another. In the cases to which Dr. Emmet alludes, in which the laceration extends to the bladder, producing vesico-vaginal fistula, or into the cellular tissue behind the uterus, giving rise to cellulitis, I quite agree that more active surgical interference may be absolutely required.

There is a feature connected with the new plastic operation for laceration of the cervix to which I would draw attention. Many gynaecologists, both European and American—among whom stand prominently the late Sir James Simpson, and my old friend, Dr. Marion Sims—have recommended, during the last twenty years or more, deep division of the cervix, with scissors and bistoury, by a single or double incision, down to its connection with the body of the uterus, for nearly every form of uterine suffering: sterility, displacements, hypertrophy, etc. For my own part, I never could understand the *rationale* of these operations, and never performed them; my patients recovering without. Now, singular to relate, we have a new school of gynaecology brought forward, which teaches us that spontaneous lacerations, the very anatomical conditions thus artificially induced to cure disease, are the actual cause, when they exist, of uterine suffering in child-bearing women; and that, by sewing up the lips of the laceration, the patient is to be cured, and made well for ever more.

These extreme surgical doctrines refute each other. None of the gynaecologists, who recommend and practise slitting up the cervix, as a remedy for uterine suffering, have found that their operation leads to laceration of the uterus during subsequent labour, or to any other evil consequence. On the contrary, they assert that the operation is a perfectly innocent one in its results, and attribute marvellous curative powers to the division of the circular fibres of the cervix.

How is it possible that such very different views can prevail, that they can both find enthusiastic followers and supporters? I think that the explanation may be found in the surgical character of the remedies proposed and carried out. In hospital practice, when a patient is operated on, as soon as the wound is healed, she is dismissed, and the case is registered as a cure, quite irrespective of what follows months or years later. It was so with my own public practice in early life. Private practice, however, soon proved to me how much we are apt to be misled by the first apparent results of surgical treatment in public institutions. When I was called upon to follow up my own treatment, or that of others, for months or years in private life, I found that I had much overestimated the value of operations on the uterus; that the radical permanent changes I had anticipated did not take place in private practice. The gynaecological celebrity appears, performs the operation, and then generally disappears—thinking, most conscientiously, that he has cured the case. But the family attendant, into whose hands the patient falls, gradually finds out that the health has been but little, if at all, modified by the operation resorted to.

In many instances, both these operations—the deep division of the cervix, and the sewing up of spontaneous lacerations—proposed and carried out in order to radically cure uterine suffering of varied character, ignore an important fact, which I pointed out many years ago. There is a class, a tribe, of women, perhaps not otherwise defective in constitution, who seem born to suffer from the uterus and the ovaries from the dawn of menstruation until its close, in some way or other. In them, there is a constitutional element—gouty, rheumatic, scrofulous, anæmic, or neuralgic—which seems to concentrate itself on the uterine organs and functions. These females often illustrate in their own persons, in succession, all the phases and forms of uterine pathology. No treatment, no operation, can or will change their nature, and enable them to pass through their uterine life entirely without suffering. Yet this is their constant aim. They attribute to us much more power to modify their condition than we really possess, and are ready to adopt any new practice, any new operation; often thinking they are better at first, whatever is done. The real therapeutic value, therefore, of any uterine operation performed, of any means of treatment used, can only be really recognised in such constitutions long after the operation; years or more.

According to my experience, all we can really do with such constitutional sufferers is, to cure curable disease, wherever and whenever it comes; to regulate the constitutional condition; the general health; and thus to lead up to the menopause, avoiding, when possible, all severe surgical measures. The menopause attained, these women may really become healthy old women, in accordance with the popular belief. All the slitting up of the cervix, all the sewing up of lacerations, all the numerous pessaries invented, fail to change their constitution. Their organisation being defective as regards the uterine organs and functions, they have to bear a more or less severe amount of uterine suffering, with its morbid sympathetic reactions, as long as uterine life lasts. Young physicians do not know this fact, and aim often at impossible results.

In such cases, if extreme, the new operation for the ablation of the

ovaries—castration, as it has been proposed to call it—might be seriously entertained. The favourable change produced by the cessation of ovulation might thus be attained long before its natural advent. But, are we justified in endangering life to remedy (possibly) mere invalidism, even if the patient consents, or wishes it? This is a question which the profession will have to decide. I am not called upon to discuss it here.

Dr. Emmet, in his work, says that those who differ with him, who reject his views with regard to his plastic operation, will be found amongst those who, from advanced or advancing age, have become incapable of receiving new ideas—have become, in a word, scientifically fossilised. I presume he will think that I belong to this class, for there are many years behind me now. I trust, however, gentlemen, that such will not be your verdict, and that you will accept this essay in the sense in which it has been written, as an exposition of my own experience and practice, as a protest against exaggerated views, and not as a protest against recent improvements in uterine surgery. Viewed in this light, it may be an element in weighing the value of the recently promulgated doctrines respecting the surgical treatment of laceration of the cervix.

In the earlier period of my gynaecological career, which commenced more than forty years ago, I had to claim, during many years, from an unwilling profession, the recognition of the right to treat the uterine organs surgically. Success crowned my efforts. Gradually the right, so long denied, to examine and treat the uterine organs just as we examine and treat all other accessible organs, was conceded. Gynaecology has, since then, progressed rapidly, and has become an important part of surgery.

I must, however, be allowed to add that the movement has gone further than I, individually, wished or approve. In my opinion, of late years, gynaecology has become unreasonably surgical in the hands of some eminent practitioners. I believe that they demand more from decided, severe, surgical modes of treatment than such treatment can give, in the sense of removing entirely suffering in the uterine organs and functions. Thence this protest as regards the plastic treatment of laceration of the cervix. At the same time, I again repeat that I by no means object to or repudiate Dr. Emmet's operation in extreme well-selected cases, leaving it to the younger gynaecologists of the day to decide when it should be performed as an exceptional operation. No man can be more anxious than myself to see science in general, and gynaecology in particular, progress. I am still, I believe, ready to accept new views and new doctrines, provided they are founded on facts, and not on blind enthusiasm.

It would, indeed, be a sad illustration of the tendency of the human mind, were I unwilling, in advancing life, to give to others the sanction I so pertinaciously and so successfully claimed in my youth in the same field of pathology and therapeutics.

ON BETHESDA WATER IN THE TREATMENT OF DIABETES MELLITUS.

By WILLIAM MURRELL, M.D., M.R.C.P.,

Lecturer on Materia Medica and Therapeutics at the Westminster Hospital; Senior Assistant-Physician to the Royal Hospital for Diseases of the Chest.

A FEW months ago, my attention was directed by Dr. Harvey J. Philpot to Bethesda water as a remedy for diabetes; and, a supply having been placed at my disposal by the Bethesda Water Company, I determined to give it a trial. It appears that this antidiabetic mineral water has been used in America for several years with great success. The spring was discovered by chance in Wisconsin, and so quickly attained a reputation for the cure of diabetes, that a large hotel—said now to be the largest in the world—was erected for the accommodation of the crowds of visitors who flocked thither to drink the waters. The patient is directed to take from eight to ten tumblersful daily for ten days, and then half the quantity for the next fifteen, thirty, or sixty days. An analysis of the water shows that it contains seventeen grains of carbonate of lime and twelve grains of carbonate of magnesia to the gallon, besides chloride of sodium, sulphate of potash, alumina, and silica. The gaseous constituents appear not to have been estimated. Several remarkable cases are mentioned, some of the patients being well-known public men in America; but the reports are wanting in scientific accuracy.

My own experience is confined to a single case of diabetes mellitus. The patient was a young man aged 20. He was unable to give us any information about his parents or relatives. He had spent the greater part of his life working in a coal-mine; but for the last two years he had been a farm-labourer. He was well and strong until about a year ago,

when he began to lose flesh and strength, was always hungry, and suffered much from diarrhoea. His legs began to swell, and he gradually became worse, until, finally, he gave up work and came under medical treatment. He had never noticed anything wrong with his water, and did not know that he passed an unusually large quantity. There was no history of syphilis.

On admission, he was found to be much emaciated, his weight being only a little over eight stone. He was curiously apathetic, and rarely volunteered any statement as to his feelings or sensations. On examination of the chest, it was found that there was dullness at both apices, with a little fine crepitation. The bowels were regular, and the motions were passed without difficulty. The urine was always acid, and free from albumen. It contained a large amount of sugar, the quantity passed in the twenty-four hours varying from one to two pounds. His appetite was voracious, and it was difficult to satisfy his hunger. He suffered from time to time from boils, which usually gave a great deal of trouble. His sight was good, and there was no catarract. He had been for some time under the care of Dr. Netherclift, who had treated him with liquid extract of opium with marked benefit.

With the view of giving the Bethesda water a fair trial, it was determined to divide the observations on the urine into four series; 1. Patient on ordinary diet; 2. Patient on ordinary diet *plus* Bethesda water; 3. Patient on restricted diet; 4. Patient on restricted diet *plus* Bethesda water. The result will be seen from the accompanying table.

Date. 1881.	Fluid taken in 24 hours.	Urine passed in 24 hours.	Specific Gravity.	Grains of Sugar in 24 hours.	
May 21	—	250 ozs.	1038	8,000	Acid; no albumen; full diet.
" 22	—	280 "	1039	9,240	
" 23	—	320 "	1042	11,840	
" 24	—	320 "	1038	9,920	
" 25	13 pints	325 "	1028	8,125	
" 26	12 "	355 "	1037	11,360	
" 27	12½ "	320 "	1032	9,600	
" 28	12½ "	450 "	1031	13,050	
" 29	9 "	420 "	1032	11,760	
" 30	8 "	340 "	1035	9,180	
" 31	8 "	410 "	1033	11,480	
June 1	9½ "	350 "	1033	10,150	Full diet, with Bethesda water, from six to eight pints a day.
" 2	11 "	430 "	1036	13,330	
" 3	11½ "	390 "	1035	9,360	
" 4	11 "	400 "	1034	9,600	
" 5	10 "	340 "	1037	9,520	
" 6	10 "	400 "	1033	11,200	
" 7	9 "	340 "	1033	9,180	
" 8	9½ "	280 "	1035	8,120	
" 9	10½ "	310 "	1039	11,160	
" 10	13 "	325 "	1035	9,775	
" 11	13½ "	400 "	1034	11,745	
" 12	12 "	395 "	1035	12,245	
" 13	12 "	400 "	1034	11,600	
" 14	12 "	400 "	1035	12,400	
" 15	20 "	400 "	1030	11,200	Restricted diet, without Bethesda water; bran-bread.
" 16	18½ "	370 "	1035	9,250	
" 17	20 "	400 "	1032	10,400	
" 18	13½ "	270 "	1033	6,480	
" 19	9½ "	190 "	1032	3,990	
" 20	8½ "	170 "	1031	3,740	
" 21	7 "	140 "	1030	2,800	
" 22	9½ "	195 "	1025	2,535	
" 23	6¼ "	135 "	1025	1,890	
" 24	9 "	180 "	1030	3,600	
" 25	6½ "	130 "	1030	2,470	Three oranges.
" 26	6½ "	130 "	1030	1,950	
" 27	6 "	120 "	1025	1,200	Glycerine 3iii from to-day.
" 28	6¼ "	125 "	1025	1,250	
" 29	6 "	120 "	1020	1,440	Restricted diet, with Bethesda water; from five to seven pints a day.
" 30	6¼ "	125 "	1025	1,875	
July 1	5½ "	110 "	1025	1,430	
" 2	6 "	120 "	1026	2,160	
" 3	6¼ "	125 "	1026	1,625	
" 4	7½ "	150 "	1027	1,850	
" 5	10½ "	210 "	1030	3,570	
" 6	8½ "	170 "	1030	3,740	
" 7	10½ "	210 "	1030	3,780	
" 8	7 "	140 "	1031	2,800	
" 9	7 "	140 "	1020	1,540	Gluten bread from to-day.
" 10	10½ "	205 "	1023	2,870	
" 11	9 "	180 "	1020	1,980	
" 12	9½ "	190 "	1026	3,610	
" 13	7 "	140 "	1025	2,940	

1. The average of eleven days of ordinary diet gives 344.5 ounces of urine and 10,323 grains of sugar *per diem*.

2. The average of fourteen days of ordinary diet *plus* Bethesda water gives 375 ounces of urine and 16,670 grains of sugar *per diem*.

3. The average of sixteen days of restricted diet gives 200 ounces of urine and 4,129 grains of sugar *per diem*.

4. The average of twelve days of restricted diet *plus* Bethesda water gives 162 ounces of urine and 2,579 grains of sugar *per diem*.

For the purposes of comparison, however, it would be better to eliminate the first three or four days of each series, and we then obtain a somewhat different result.

1. The average of the last eight days of ordinary diet gives 367 ounces of urine and 10,559 grains of sugar *per diem*.

2. The average of the last twelve days of ordinary diet and Bethesda water gives 365 ounces of urine and 10,493 grains of sugar *per diem*.

3. The average of the last twelve days of restricted diet gives 146 ounces of urine and 2,403 grains of sugar *per diem*.

4. The average of the last eight days of restricted diet *plus* Bethesda water gives 180 ounces of urine and 2,987 grains of sugar *per diem*.

Whilst he was on restricted diet, every precaution was taken to exclude both sugar and starch. Some difficulty was experienced except in the matter of bread, but this was obviated by allowing him first bran-bread, and subsequently gluten-bread. After a time, he suffered greatly from dryness of the mouth and constipation, and it was found necessary to give him a little glycerine—about three ounces a day—which he used for sweetening his tea. The Bethesda water was taken without difficulty; but the patient so rarely gave us any information respecting his subjective sensations, that it was impossible to tell how far they were influenced by treatment. The case unfortunately terminated fatally, the patient dying of acetonaemia. On July 13th, he was found crying and complaining of pain in the stomach. At 2 A.M., on the 14th, he vomited, and complained of headache and of severe pain in the stomach. At a quarter to four, he was violently convulsed, the urine and faeces being passed under him. At 6 A.M. he had another slight convulsive attack, and then passed into a semicomatose condition, in which he died about noon. The *post mortem* examination was made by Dr. Gabbett, who found signs of recent pericarditis, scattered tubercle in both lungs, cloudy swelling in the kidneys, and a fatty liver. It seems probable that the fatal termination of the case was accelerated by the strictness of the dietary adopted; at all events, it was in no way due to the Bethesda water, which deserves a more extensive trial, not only in diabetes, but in Bright's disease. I beg to thank Mr. Batterham, of the Westminster Hospital, for assistance in the examination of the urine.

REMARKS ON ANIMAL VACCINATION.*

By ERNEST HART,

Chairman of the Parliamentary Bills Committee of the British Medical Association.

In the presence of those so intimately and practically acquainted with the subject as Dr. Warlomont of Brussels, and Dr. Martin of Boston, whom we are all glad to welcome to our meeting, it would ill become me to attempt to present a review of the question, were it not that I have been led, in my capacity as Chairman of the Parliamentary Bills Committee of the Association, to devote much study to the subject in its various aspects.

The introduction into the House of Commons, in the session of 1879, of Dr. Cameron's Bill providing for the employment of lymph direct from the calf in cases where parents objected to the use of humanised lymph, led me to devote a portion of my vacation in that year to studying the working of certain of the flourishing animal-lymph establishments in Holland and Belgium. From what I saw there, I was convinced that the same system could be transplanted with success to England, and that there existed no substantial reasons why animal lymph should not be supplied by our English National Vaccine Establishment as well as human lymph. The subject seemed to me, indeed, so important, that I prevailed on Dr. Warlomont to brave the London fogs for the purpose of giving the results of his great experience in the matter before an English audience. You will doubtless all be familiar with the important and weighty conference which assembled in December 1879, under the auspices of the Association, to discuss the question, and to endeavour to bring it within the limits of practical politics. In a report which I prepared for the use of the Conference, I went at length into the history of animal vaccination in different parts of the world, and brought forward evidence to rebut the official objections to the introduction of calf-lymph. Though Mr. Schlater-Booth, whom we first approached on the subject, did not give a favourable reply to our petition, the question was afterwards thoroughly gone into by the Local Government Board; and when Dr. Cameron again brought forward his Bill on June 11th, 1880, Mr. Dodson, who had meanwhile suc-

* Introduction to a discussion in the Section of Public Medicine, at the Annual Meeting of the British Medical Association in Ryde, August 1881.