be expected. The vague manner in which electricity has been used I have always compared to the rubbing in of quinine for the cure of malaria; unless we give certain doses, at certain times, no decided result is accomplished; in time it may do some good. So it is with the galvanic current; by the long-continued use of the mild currents, sittings of twenty of thirty minutes, every few days, some good will result; but until the galvanometer becomes a part of the galvanic battery, and until currents of known strength are applied directly to and into the diseased tissues, progress in the field of electro-therapeutics is impossible.

A SUPPLEMENTARY PAPER TO DR. MARTIN'S, CITING TWO CASES OF FIBROID TUMOR SUCCESSFULLY TREATED BY ELECTROLYSIS.

BY J. N. FREEMAN, M.D.,

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The electrolytic treatment of uterine fibroids has now been so long before the profession, so thoroughly tested, and so entirely successful, that it is entitled to a place among the recognized means of dealing with these troublesome growths. Fatty tumors have not, in my hands, yielded to its influence, nor have I succeeded in curing cystic tumors; but fibrous growths will uniformly melt away and be absorbed under a proper application of the constant current. The most suitable cases are those intramural or sub-peritoneal fibroids where ergot is useless, and where, without this resource, we could only hope to cure our patients by removing the uterine appendages or the uterus itself. To illustrate my methods of treatment, I will give two cases in detail, the first of which was read before the Medical Society of the County of Kings, at its regular meeting in June, 1878. The other case has not been reported:

Case 1.—Miss O., aged 35, came under my care in St. John's Hospital in May, 1876. Anæmic, and suffering from extreme nervous debility. Menstruation profuse and painful. Examination revealed a fibroma of the right anterior wall of the uterus, more nearly approaching the peritoneal than the mucous surface. Ergot had been used persistently and in large doses, without benefit. A consultation having decided that no surgical interference was admissible, I determined to attempt the destruction of the tumor by electrolysis.

The first operation was on December 23, 1876, and was done in the presence of Dr. Jos. C. Hutchinson, Dr. Wm. Gilfillan, Dr. J. H. H. Burge, Dr. J. R. Bird, Dr. Frank W. Rockwell, Dr. G. G. Hopkins, Dr. A. W. Catlin, Dr. E. S. Bunker, and Dr. Charles Corey. The uterine cavity was found to be five and one-half inches in depth. The tumor was plainly mapped out through the abdominal walls, and apparently of the size of the head of an ordinary child at birth. After she had been placed under the influence of ether, I took a large sail-needle, curved at the pointed end, and insulated to within an inch of the point, and, passing it through the cervical canal, thrust it into the tumor and connected it with

the positive pole of a galvanic battery. A straight round needle, similarly insulated, was then thrust through the abdominal wall and into the tumor, taking care to avoid the bladder, and so placed as to come within an inch of the other needle, and then connected with the negative pole of the battery. The tumor was so dense and firm as to require very heavy forceps and much force to drive the needle into it. A current from sixteen cells was continued through the needles for fifteen minutes. No unpleasant effects were experienced, and the patient was out of bed the next day.

I repeated the operation in the same manner on January 2, 1877, continuing the current for twenty minutes, and again on January 9, this time increasing the number of cells used to twenty-four, and the time to twenty-two minutes. The next week her menstruation was less profuse and less painful than usual. I repeated the operation February 6 and 12, increasing the time to half an hour and using thirty-two cells.

March 6, before the sixth operation, the uterus measured four inches and a half in depth. The tumor, or what remained of it, was soft to the touch, and the needle could be easily passed in any direction through it with the fingers. Her general health was much improved. The seventh operation was Mar. 12.

April 3 the sound passed into the uterus only to the depth of three inches and a half. This, the eighth and last operation, was unfortunate, as the needle that was passed through the abdominal wall was stripped of its insulating covering and the track of the needle so much irritated as to cause an abscess that was slow in healing.

I left her in the hospital in June for a long trip in the East, and did not return for eight months, during which time she had no medical treatment. On my return I made a careful examination, and found no trace of the tumor. The sound would pass but two inches and a half into the uterine cavity, and the uterus was freely movable in the pelvis. I have examined the lady at least once a year since that time, and saw her only last week in excellent health and with no symptoms of ever having had any trouble in the pelvic cavity. Her menstrual periods are regular as to time and quantity, and are painless.

My fifth case was referred to me on Feb. 12, 1885, by my friend Dr. Alexander S. Clark.

Case 5.—Mrs. H., aged 31; married six years; no children. Menses always scanty and painful. A fibroid tumor, the size of a large cocoanut, occupied the anterior uterine wall. The cavity of the uterus measured five inches and a quarter in depth. The tumor was attached by its entire anterior surface to the bladder, preventing contraction of that organ to expel the urine, and thus causing a severe chronic cystitis. This lady was very much debilitated, and not able to leave her bed without assistance.

In this case I operated three times, February 16, April 29, and June 4, 1885, using for the positive pole a platinum probe, not insulated, passed to the fundus of the uterus; and for the negative pole, the straight, insulated steel needle, passed through the anterior wall of the abdomen, and into the tumor. I used thirty cells for about half an hour on each occa-

sion. The tumor was quite soft and two-thirds gone at the time of the third operation, and her health had steadily improved.

In September she walked from her house to my office and back, the distance of a mile each way, and has been in fair health since. The action of the uninsulated probe in these operations produced enough irritation to partially occlude the cervical canal, which needed some after attention. The uterus is now freely movable in the pelvis, is of the normal size, and has no remnants of the tumor. The bladder has entirely regained its healthy tone.

I have now treated eight cases, and have seen cases treated by other surgeons with my needles, and from this experience have come to the following conclusions:

When the tumor is sub-mucous or intra-mural, the positive pole should be attached to a curved platinum needle, insulated to an inch from the point, and which has been passed through the cervical canal and thrust into the tumor. This course may be followed in sub-peritoneal tumors if the base is broad enough to be sure of inserting the needle into the tumor, and not one side or beyond it.

In other cases, or where the tumor is sub-peritoneal, with a narrow pedicle, the positive pole should be connected with a large platinum probe, insulated to an inch from the end, to be inserted to the fundus of the uterus or to the vicinity of the base of the tumor. In all cases the negative pole of the battery should be connected with a straight, round, smooth steel needle, strong enough and properly tempered not to break, and insulated to one-half or three-quarters of an inch from the point, and this thrust into the tumor from the most available point, whether through the vaginal walls or through the abdominal parietes, taking care not to wound the intestines nor the bladder.

Sixteen to thirty of the ordinary zinc-carbon cells is as strong a current as I would advise, and from fifteen to forty minutes the limit of time. An anæsthetic is always required. It is better to give plenty of time between the operations than to be in too great a hurry. Once, or at most twice, between the menstrual periods is often enough, and if there is much reaction, that may be too often.

I have had no experience in treating those immense fibroids measuring twelve inches or more in diameter, that we occasionally see, but am confident that they can be cured, in the large proportion of cases, if taken in the earlier stages, at the time when they usually come under the notice of the physician.

80 Hanson Place, Brooklyn, N. Y., June 26, 1886.

POTASSIUM CHLORIDE.¹

BY ASA F. PATTEE, M.D.,

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Nothnagle and Rossbach, in their "Treatise on Materia Medica," say that "therapeutically potassium

chloride is not used." We find no mention of its use in the United States Dispensatory, National, or the various works on materia medica. Sander has recommended its use in epilepsy in place of the potassium bromide. Opinions vary as to its usefulness in that disease. It has its place, however.

Potassium chloride closely resembles common salt in appearance; it crystallizes in anhydrous centres; permanent in air, soluble in three parts of cold water; has a simple saline taste not as pronounced as common salt.

Formerly it was generally considered that the corresponding salts of potassium and sodium had the same physiological and therapeutical action upon the animal body; and it was a matter of indifference which salt was used. It is now known, however, that this is by no means so, and that important and well-defined distinctions do exist in the two salts.

In the body the potassium chloride is found in the tissues, cells and blood-corpuscles, while in the fluids (the serum of the blood, lymph and bile), we find almost exclusively sodium chloride. Arterial blood mixed with a dilute solution of potassium chloride becomes brighter than that mixed with a solution of sodium chloride. Potassium chloride given in 20-grain doses with 15-grain doses of sodium chloride three times a day after meals, causes an increase in the molecular tissue and red blood corpuscles, a fact that I myself have proved.

The effect of potassium, citras and acetates when introduced into the system, is to cause the excretion of a large amount of sodium chloride in proportion to the amount given. The potassium chloride does not interfere with the normal amount of sodium chloride in the fluids or solids of the body.

That potassium chloride is essential for the development of the animal tissues is shown by the fact that food which in itself is not sufficiently nutritious, such as over-boiled meat, recovers its properties on the addition of potassium chloride and a small portion of sodium chloride (Binz). Experiments with plants show also how necessary potassium is for cell nutrition.

For many years I have used potassium chloride, and find it a valuable medicine either alone or in combination with other medicines. I have used it in many cases of anæmia after other well-known treatment had failed to do good, with the most happy results. The dose usually given was 5 grains every three hours in a wineglass of water. In the commencing stage of cirrhosis of the liver due to alcoholic excess it has apparently been of benefit.

Exudations after inflammation with effusion of lymph, particularly pelvic cellulitis, have quickly disappeared under its use. In glandular enlargements, in my hands it has been of more benefit than calcium chloride or the iodine compounds. In stomatis of pregnant women or from mercury it is equal to the chlorate. In ovarian neuralgia with nervousness and menstrual headache accompanied with wakefulness, this salt has given better results than the bromide or ammonium chloride. When combined with corrosive sublimate it is one of the best preparations for syphilis. I usually give it as follows:

¹Read in the Section on Practical Medicine, at the Thirty-Seventh Annual Meeting of the American Medical Association.