

the jaw, serving the purpose of a submaxillary splint. This latter should have four holes in it, two on either side, to make it more secure.

This comprises the entire apparatus, and is applied to a fracture of the lower jaw, whenever the fracture is in the body of the bone by fitting the dental splint to the teeth, placing a compress of patent lint or some soft material between the under surface of the chin and the submental splint, then tying the tails of the thread, or twisting the wire previously passed through the holes in the latter splint, as seen in the wood-cut, to the projecting arms of the former, thus doing away with the necessity of *bandages over the head altogether*.

After trying the usual methods by bandaging unsuccessfully, as well as the instrument of Mr. Lonsdale, this apparatus was applied with the most *satisfactory and agreeable results*.

The dental splint is represented as being fenestrated; the object of this is to allow the teeth of the upper and lower jaw to dovetail, or articulate with each other, as the dentists say, in cases when there is an inequality in the size of the teeth, or irregularity in their position, so as to bring the fractured ends of the bone into perfect coaptation, without one or two projecting teeth interfering with an accurate adjustment of the fracture. If this apparatus is properly understood and applied to the fractured jaw the patient can go about his usual avocations, *take his food, and talk without fear of displacing the fragments of the broken bone*, and without the necessity of wearing a bandage or handkerchief tied over the head.

The objects had in view are precisely those laid down by Lonsdale, and the advantages, such as lightness, adaptability, simplicity, and convenience, gained by this instrument over that of Lonsdale's, or any of those figured in *Hamilton on Fractures*, or in *Wales' Mechanical Therapeutics*, cannot, it appears to me, be disputed.

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ART. VI.—*Chromic Acid in the Treatment of Menorrhagia and Uterine Leucorrhœa*. By DAVID WOOSTER, M. D., of San Francisco, Cal.

It is unnecessary to preface this article with an elaborate account of the physiology of menstruation, or the pathology of menorrhagia; it is sufficient to premise that the uterus is lined with mucous membrane, which consists of mucous follicles, tubular in shape, arranged side by side, and perpendicular to the uterine surface. These follicles open into the cavity of the womb, and their opposite extremities are closed and in direct contact with the subjacent uterine tissue. These follicles are surrounded with vessels which inosculate with each other. The uterine mucous membrane is

scantly supplied with nerves, the majority of whose filaments are derived from the spinal cord. From this latter fact results the alarming shock and the prolonged tendency to syncope, which often occur after the most trivial interference with the uterine cavity, especially when the uterus or its lining membrane is inflamed.

Menorrhagia, like menstruation, occurs from the whole mucous lining of the womb, and is merely an excessive exosmosis or transudation of blood from the vessels into the mucous follicles which they surround. From the open mouths of these follicles the blood is poured into the cavity of the womb, from which it readily escapes through the patent *ostia*, to be replaced by a fresh supply, and so on, until the congestion of the uterine vessels is relieved in menstruation, or until the excessive setting of the hemorrhagic current in menorrhagia is diverted; *a*, by cessation of the heart's motion, as in syncope; *b*, by changing the plasticity of the blood, as in the use of iron and cod-liver oil; *c*, by contracting the uterus and the muscular coats of the vessels, as with ergot; *d*, temporarily, by mechanical means, as with a vaginal tampon, by which a clot is produced in the cavity of the womb, to be afterwards expelled by labour-pains or to undergo solution in a more abundant transudation of blood; or, finally, by any means which shall arrest the transudation of blood over the whole mucous surface. For example, by an astringent escharotic so mild in its astringency as not to coagulate albumen before it has had time to penetrate the full thickness of the hemorrhagic membrane, and so promptly and efficiently escharotic as to condense the follicles, so that no more blood can be poured into them through their patulous walls, or through such portions of them as are already denuded of epithelium by persistent hemorrhage.

Tincture of iron fails in this indication, because it immediately produces a clot which constantly increases from subjacent accretion. Tannin or alum acts similarly. Solid nitrate of silver produces a solid superficial eschar, which, falling off, leaves a new hemorrhagic surface; and furthermore, it acts on the uterine tissue much as it does on the glans penis in chancre, producing increased congestion and painful erection; or in the womb a sense of extreme tension, described by the patient under the terms "bearing down," "fulness," etc.

Zinc and lead lack the cauterizing quality requisite, except the chloride of zinc, which is far too active if used in cauterizing strength, and dangerous to life from absorption, if used in milder dilution.

Thus I was led to use *chromic acid*.

Chromic acid ( $\text{CrO}_3$ ) is isomorphous with ferric acid ( $\text{FeO}_3$ ), and it is probable that chromic acid is as harmless when absorbed into the blood as manganic or sulphuric or ferric acids, with which it is isomorphous.

Chromic acid is an oxidizing agent of slow but persistent action, and of considerable power on account of the facility with which it is reduced to

the sesquioxide of chromium, isomorphous with sesquioxide of iron, and quite as harmless to the economy in certain doses.

CASE.—Mrs. — had menorrhagia for years. She was ostensibly a tolerably respectable lady, but really accustomed to “love not wisely, but too well.” Her menses hardly ever stopped entirely. Occasionally she would have an interval of two days of cessation of the flow. Often it was a flood stopping only with syncope. She had used, under advice of different physicians, alnm plugs, cotton tampons saturated with tannate of glycerine; she had taken iron and cod-liver oil to increase the density of the blood; she had taken lead and opium to increase the plasticity of the blood, diminish irritability and constrict the capillaries. She had ergot to contract the arteries and the womb; she had digitalis and aconite to diminish the frequency of the heart’s systoles; she had blisters to the sacrum to divert the blood current; and leeches to the ovaries for the same purpose; she had ice-cold compresses applied to the abdomen over the womb; the foot of her bed had been raised six inches higher than the head, and she had lain in this position a week at a time. Everything afforded but temporary relief. She was one of those unfortunates for whom “everything had been done.”

When I saw her she was anæmic, and almost pulseless; her nose and ears were cold, and her respiration yawning and sighing. I plugged the mouth of the womb with a sponge tent, prepared with carbolic acid, and gave her beef-tea for twenty-four hours. On removing the tent the hemorrhage was as bad as ever. I examined the uterine cavity with the index, and found no abnormal growths; I then washed out the cavity with a warm solution of iodine and water. This arrested the bleeding for ten hours, when it returned as before. I now washed it out with a solution of perchloride of iron, ten drops to the drachm of water. This caused a coagulum, which was expelled in less than twenty-four hours with renewed hemorrhage to the verge of syncope. Then I had recourse to chromic acid. I dissolved half a drachm of chromic acid in a drachm of hot water, and the mouth of the womb being so patulous as to admit the index finger, there was no risk of the fluid being retained by contraction of the os internum, and so I immediately injected the whole amount through an ordinary No. 12 gum catheter, passed up to the fundus. The most of the solution flowed back by the side of the catheter, a yellowish serosity with no coagula. I withdrew the catheter, deterged the vagina with a soft sponge, left the speculum *in situ*, exposing the os uteri for some minutes; but, as not a drop of blood issued, I removed the instrument. There was no more hemorrhage until the expiration of nine days, when the menstrual period having arrived, it became menorrhagic, and was allowed to continue for three days, when I again injected chromic acid precisely as at first. It has now been ten months. Menstruation has been regular in time and quantity ever since. My patient is in excellent health, and has as ruddy a look as most women of thirty-five—her age.

I have now used chromic acid in several instances, both for menorrhagia and uterine leucorrhœa, with uniform and absolute success. I use the chromic acid in leucorrhœa in the strength of fifteen grains to a drachm of hot water, having first dilated the cervix with sponge tent. One injection is generally sufficient, when the general health is not seriously impaired.

The injections in any event should not be repeated in less than four or five days; unless the cervix be well dilated before the injection, the most alarming collapse may supervene in a few moments. The same thing will often happen even if the cervix has been well dilated, unless the patient remain in bed at least twenty-four hours after the injection. Notwithstanding these *possibilities* of harm, the chromic acid is perfectly harmless if used with the precautions suggested; and if it will cure a chronic uterine leucorrhœa, it is certainly worth the trouble of being carefully handled, and its *possible* dangers are no greater than might result from the careless use of salt and water. If labour-pains and tendency to collapse should supervene from the carelessness of physician or patient, hot fomentations to abdomen, lavender and ammonia or brandy interually, with absolute rest in bed, will afford prompt and permanent relief.

SAN FRANCISCO, May 27, 1869.

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ART. VII.—*Complex Obstetrical and Surgical Case; Tedious and Instrumental Labour; Intractable After-Pains; Pilo-Cystic Tumour of Left Broad Ligament; Extirpation by Abdominal Section; Menstruation through Wound; Recovery, with Ventral Hernia.* By R. W. GIBBES, M.D., of Columbia, S. C., formerly Vice-President of the "American Medical Society in Paris," and Interne Pupil of the Rotunda Lying-in Hospital, Dublin. (Read before the South Carolina Medical Association, and referred to the Committee on Publication, May 21, 1869.)

MRS. S., æt. 26 years, has had two children (youngest now 13 months old), and was attended by me in both cases of natural labour. Before marriage, ten or twelve years ago, I had her under my care for *suppressio mensium* during several months, when she suffered with severe abdominal pains. A galvanic supporter appeared very useful in restoring the regular flow.

July 25 and 26, 1867. Suffered greatly with spurious pains. Tr. opii ʒj, by enema on 26th, P. M., gave relief. 28th, A. M. Taken at full term—labour tedious. At 9½ P. M. os *tincæ* one inch in diameter and rather rigid; complained of much fatigue and begged for chloroform. While under its influence I examined more thoroughly; found head in 2d position, one hand being engaged with it in superior strait; membranes ruptured spontaneously two hours ago. I succeeded in passing four fingers within the os, which had become more relaxed, and pushed the hand away from the head. Suddenly, an involuntary evacuation occurred after withdrawal of chloroform with much relaxation and feeble pulse. A few moments after being awakened, she had another watery and offensive stool, and fainted. R.—Vapour of ammonia to nostrils, cold water to face, and aq. ammon. gtt. x as she recovered consciousness.