thinking that thereby the infectious material would be removed and therefore could not be carried into the genitals by the examining finger. He adopted chloride of lime as a means of attaining this cleanliness, always using it himself and requiring his students to do the same before digital examinations or operations. The result proved that his theory was well founded, for the mortality in his clinic suddenly fell to 1.27 per cent.* Successful, however, as Semmelweis was in demonstrating that putrid matter is the cause of puerperal fever, his efforts to establish a prophylaxis as a treatment were coldly received and sharply criticised, and their author finally succumbed from chagrin at the ill success in impressing his countrymen with his views, and died most miserably at a time when the whole world should have united in doing him honor. His teachings were soon lost sight of and remained unnoticed, until revived in England by Mr., now Sir Joseph Lister. Thus the surgeon developed what the obstetrician had discovered, and midwifery received in the chirurgical foundling the true offspring of its own wisdom. Between Semmelweis and Lister there were years and years when puerperal

*Bar. "The Principles of Antiseptic Methods Applied to Obstetric Practice." Philadelphia, 1887, p. 65.

infection raged both in private practice and especially in lying-in institutions. Here is not the place nor time to detail the mortality as it rose in various hospitals, until it reached the climax of 20.3 per cent. at the Paris Maternity.

2. The Antiseptic Period. For the sake of convenience I have placed this period from the beginning of the introduction of antiseptics into midwifery practice to the present day.

In 1863, M. Pasteur presented a paper before the Paris Academy of Science, entitled "*Examen du Role Attribue aux Animal après la Mort*," in which he again showed the part played by bacteria in producing fermentation and putrefaction. Soon other observers entered the field, and the study of bacteriology in its relation to disease became more and more general. But although these facts were recognized for many years, the relation between fermentation and pus formation with septic infection was not known, until the experiments and published statements of Sir Joseph Lister called attention to the fact, and led to further and more extended research. He showed that there were germs which, admitted to sterilized infusions, soon gave rise to fermentative changes which in their course often involved the life of the patient.

He also found that by the use of certain substances these bacteria could be poisoned, or rendered incapable of harm, and that wounds so treated, as a rule, not only secreted less pus, or no pus at all, but were greatly facilitated in the process of healing and repair.

The position once admitted, nearly every obstetrician of any note went to work with the antiseptic system, in so ardent a manner that a reaction soon took place, and by many it was considered a snare and a delusion;—and the question was asked whether it were not better for a woman to die of septic infection than from poisoning with carbolic acid and corrosive sublimate, besides the

inconvenience of the thing. It is necessary only to turn back to the pages of yesterday to find Grünewald of St. Petersburg, and Winckel of Dresden, elevating the patient's hips and injecting antiseptic solutions with an ounce syringe into the lately delivered uterus. Langenbach and Schede, looking at the uterus from a surgical stand point, proposed to drain it as they would an abscess, and strange to say, obtained most excellent results. Schücking, from a very similar point of view, and later on the great Berlin accoucheur, attempted permanent irrigation of the womb, treating it and the vagina as a great open wound.*

Later, in Berlin, every uterus was douched out *post partum*, and everywhere the routine use of the vaginal douche came into vogue. Medical literature was filled with the discussion of new methods and new instruments. Here an observer would present a brilliant array of cases treated antiseptically, and there a less fortunate confrere would tell his tale of poisoning and death. After a time these extremes gave place to a more careful and accurate method, and ushered us into the present, or what I have styled for sake of distinction

3. The Post or true Antiseptic Period. The furor and novelty of the antiseptic treatment has died away. Experience has taught her lesson. We realize the importance of germs, but we appreciate as fully the adage that "meddlesome midwifery is dangerous." When the Continentals were entrenched on Bunker Hill, General Putnam, knowing the inefficacy of a desultory fusilade, bade his soldiers hold their fire until they saw the whites of the enemies' eyes, and then to aim low. On this principle, it seems to me, we should proceed in our active use of antiseptics displayed toward the patient. We should do all in our power to prevent infection, and we should ever be on the alert to detect it in its incipiency;

*Fritsch. "*Grundzuege der Pathologie und Therapie des Wochenbetts.*" Stuttgart, 1884, p. 13.

but I believe we should not inaugurate treatment for a condition which is not present, and which in the majority of cases is not likely to be present. Should treatment become necessary, then let it be vigorously pushed. My own conclusions are, after a careful study of the subject in the great lying-in hospitals abroad, and in private practice at home, that to arrive at a successful issue in the employment of antiseptics in midwifery practice, we must studiously consider and ever bear in mind two points:

(*a*) Prophylactic Antisepsis.

(*b*) Therapeutic Antisepsis.

In prophylactic antisepsis, the physician's *personnel* is first to be thought of. In these days no one would think of going from the bed-side of a patient sick of a contagious disease to the accouchement of another patient, without first having changed clothes and linen, and thoroughly washed; or, at least, not until thoroughly disinfected by some suitable means.

Cleanliness of the hands is another point which is impressed upon the beginner, and, it is to be hoped, clings to him throughout his life. Perfect cleanliness is hard to attain, harder still to maintain, and so to assist in this antiseptics are used.

Before and after each examination of a pregnant, lying-in, or puerperal woman, the hands should be thoroughly scrubbed with a nail brush with soap and water, and then dipped into a solution of carbolic acid or corrosive sublimate; or these substances may be added at once to the wash-water. For this purpose I used for a long time the iodide of mercury tablets prepared by Messrs. Parke, Davis & Co., but I found them too slow in dissolving. While casting about for some more soluble preparation, the same firm brought out a bichloride triturate, suggested by Dr. Bernays of St. Louis. These dissolve readily, and are of such a strength that one added to a pint of water makes a solution

of 1 to 4000. But it is useless to cleanse the hands if the finger nails are rimmed with jet. Such nails may be the death of any woman. In a general way the physician should be careful in his daily life. It is dangerous, to say the least, for one to make an autopsy, and then having wiped his well-smeared hands on a towel, to thrust them into his pockets. His hands may be well washed and disinfected afterward, but if they go again into those pockets, they are no longer antiseptic. We must deal in the same way with the instruments used in conducting a labor; cystitis may lurk in the catheter, and septicæmia on the forceps; these must be strictly clean, and kept as bright as possible. Before used they should be immersed for a few minutes in boiling water, or an antiseptic lotion.

At this point it seems proper to speak of the midwife, who, in this country, is certainly responsible for much of the septic infection seen.

In Germany and other European countries, the midwife, who is by law authorized to practice her art, must go through a regular course of training, and pass the requisite examinations, before she can receive a diploma. Nor is this all; for once in practice, she is as much under the eye of the law as ever, and must follow in her practice certain rules which the law prescribes. The rules laid down for the midwife by the laws of Saxony, and which will serve as a sample of those existing in other countries, are:

SECTION 1. The midwife shall see, that in so far as possible, every pregnant woman who is to come under her care shall be provided with her own vaginal tube, a catheter, and a bottle of the carbolic acid mentioned below.

SEC. 2. As the midwife is often called for the first time to cases in labor, she shall always be provided with and take with her a sufficient quantity of the carbolic lotion, and several new catheters and vag-

inal tubes, in order that the patient may have the opportunity of purchasing those necessary.

SEC. 3. Before and after each examination of a pregnant, lying-in, or puerperal woman, the midwife must thoroughly wash the hands, particularly over and under the nails, employing plenty of soap, a nail brush, and a 1 to 2 per cent. carbolic lotion.

SEC. 4. The catheter, vaginal tube, and the linen rags for cleansing the patient, and which will be used during the labor, must previously lie in a 2 per cent. carbolic lotion.

SEC. 5. For lubricating the instruments or the finger after having washed the hands, only a 2 per cent. carbolic oil or vaseline may be used. Either of these can be prepared by the midwife at home as follows: Fifteen drops of fluid carbolic acid are mixed thoroughly with three to four teaspoonfuls of table oil or vaseline. These may also be prepared by the apothecary. One or the other must always be at hand.

SEC. 6. After every birth, the woman must be (1) placed on the side in order that the perineum can be examined and the external genitals washed with a soft linen rag, never a sponge, (2) and then, provided a physician has not ordered otherwise, the vagina is to be irrigated with one-half a litre of a 2 per cent. carbolic lotion. It is recommended that the vagina be douched twice daily, or oftener if the lochia are offensive, in every case during the first five days, using each time one-half a litre of 2 per cent. carbolic lotion. The parts must then be carefully dried with a clean cloth, and the vulva covered as with a napkin, by a small cloth wet in a 2 per cent. carbolic lotion, with salicylic cotton, or carbolic jute.

SEC. 7. The midwife must acquaint the district physician immediately with any severe case of fever among her patients, or of any case, pronounced by

a physician who may be called in, to be puerperal fever.

SEC. 8. In the case of the death of a puerperal woman, the midwife must report, preferably in person, but otherwise by writing, the cause of death, to the district physician.

SEC. 9. If one of the patients delivered by a midwife is sick of puerperal fever, she shall no longer continue to visit this patient, but entrust the care of the woman to those of her own family or to a nurse or servant.

SEC. 10. If a patient of a midwife dies of puerperal fever, or if two or more puerperal women are successively attacked with the fever, that midwife shall attend no more deliveries for a period of 14 days. During this she must thoroughly purify her clothes, and thoroughly cleanse herself by once or twice daily washing the hands and forearms in a 5 per cent. carbolic solution,every time using the nail brush.

SEC. 11. From the district physician the midwife will receive a prescription for fluid carbolic acid, which consists of 150 grammes carbolic acid crystals, and 7½ grammes of distilled water. From this she may prepare for herself a 1 or 2 per cent. carbolic solution, by putting one or two teaspoonfuls of the fluid carbolic into one-half a litre of clean water, and a 5 per cent. solution by placing five teaspoonfuls in the same amount of water. The bottle containing the fluid carbolic must have this label: "Strongly Caustic Carbolic Acid. To be used for washing according to directions given. Take 1, 2, or 5 teaspoonfuls in one-half litre of water. For the midwife,——in——."*

Such rules as these are simple, and will commend themselves to the mind of any woman who is competent to act as midwife. Certainly the practice of midwives in this country should be regulated in

*Correspondenzblatt des Aertzlichen Kreis-u. Bezirksverein im Konigreich Sachsen. Mai, 1880.

some such way. Monthly and other nurses, too, should be instructed in the use of antiseptics, and learn that "cleanliness is next to godliness." Some excellent rules were given by Dr. W. S. Playfair, at the last meeting of the British Medical Association, who said that he always presented to nurses in attendance on cases under his care a card with the following:

ANTISEPTIC RULES FOR MONTHLY NURSES.

1. Two bottles are supplied to each patient. One contains a solution of bi-chloride of mercury, of the strength of one part to one thousand of water, tinted with litmus (called the 1-1000 solution), the other carbolic oil (1-8).

2. A small basin containing the 1-1000 solution must always stand by the bedside of the patient, and the nurse must thoroughly rinse her hands in it every time she touches the patient in the neighborhood of the genital organs, for washing or for any other purpose, before or during labor, or for a week after delivery.

3. All sponges, vaginal and rectal pipes, catheters, etc., should also be washed with it.

4. Vaginal pipes, enema tubes, catheters, etc., should be smeared with the carbolized oil before use.

5. Unless express directions are given to the contrary, the vagina should be sponged twice daily, after delivery, with warm water, having a sufficient quantity of Condy's fluid dropped into it to give it a pale pink color.

6. All soiled linen, diapers, etc., should be immediately removed from the bed-room.

N. B. These rules are for the protection of the patient from the risk arising from accidental contamination of the hands and sponges. It is therefore hoped they will be faithfully and minutely adhered to.

These certainly are plain, comprehensive directions, which any intelligent nurse can follow out without taxing her memory. I should like to make

one change, however, in these rules, and substitute absorbent cotton for the word sponges. Sponges are a *bete noire* in the lying-in room, and I insist that they cannot be trusted in the hands of the best of nurses. They are harbingers of evil and should be banished.

We next must consider the patient and the lying-in room. During pregnancy all the organs of the body should be in a healthy state. The skin should be kept in an active condition by the frequent use of tepid baths; the bowels must be regulated, and the urine carefully watched. If there is a vaginal discharge, the cause should be ascertained if possible, and suitable douches of alum water, permanganate of potash, or some other astringent or antiseptic used. During labor, when examining, the finger of the accoucheur should be lubricated with carbolated vaseline or oil. I am accustomed to use vaseline, which I have put up in soft tin tubes, a very neat and convenient fashion. The less frequently, however, that digital examination is resorted to, the better. Indeed, in the majority of cases, it is barely necessary, as the position of the child can be accurately made out by abdominal palpation and auscultation, so that to ascertain the condition of the cervix is all that makes such examination occasionally desirable. The artificial dilatation of the cervix, so highly recommended by some as an aid to hasten labor, should be strictly avoided, and all wounding of the genitals should be carefully prevented, as by support of the perineum, etc. This all tends to lessen the danger of infection.

After operative cases, where the hand has entered the vagina or uterus, it is my practice to give a vaginal or uterine douche of antiseptic fluid; but after an ordinary, normal labor, in my opinion, the patient should be left alone, and the most that should be done is to gently wipe the genitals at the completion of labor, with a piece of absorbent cotton wet in carbolic or bi-chloride solution.

Where I have the directing of the case from the beginning, I have the patient prepare antiseptic pads for use after delivery. These are made of strips of cheese-cloth of several thicknesses, in the middle of which a pad of cotton batting is stitched. The whole is then baked in the oven to destroy any germs which may be present, and then rolled in a paper and put away. Before using, it is a good plan to slightly moisten the surface of the cotton pad in bi-chloride solution (1-2000). The advantage of such a pad is that while antiseptic it is also inexpensive, and can be burned up when soiled.

In all cases one of the most important points to observe is that the uterus is well contracted. Leopold has described the uterus as a great lymph gland, ready to absorb anything that may be put into it. If the womb is contracted, however, there is little danger of absorption, and this condition should be secured as a preventive. A lax, flabby organ, is, I find, always indicative of trouble. It has always been my custom to give a teaspoonful of fluid extract of ergot after a labor, and I consider it an important safeguard. I have never seen any harm arising from its use in this way.

Another point to receive attention is the lying-in room. In a great many instances, even among the higher classes of patients, the physician is never consulted in this matter. But there can be no doubt that too often

> "Death rides in every passing breeze,
> He lurks in every flower,"

and the accoucheur is blamed for the result of conditions beyond his control. The typical lying-in room is clean, fresh, sunny and well ventilated, and free from that pest known as the stationary wash-stand. In all cases I endeavor to avoid this nuisance, but when it is impossible, and there is the slightest indication of odor, I have the waste-pipe cut off and tightly soldered several months before delivery. The room is then cleaned and swept sev-

eral times before the accouchement, and the danger from germs blown up from the sewer is obviated.

A suggestive experience of this nature is related by Dr. Nœggerath. The room occupied by his patient had been closed during the summer, and was only opened to prepare for the approaching confinement. The walls, carpet and furniture had been sponged with bi-chloride, and the bed linen and clothing had been kept for a while in a strong solution of carbolic acid. The labor was normal, but the patient afterward developed a high temperature, etc., for which antiseptic vaginal douches and some internal treatment were given. Thirteen days after delivery a clot was expelled from the womb, which was afterward examined. It was found to be filled with a certain form of bacterium belonging to the class *saprogenes*. These bacteria were subjected to various cultures, and experiments on animals were made. Scrapings from the inside of the central stopper of one of the wash basins in the room were also placed on gelatin, and from these cultures the same microbe as that in the clot were obtained. Dr. Nœggerath concluded that during the summer the inhabitants of the basin had been transformed into dry dust, which was swept by currents of air from the sewer into the room, filling the air and covering everything, and infecting the patient. The history of the case in detail is most interesting.*

Dr. George P. Andrews† relates a case which, although the connection of cause and effect is hardly as apparent, seems to me must have resulted from the same or a similar origin.

In this case everything was normal, except that the pains were lacking in force; and the child was finally delivered by the forceps. Subsequently the patient developed fever and finally died on the eighth day, with symptoms of serious effusion

*American Journal of Obstetrics, May, 1886.

†"Puerperal Pyrexia." *American Lancet*, January, 1886.

within the cranium. The remarkable point in this case was, that the patient was delivered and died in the same room where the first wife of the husband had died of the same affection, puerperal infection, three or four years previously. During the interval the room had been thoroughly renovated, re-papered, etc. There was a suspicion directed toward the set-bowl, for Dr. Andrews informs me that although there was no odor, the bowl was frequently disinfected with antiseptic solutions.

There are many other minor points which will suggest themselves to the careful obstetrician, but which need not here be detailed.

In theurapeutic antiseptics, we direct our attention to a morbid condition already established or at least threatening. Fever, or rather rise of temperature, in a lying-in woman, is so frequently due to the condition of the bowels, mental disturbance, and other trivial causes, that all such must be excluded before septic infection is diagnosed. In any event, at the first indication of abnormal odor of the lochia, or where septic trouble can be positively diagnosed, the antiseptic vaginal douche must be used three or four times daily. If there is a suspicion that a bit of placental tissue or membrane has been left behind in the uterus, it becomes our imperative duty to remove it, either by the finger or the curette. In my consulting practice I have curetted the uterus in this way a good many times, and have never seen bad results follow, except, perhaps, in one case where the patient had phlegmasia dolens several weeks after the operation, so long after, in fact, that I could not connect the two as cause and effect. My plan is to thoroughly swab out the uterine cavity with Churchill's tincture of iodine after curetting, and then give a vaginal douche twice or thrice daily as long as necessary. In some cases it is a good plan to insert a bacillus of iodoform into the womb cavity after an operation. This is particularly useful where the

assistance is inadequate, or where the physician can see the patient but infrequently.

When tears of the perineum demanding attention occur, the parts should be carefully washed free from blood, clots and discharge with an antiseptic lotion, and the wounded surfaces brought together by sutures. Iodoform should then be liberally dusted over the injured part. In treatment, it must be remembered that there are two varieties of septic infection; where the poison is received from without, and where it is generated in the patient's own organism. In the first instance, we may, in the majority of instances, expect the happiest results from our antiseptic applications, but in the second variety there is little hope of recovery as the result of any means which we may employ. This last condition, fortunately rare, is seen where a pre-existing focus of pus is set to distributing its deadly material as the result of labor. An exceedingly valuable and important paper illustrating a portion of this subject was recently presented before the British Gynecological Society by Dr. W. C. Grigg.*

Thus briefly and very superficially I have sketched antiseptic midwifery as it has been practiced from the beginning and is used to-day. In the mind of one who has thoroughly familiarized himself with the system and its results, there can be no *cui bono*.