

nearly 200, in spite of the most vigorous stimulation, was so desperate that it precluded the idea of subjecting her to the risk of the further hemorrhage that would probably follow any manipulation of the rigid and undilated cervix, fearing that she would die on his hands while dilating even enough to extract after craniotomy. Even supposing that she lived through the extraction there remained the danger of post-partum hemorrhage, and she seemed so bloodless that apparently even the loss of the amount of fluid ordinarily following delivery would be too much for her. By doing a Porro, on the other hand, provided she stood the shock of the operation, not in itself necessarily great, further loss of blood was absolutely prevented. A conservative Casarian section was not considered, the time necessary for that operation being out of the question in the patient's condition. As the uterus did not now seem to be increasing in size, nor the condition of the patient growing worse, there were grounds for hoping that the hemorrhage had ceased for the time, and in the absence of uterine contractions that it would not start up again until the few necessary instruments had been procured and sterilized.

Meanwhile, in the next hour, she was given an ounce of whiskey under the skin. She was then etherized, using a mixture of three parts of ether to one of chloroform. The cleansing of the skin was thorough but very quick, for fear of starting up bleeding, and in less than three minutes after she was thoroughly anesthetized she had been scrubbed up, the abdomen opened, the broad and round ligaments on each side clamped and divided, and the uterus, with an elastic ligature around its base, effectually preventing further hemorrhage, had been tipped forward out of the abdomen, the walls of which were at once caught together with a couple of pairs of bullet forceps. On opening the uterus the dead child was extracted, the placenta being found wholly detached and the uterus full of clots and liquid blood. The uterus was then amputated low down, and after catching the uterine arteries with six snaps the elastic ligature was exchanged for a Tait's clamp. Two Peaslee's needles served well as hysterectomy pins in default of better ones. The other details of the operation were as usual, though hurried.

With warmth and plenty of whiskey the patient rallied well, and four days later was carried to the hospital, where she made a good recovery. Any one familiar with the filth and squalor of Dublin tenements will appreciate the unfavorable nature of the surroundings, yet so thorough was the sepsis that her temperature did not rise above 100°.

Four months later the woman was seen, "feeling better than before the operation."

In 1890 Tait recommended Porro's operation as being suitable for certain cases of placenta prævia and as a result rather a storm of criticism descended upon him. While its advisability in placenta prævia may be an open question, it seems in cases like the one reported that the operation is not only justifiable but even the only one promising success.

THE ST. LOUIS MEDICAL ERA, a new monthly journal of medicine and surgery, appeared for the first time in September, under the editorship of Dr. S. C. Martin.

THE TREATMENT OF WOUNDS FROM THE ASPECT OF GERM INFECTION.¹

BY CHARLES B. EWING,
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WE understand by wound infection, the introduction into wounds of specific micro-organisms, causing suppuration. I do not propose to include the forms of wound infection, which may arise from those specific germ diseases, known as tetanus, diphtheria and scarlatina, etc.

In order to arrive at a proper understanding of the treatment of wounds, we are to determine what those micro-organisms are, where they are to be found and the method of their introduction into wounds.

Broadly speaking these pus-producing germs are known as the staphylococcus pyogenes albus and aureus, the streptococcus pyogenes and the staphylococcus epidermis albus (Welchii), a modified form of the albus of Rosenbach, leaving out of consideration all chemical pyogenic substances and sterilized cultures of various micro-organisms, which cause suppuration independently of these microbes. Neither do we consider that third species of staphylococcus pyogenes, the citreus, cereus albus or cereus flavus of Passet, the staphylococcus flavescens of Babes, the micrococcus tenuis of Rosenbach, nor lastly, that producing the green fluorescent and the blue pigments, known as bacillus pyocyaneus of Gessard and the bacillus pyocyaneus (beta) of Ernst, respectively.

The question of the relation of micro-organisms to suppuration is an old but very interesting one, and we are indebted to Grawitz and DeBary, for clearing up the matter. The trite dictum, "no suppuration without micro-organisms," was known by them particularly to be fallacious, inasmuch as germ-free chemical substances were shown to produce suppuration, yet the aphorism as a generalization remains correct.

Admitting then the above, we proceed to a brief mention of: (1) Germs constantly resident within or in close proximity to the wound; (2) Those coming from without.

Under the first heading, we have only one, a coccus, known as the staphylococcus epidermidis albus (Welchii). This organism, though not verified by other observers, is thought by Professor Welch, of Johns Hopkins, to be a permanent inhabitant of the skin in health, and more particularly of the deeper layers of the epidermis, as well as an occupant of abscesses formed around stitches used in closing wounds. While Professor Welch admits the close relationship of this pathogenic entity to the white coccus of Rosenbach, he shows conclusively wherein its genesis is different and should be designated as a separate distinct organism, because "possessing such feeble pyogenic capacity, as is shown by its behavior in wounds as well as by experiments upon rabbits, that the designation staphylococcus pyogenes albus does not seem appropriate." If it had been shown as Professor Welch informs us, that his coccus is a constant inhabitant of the epidermis, it certainly differs from that of Rosenbach, inasmuch as it has never been claimed by observers, that the latter had its habitat in the skin at all.

This new coccus will prove troublesome to surgeons who place "drainage-tubes and other extraneous substances into their wounds," and we must needs pause

¹ Remarks before the Association of Military Surgeons of the National Guard, at its St. Louis meeting, 1892.

and consider, when we are informed that such an able exponent of our art as Professor Halstead, of Johns Hopkins, "has abandoned for nearly all wounds, the use of skin stitches, the edges of the wound being brought together with admirable coaptation by subcutaneous sutures." We are certainly greatly indebted to Professor Welch for this very valuable contribution to surgical pathology.

Coming now to our second group: "Those germs coming from without"; we shall make mere mention of the species heretofore named, the staphylococcus pyogenes albus and aureus, and the streptococcus pyogenes. These cocci are so well known to you that I shall not go into their history, but merely say that they may be introduced into the wound through the air, the instruments and dressings (particularly thread and drainage tubes when used), or the person of the operator, such as his hands, hair or perspiration, etc., leaving out of consideration auto-infection.

In speaking of the treatment of wounds, I shall premise by saying that asepsis is only to be attained through antisepsis, and without the latter we cannot hope for the former. Antisepsis of the field of operation, except in certain regions, is much more easily obtained, than that of the hands, hence I shall direct your attention particularly to this, in doing which I can do no better than to ask your careful scrutiny of the work of Welch, Kelly and others, which when crystallized is about as follows as regards sterilization of the hands:

(1) Scrubbing with sterilized brush, using soft soap and hot water, several minutes; (2) immersion in hot saturated solution, permanganate of potash, three minutes; (3) immersion in hot saturated solution, oxalic acid, three minutes; (4) immersion in hot common salt solution, three minutes; (5) immersion in hot (1 to 1500) solution bichloride of mercury, three minutes.

An aseptic Field of Operation can be obtained in this way: (1) scrub and douche thoroughly, with soft soap and hot water; (2) wash with turpentine; (3) wash with ether; (4) wash with solution of corrosive sublimate (1 to 1500); (5) compress, soaked in above solution and applied over part to be operated on; (6) compress and roller bandage, to hold the above in place.

The ideal dressing, after the incisions have been closed with sterilized silk, is one which seals the wound hermetically and prevents the invasion of pathogenic organisms completely, from without. This consists in applying a saturated solution of powdered iodoform in colodion, where the initial incision is through the integument, and a saturated solution of powdered iodoform in ether, where the integument has been destroyed by disease or accident. The incision is closed, the line of the wound, the skin and sutures are thoroughly dried and the solution applied, according to the conditions above mentioned, with small camel's-hair brush. Evaporation takes place rapidly, and the dressing hardens evenly and firmly, acting as a splint to the part. It is important that not only the line of the wound and sutures be protected with the solution, but that the neighboring parts, for at least an inch, be thickly covered.

The qualities possessed by this dressing are these: it is always satisfactory, simple and easily made. No additional dressings are necessary, except where the solution of iodoform in ether is used, in which case the ordinary dressings are sterilized and applied over

the part treated. This latter solution cannot be regarded as the former, in the light of an ideal wound-dressing, as the operations requiring its use are of an entirely different character from those demanding the iodoform-collodion solution.

The iodoform-collodion dressing can be left a week or more, then removed with ether, and the stitches taken out. If, however, the staphylococcus epidermidis should have caused suppuration around the stitches, as indicated by pain, redness, local tenderness and elevated temperature, then the dressing should be at once removed and the discharge of stitch-abscesses encouraged.

On the battle-field, the first dressing must of necessity be dry; consequently wound-infection follows in a great many cases. This dry dressing itself may contain pathogenic organisms, and in that way cause infection.

Germicidal fluids cannot be used unless concentrated and of small bulk, in convenient receptacles for transportation, which is a very difficult problem to solve. Again, the question arises, as to whether it is possible to obtain complete asepsis by the use of a dry dressing. I think we shall be obliged to answer in the negative. Then a fluid of strong antiseptic properties must be chosen, and that should be the very best germicide, as the quantity of fluid must be small as space in an army-chest and transportation are alike very valuable.

What shall it be? The best antiseptics of to-day require that they be used highly diluted; consequently small quantities will hardly subserve the purpose of producing an aseptic condition.

Since writing the above, a communication signed by Dr. Kelly, has appeared in the *American Journal of Obstetrics*, to the effect "that saturated solutions of permanganate of potash and oxalic acid are not germicidal to streptococcus and staphylococcus, aureus or albus, in pure culture upon silk threads, which have been infected for twenty-four hours," and he is "unable to explain the remarkable difference between the experiments made upon the hands and the severer tests, applied in the bacteriological laboratory."

A SYMBOL FOR PHYSICIANS?

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In the *Illustrated American* (February 20, 1892), reference is made to various symbols of life's conditions, mysteries and problems in use among the adepts and philosophers of ancient India, Assyria and Egypt. Some of these symbols are analogous if not identical with forms recently discovered in the southwestern part of the State of Ohio (United States of America)—region of "Mound Builders." I have seen one of these tokens, typifying *God in Nature*, employed in a similar manner by the Koreans. This is but one of many written objects showing the mento-moral association with Sanscrit ideas which was formerly a prominent feature in the intellectual life of Chōsen, when schools and art were not unknown to what we now call the Hermit Nation. Their national ensign is an illustration of this kind of concise representation of cosmic or helio-geic concepts. There are material and mento-linguistic evidences of intercourse between the people of Chōsen and those of Japan and ancient North America.

Logos, the mind, reason, of the All-Father—