THE TREND OF GYNECOLOGIC WORK TO-DAY.

A. PALMER DUDLEY, M.D.

Professor of Gynecology, New York Post-Graduate Medical School,
New York; Professor of Gynecology, Dartmouth Medical
College, Hanover, N. H.; Surgeon to Harlem Hospital.

NEW YORK.

(Concluded from p. 1452.)

EDWARD J. ILL, NEWARK, N. J.

Total number of cases.....	66	Left tube removed.....	25
Left ovary diseased.....	34	Right tube removed.....	24
Right ovary diseased.....	28	Appendectomies.....	3
Left tube diseased.....	40	Herniotomy (femoral).....	1
Right tube diseased.....	33	Ventrosuspensions.....	20
Left ovary resected.....	13	Vaginal sections.....	2
Right ovary resected.....	14	Pregnancies.....	8
Left tube resected.....	14	Married.....	57
Right tube resected.....	6	Average age.....	30
Left ovary punctured.....	3	Recovered.....	35
Right ovary punctured.....	1	Improved.....	12
Left tube opened.....	4	Not improved.....	2
Right tube opened.....	4	Died.....	1
Left ovary removed.....	21	No report.....	16
Right ovary removed.....	17		

Dr. Ill's report shows most gratifying results, and his average of pregnancies reported (9 in 50 cases) compares favorably with my own.

JOS. E. JANVRIN, NEW YORK.

He quotes no statistics, but expresses a firm belief in the wisdom of preserving the function of menstruation as indispensable to the well-being of his patients.

CHAS. JEWETT, BROOKLYN.

Dr. Jewett, in a material of 62 cases of conservative surgery of the ovaries, etc., knows of but 3 cases of pregnancy occurring subsequently. He believes, especially in the case of young women, that any portion of the ovary which appears to be sound to the naked eye should be allowed to remain.

JOSEPH TABER JOHNSTON, WASHINGTON, D. C.

Dr. Johnston³ advocated the conservative treatment of the diseased ovary before the Southern Surgical and Gynecologic Association, Dec. 6, 1898.

MATTHEW D. MANN, BUFFALO, N. Y.

Dr. Mann has seen pregnancy follow where the ovaries seemed at the time to be hopelessly diseased; not so with the tubes, however.

W. P. MANTON, DETROIT, MICH.

Number of cases.....	28	Ovary punctured not stated	4
Married.....	22	Left tube resected.....	0
Single.....	6	Right tube resected.....	1
Left ovary diseased.....	13	Left ovary removed.....	2
Right ovary diseased.....	23	Right ovary removed.....	5
Ovary diseased, not stated..	4	Left tube removed.....	2
Left tube diseased.....	2	Right tube removed.....	4
Right tube diseased.....	5	Pregnancies.....	2
Left ovary resected or punctured.....	15	Cured or greatly improved, all but 2 or.....	3
Right ovary resected or punctured.....	20		

Dr. Manton reports a most interesting case in which he found a third ovary embedded in the vaginal wall at the cervico-vaginal junction. The cysts in this third ovary were removed by vaginal section. In nearly every case reported other plastic work on the genital tract was performed.

His results with two or three exceptions were entirely satisfactory.

SIMON MARX, NEW YORK.

Dr. Marx writes of an interesting case of pregnancy after practically all ovarian tissue had been removed in two consecutive operations.

ROBERT T. MORRIS, NEW YORK.

Dr. Morris has sent me a valuable communication on conservative surgery of the ovary, but as he deals almost

exclusively with the question of implantation, I can hardly make use of it in this connection.

H. P. NEWMAN, CHICAGO.

Total number of cases.....	86	Required secondary intervention, per cent.....	20
Resection of ovaries.....	86	Pregnancies (3 abortions).....	8
Recovery, per cent.....	60	Suspension of uterus or ovaries, per cent.....	50
Improvement, per cent.....	20		

Although guarded in his opinion, Dr. Newman is in favor of conservative work, and his report shows most gratifying results.

RICHARD C. NORRIS, PHILADELPHIA.

Total number of cases.....	42	Relieved by second operation, per cent.....	15
Controlled by statistics.....	28	Unimproved, per cent.....	35
Symptomatic recovery, per cent.....	20	Pregnancies (in 10 cases).....	2
Improvement, per cent.....	30		

Dr. Norris has but recently read a paper on conservative surgery of the uterine appendages before the Lancaster County (Pa.) Medical Society. His experience in this field extends over some 8 years. The material is confined to hospital work.

Generally speaking, he is the most pessimistic of my correspondents in regard to conservative work. The results, he says, are often discouraging. There appears to be no definite relationship between the amount and character of intervention and the final result, which makes prognosis extremely difficult.

It must be borne in mind that Dr. Norris' views are based on a rather small material—28 cases.

C. D. PALMER, CINCINNATI.

Eighty-eight operations of bilateral oophorectomy performed since June 30, 1899. All were hospital cases but 5.

Disease: Chronic catarrhal with some interstitial salpingitis, the vast majority of gonorrheal origin, a few only being septic.

Never operates on other than inflammatory cases.

Mortality 4 per cent.

Knows of no subsequent pregnancies.

In 3 cases menstruation persisted for some months and perhaps longer.

Abdominal section, usually preceded by curettage of uterus. Vaginal section in endometritis followed by salpingitis, but rarely did more than wash out cavity of lower peritoneum.

Dr. Palmer, in summing up the results of his work places himself on record as in favor of conserving the appendages, but insists that all the minor plastic work, including curettage of the uterus and even posterior vaginal section for drainage, should first be resorted to.

WILLIAM M. POLK, NEW YORK.

Dr. Polk has had experience with a very large number of conservative cases. According to his recollection, he has operated 273 times. In the absence of documentary evidence, his figures are not counted with the actual totals. He only knows of 5 cases of pregnancy. Most of his material consists of charity cases from Bellevue Hospital.

In 1886 Dr. Polk read a paper⁴ before the Society of Physicians and Pathologists at Washington in which the subject of conservatism was discussed.

M. F. PORTER, FORT WAYNE, IND.

Number of cases, over.....	50	Pregnancy.....	0
Resection or puncture of ovaries and tubes, per cent.100		Results satisfactory; better in ovarian work.	

JOSEPH PRICE, PHILADELPHIA.

In a report of 100 cases of resection of the ovary it is stated that pregnancy followed in a good percentage of the cases. In some instances only a third or fourth

3. THE JOURNAL A. M. A., Dec. 17, 1898.

4. American Practitioner, vol. 1, and Med. Record, Sept. 18, 1886.

of the ovary was left. Dr. Price declines to resect the tubes, preferring to remove them entirely.

EDWARD REYNOLDS, BOSTON.

Total number of cases.....	8	Right tube resected.....	3
Left ovary diseased.....	3	Right tube punctured.....	1
Right ovary diseased.....	3	Left ovary removed.....	3
Ovary diseased not stated..	2	Ovary removed not stated..	1
Left tube diseased.....	6	Right ovary removed.....	3
Right tube diseased.....	6	Left tube removed.....	1
Ovaries resected.....	0	Right tube removed.....	2
One ovary punctured (not stated which).....	1	Pregnancy.....	0
Left tube resected.....	5	Recovery (data in 3 cases only).....	3

Dr. Reynolds holds the record with us in this country as a successful operator in cesarean section. The report of his cases does not represent more than 10 per cent. of the work he has done, but it is evidence sufficient that he is a thorough believer in conservatism in appropriate cases.

E. C. SAVIDGE, NEW YORK.

Number of cases.....large		Pregnancies.....	4
Implantations (abdominal operations), per cent....100		Results, very gratifying in all respects but pregnancy.	

F. F. SIMPSON, PITTSBURG, PA.

Total number of cases.....	53	Right salpingostomy.....	3
Right salpingoöphorectomy..	11	Left salpingostomy.....	2
Left salpingoöphorectomy..	10	Ventrosuspension, etc.....	33
Right ovary resected.....	6	Pregnancies.....	5
Left ovary resected.....	7	Appendectomies.....	7

A. LAPHORN SMITH, MONTREAL, CANADA.

Left ovary diseased.....	14	Right tube removed.....	12
Right ovary diseased.....	16	Ventrosuspensions.....	2
Left tube diseased.....	17	Results:	
Right tube diseased.....	14	Good.....	12
Left ovary excised.....	3	Pregnancy.....	2
Right ovary excised.....	10	Unsatisfactory.....	4
Left tube excised.....	0	Unknown.....	1
Right tube excised.....	1	Number of cases.....	17
Left ovary removed.....	9	Married.....	12
Right ovary removed.....	5	Single.....	5
Left tube removed.....	16	Average age, under.....	30

I. S. STONE, WASHINGTON, D. C.

Left ovary diseased.....	69	Ventrosuspensions.....	36
Right ovary diseased.....	69	Appendectomies.....	6
Left tube diseased.....	18	Pregnancy.....	1
Right tube diseased.....	31	Myomectomies.....	6
Left ovary excised.....	12	Vaginal sections.....	3
Right ovary excised.....	12	Vaginal suspension.....	1
Left ovary excised.....	19	Hysterectomies.....	2
Left tube excised.....	2	Cured.....	44
Right tube excised.....	5	Relieved.....	40
Left ovary removed.....	26	Not relieved.....	1
Right ovary removed.....	29	Average age.....	28
Left tube removed.....	15	Married.....	53
Right tube removed.....	26	Single.....	32
Left ovary punctured.....	33	Number of cases.....	85
Right ovary punctured.....	24		

Dr. Stone is averse to doing conservative work on infected cases, but believes most emphatically in leaving any portion of healthy ovarian tissue in the young.

MAGNUS A. TATE, CINCINNATI.

Total number of cases.....	2	Right ovary resected or punctured.....	1
Left ovary diseased.....	2	Ventrosuspension.....	1
Right ovary diseased.....	1	Pregnancy.....	0
Left ovary resected or punctured.....	2	Recoveries.....	2

JOHN F. THOMPSON, PORTLAND, ME.

Dr. Thompson reports one case in which both ovaries were cystic. The left was removed and the right resected. The woman subsequently became pregnant and gave birth to twins.

ALBERT VAN DER VEER, ALBANY, N. Y.

Ovarian surgery is much more satisfactory and attended with better results than tubal surgery.

H. N. VINEBERG, NEW YORK.

Total number of cases.....	106	Operation failed.....	10
Vaginal sections.....	34	Died.....	1
Laparotomies.....	72	Cured or much improved..	95
Pregnancies.....	12		

Dr. Vineberg's report evidences the fact that this work can be done per vagina with as good results as by the abdominal route, which leaves this question still open for discussion.

EDWIN WALKER, EVANSVILLE, IND.

Total number of cases.....	6	Right ovary removed.....	0
Left ovary diseased.....	5	Left tube removed.....	5
Right ovary diseased.....	5	Right tube removed.....	3
Left tube diseased.....	5	Ventrosuspension.....	1
Right tube diseased.....	5	Pregnancy.....	1
Left ovary resected.....	1	Average age.....	30
Right ovary resected.....	4	Cured.....	2
Left ovary punctured.....	1	Improved.....	1
Left tube resected.....	1	Not improved.....	1
Right tube resected.....	2	Too recent for results.....	2
Left ovary removed.....	3	Married.....	6

T. J. WATKINS, CHICAGO.

He knows of several cases of pregnancy following ovarian surgery, but has kept no records.

J. H. CARSTENS, DETROIT, MICH.

Dr. Carstens of Detroit, although he did not give me statistics of his work, expressed his opinion in his characteristic and candid manner concerning this work. He agreed in the main with Dr. Wheaton, that in suitable cases it was wise to leave portions of the ovaries in position, in order to prevent as much as possible the reflex conditions that follow such work.

C. A. WHEATON, ST. PAUL, MINN.

Dr. Wheaton sums up the whole question in such a concise and straightforward manner that I desire to quote his letter in full:

I have before me your favor of Nov. 19, etc. . . . In our hands conservatism has proven a great boon to suffering femininity. I regret that our cases are not so classified that they can be of service to you. We have repeatedly made operations on the pelvic organs of the female, often removing the uterus and leaving the ovaries; often removing the tubes and leaving the ovaries and the uterus; often removing both tubes and leaving one ovary; often removing a tube on one side and an ovary on the other; often removing portions of ovary or tube, and I have yet to see the case in which I have regretted that sort of conservatism. It seems to me that the all-important question, independent of every other consideration, is the leaving ovarian tissue enough to preserve the sexual integrity of the woman. When I say "sexual integrity" I mean in its physiologic sense. A woman, deprived of her ovarian machinery, to my mind, is as much a defective as the eunuch, or the children born without any of the organs which go to make up the perfectly developed animal.

I regret that I am unable to give you a series of cases classified, but I have never kept a consecutive record of my work.

H. T. WILLIAMS, ROCHESTER, N. Y.

Total number of cases.....	250	Right ovary diseased.....	85
Available for statistics.....	155	Left ovary diseased.....	60
Ventrosuspensions.....	52	Pregnancies.....	25
Appendectomies.....	30		

SUMMARY.

An analysis of the preceding tables gives the following results:

TOTAL NUMBER OF CASES.

Baker, Boston.....	1	Ill, Newark, N. J.....	66
Boldt, New York.....	82	Manton, Detroit.....	28
Brettaufer, New York.....	31	Marx, New York.....	1
Brothers, New York.....	50	Newman, Chicago.....	86
Burrage, Boston.....	187	Norris, Philadelphia.....	42
Clarke, Cambridge, Mass..	13	Palmer, Cincinnati.....	88
Coe, New York.....	5	Porter, Fort Wayne, Ind..	50
Cragin, New York.....	33	Price, Philadelphia.....	100
Cumston, Boston.....	47	Reynolds, Boston.....	8
Douglas, Nashville, Tenn..	30	Simpson, Pittsburg.....	53
Dudley, New York.....	269	Smith, Montreal, Canada..	17
Earnest, Atlanta, Ga.....	8	Stone, Washington, D. C..	85
Ferguson, Chicago.....	75	Tate, Cincinnati.....	2
Frederick, Buffalo.....	125	Thompson, Portland, Me..	1
Goffe, New York.....	115	Vineberg, New York.....	106
Goldspohn, Chicago.....	97	Walker, Evansville, Ind..	6
Gordon, Portland, Me.....	2	Williams, Rochester, N. Y.	155
Griffith, Kansas City, Mo..	4		
Humiston, Cleveland.....	5	Total.....	2168

This number could be considerably increased by including figures furnished from memory, etc., without proper documentation.

AVERAGE AGE.

In but few reports is the age recorded. From the statistics submitted by Boldt, Ill, Smith, Stone and

Walker, it appears that the average age of patients is slightly below 30 years.

MARRIED OR SINGLE.

Most reports are also defective in this respect. Out of 405 cases reported by Cragin, Dudley, Ill, Smith, Stone and Walker, 315 are known to have married—nearly 80 per cent.

LEFT OVARY DISEASED.

Boldt	32	Simpson	17
Brettauer	12	Smith	14
Cragin	26	Stone	69
Cumston	31	Tate	2
Dudley	204	Thompson	1
Ferguson	46	Walker	5
Frederick	65	Williams	60
Humiston	4	Palmer	88
Ill	34		
Manton	13	Total	722
Reynolds	3		

RIGHT OVARY DISEASED.

Boldt	33	Reynolds	3
Brettauer	11	Simpson	17
Cragin	27	Smith	16
Cumston	31	Stone	69
Dudley	188	Tate	1
Ferguson	23	Thompson	1
Frederick	48	Walker	5
Humiston	5	Williams	85
Ill	28		
Manton	23	Total	702
Palmer	23		

LEFT TUBE DISEASED.

Boldt	24	Manton	2
Brettauer	11	Reynolds	6
Cragin	32	Simpson	12
Dudley	59	Smith	17
Ferguson	22	Stone	18
Frederick	73	Walker	5
Humiston	1		
Ill	40	Total	322

RIGHT TUBE DISEASED.

Boldt	23	Manton	5
Brettauer	13	Reynolds	6
Cragin	29	Simpson	14
Dudley	53	Smith	14
Ferguson	17	Stone	31
Frederick	60	Walker	5
Humiston	5		
Ill	33	Total	308

LEFT OVARY REMOVED.

Brettauer	3	Palmer	88
Cragin	16	Reynolds	3
Dudley	41	Smith	9
Ferguson	20	Stone	26
Frederick	47	Thompson	1
Humiston	1	Walker	3
Ill	21		
Manton	2	Total	281
Conservative operations			370

Total operations on left ovary 651
 Conservative—Left, 370; right, 384 754
 Radical—Left, 281; right, 241 522

LEFT OVARY RESECTED (OR PUNCTURED).

Boldt	30	Manton	15
Brettauer	7	Simpson	7
Cragin	10	Smith	3
Cumston	31	Stone	45
Dudley	155	Tate	2
Ferguson	26	Walker	2
Frederick	18		
Humiston	3	Total	370
Ill	16		

RIGHT OVARY REMOVED.

Boldt	3	Manton	5
Brettauer	4	Palmer	88
Cragin	17	Reynolds	3
Dudley	26	Simpson	11
Ferguson	7	Smith	5
Frederick	25	Stone	25
Humiston	5		
Ill	17	Total	241
Conservative operations			384

Total 625

RIGHT OVARY RESECTED (OR PUNCTURED).

Boldt	29	Manton	20
Brettauer	7	Simpson	9
Cragin	10	Smith	10
Cumston	31	Stone	43
Dudley	171	Tate	1
Ferguson	16	Walker	4
Frederick	18		
Ill	15	Total	384

LEFT TUBE REMOVED.

Boldt	3	Reynolds	1
Brettauer	3	Simpson	10
Cragin	17	Smith	16
Dudley	27	Stone	15
Humiston	1	Walker	5
Ill	25		
Manton	2	Total	127
Conservative operations			96

Total operations on left tube 223

LEFT TUBE RESECTED (OR OPENED).

Boldt	20	Simpson	2
Brettauer	8	Stone	2
Cragin	16	Walker	1
Dudley	28		
Ill	14	Total	96
Reynolds	5		

RIGHT TUBE REMOVED.

Boldt	4	Reynolds	2
Brettauer	6	Simpson	11
Cragin	15	Smith	12
Dudley	26	Stone	26
Humiston	5	Walker	8
Ill	24		
Manton	4	Total	138
Conservative operations			83

Total on right side 221
 Conservative—Right, 83; left, 96 179
 Radical—Right, 127; left, 138 265

RIGHT TUBE REMOVED (OR OPENED).

Boldt	19	Simpson	3
Brettauer	7	Smith	1
Cragin	13	Stone	5
Dudley	22	Walker	2
Ill	6		
Manton	1	Total	83
Reynolds	4		

SUSPENSION OF UTERUS.

Boldt	82	7
Brettauer	31	2
Brothers	50	6
Dudley	244	99
Ferguson	69	22
Frederick	73	12
Griffith	4	4
Humiston	5	3
Ill	66	20
Simpson	53	33
Smith	17	2
Stone	85	36
Tate	2	1
Walker	6	1
Williams	155	52
Total	942	300

APPENDICECTOMIES.

Brettauer	31	1
Dudley	244	32
Ferguson	69	30
Frederick	73	8
Ill	66	3
Simpson	53	7
Stone	85	6
Williams	155	30
Total	776	117

In 776 cases reported by Bretttauer, Dudley, Ferguson, Frederick, Ill, Simpson, Stone and Williams, appendicectomy was performed 117 times.

RESULTS.

Operator.	No. Cases.	Recovery or Improvement.	Marked	Unimproved.	Died.
Boldt	82	..	..	..	0
Burrage	187	136	..	..	3
Clarke	13	13	..	..	0
Cragin	33	..	..	..	1
Cumston	37	37	..	..	0
Douglas	30	..	..	..	0
Earnest	8	..	..	..	0
Ill	50	47	2	1	1
Manton	28	25	3	0	0
Newman	86	69	17	0	0
Palmer	88	..	..	..	3
Reynolds	3	3	..	..	0
Smith	16	12	4	0	0
Stone	85	84	1	0	0
Tate	2	2	..	..	0
Vineberg	106	95	10	1	1
Walker	4	3	1	0	0
Total	858				9

Thus in 858 operations but 9 patients are known to have died from intervention. In 435 cases in which complete results are given the operation was successful in 396 and unsuccessful in 39 (10 per cent. failures; 1 per cent. mortality).

PREGNANCIES.

Baker	1	Ill	8
Boldt	1	Jewett	3
Brettaufer	3	Manton	2
Brothers	8	Marx	1
Burroughs	23	Newman	8
Clarke	3	Norris	2
Coe	5	Polk	5
Cragin	1	Savidge	4
Cumston	12	Simpson	5
Douglas	5	Smith	2
Dudley	31	Stone	1
Ferguson	12	Thompson	1
Frederick	8	Vineberg	12
Goffe	10	Walker	1
Goldspohn	10	Williams	25
Gordon	2		
Griffith	3	Total	226
Humlston	5		

An analysis of the recorded lesions, operations, etc., reveals certain data of interest.

There is a slight preponderance of diseases on the left side, 722 diseased ovaries as contracted with 702 on the right side; while the tubes show a similar preponderance, viz., 322 as against 308. While these differences are slight, they are probably not due to chance, but should be susceptible of explanation on circulatory grounds (absence of valves in left spermatic vein, pressure of fecal matter in sigmoid flexure on this vein, etc.).

The figures show that conservative operations were performed on the left ovary 370 times, while the organ was removed 281 times. The corresponding figures for the right ovary are 384 conservative and 241 radical operations. Hence the totals comprise 754 conservative and 522 radical operations. This excess of conservative intervention is bound to increase in the future.

When we come to operations on the tubes the figures for conservative and radical intervention are found to be reversed. Thus on the left side there were 127 complete extirpations of the tube against 96 resections, punctures, salpingostomies, etc. The corresponding figures for the right tube are 138 radical and 83 conservative operations. The totals are, therefore, 265 extirpations and 179 partial operations. A number of surgeons are outspoken against conservative work on the tubes, and it is difficult to forecast the future in regard to the character of intervention on the tubes accompanying conservative operations on the ovaries.

In regard to the statistics on uterosuspensions, appendectomies, etc., given in my tables, it is only necessary to emphasize the fact that multiple operations, including plastic surgery of the genital tract, must frequently be performed in connection with conservative surgery of the ovaries.

In regard to results, two classes must be considered: The general outcome of the operation, and the preservation of sex. The primary mortality is quite insignificant, amounting to but about 1 per cent.—9 cases in nearly 2,200 (2,168). It is possible that some of these few may not be attributable to the operation proper. In regard to the ultimate success of the intervention the tables show not over 10 per cent. of failures, and many of these were corrected by second operations, which, however, would be classed as radical intervention. The overwhelming majority of my correspondents express themselves plainly in favor of conservatism on general principles, the very few exceptions being duly noted under individual reports.

In regard to the preservation of sex, we do not find many statements as to the persistence of menstruation.

It is to be regretted that operators can not control their cases in this respect, but the difficulties are almost insurmountable. The question of subsequent pregnancies can be answered very satisfactorily. Despite the great difficulties attending the following up of these cases, we have positive proof that at least 10 per cent. of the women who make up by statistics became pregnant. When we bear in mind that many of these women doubtless do not desire offspring, and that quite a number

Fig. 1.—Case 1. Showing appearance after tube was amputated and ovary sewed up. The two sides were alike.

had both ovaries removed (Dr. Palmer's cases), the percentage must be regarded as remarkable; for there is every reason to believe that many pregnancies were not located, while in many other cases the operations were of such recent date that pregnancy is likely to develop in due time.

I have not thus far mentioned the many cases of deformed and twisted conditions of the tubes on which we can do conservative work. Bearing in mind its anatomy

Fig. 2.—Case 2. Anterior view showing remaining healthy portion of right ovary.

and surroundings, it is not to be wondered at that the tube is subjected constantly and especially at the time of menstruation, to congestion and thickening, as a result of displacement, or pressure, which will cause a temporary, if not a permanent, closure of some portion of its lumen. See plates of Dr. Ferguson and myself. Conditions such as these of the tube can be relieved by conservative work.

The "surgical menopause," so to speak, has become such a fruitful source of revenue to those in our profes-

sion who are eminent in their practice as nerve specialists, and the records of their work evidence such an accumulation of various nervous manifestations consequent on the total removal of the uterus and appendages; or (even to put it mildly), a partial removal of these organs, that it behooves the operating surgeon who is yearly doing a large amount of this work, to bear in mind, that possibly he may be sowing the seeds of disease in some other part of the body while he so skilfully removes that which he considers to be local.

Having had this fact many times so forcibly brought to my mind by the return of patients with these nervous symptoms, so prominent as to be a constant source of annoyance to them, I have been forced in defense of myself, and for the benefit of my patients, to give serious thought and study to this condition from the nervous standpoint, and rather than attempt to give you my own opinion from a clinical standpoint, something that you might not feel I was justified in offering to you from my knowledge alone, I much prefer to quote to you from the experience of one of our best-known teachers on nervous diseases in New York, or even the United States—Dr. Graeme Hammond, professor of nervous diseases in the Post-Graduate Medical School. He says:

The more organs removed, the more pronounced the nervous symptoms are likely to be. The results most likely to follow, in mild cases, are those of neurasthenia. In more severe cases, from mild to severe grades of hysteria and dementia. In still others we see more severe mental disturbances, such as development of paranoia, melancholia and a mild grade of dementia, with severe hot flashes.

These hot flashes are very common, even after the removal of parts of the pelvic organs, not necessarily the removal of all of them; say simply the uterus or one ovary. They get neurasthenic symptoms, insomnia, depression of spirits, with crying spells, irritability, inability to apply the mind to ordinary occupations, flushes of the face, etc. These flushes are due to vasomotor paralysis, having its origin in the generative organs. That is probably cerebral, due to temporary paralysis of the sympathetic system.

There may be, on the other hand, attacks of coldness of the feet or hands, which are the result of the spasmodic condition of the blood vessels due to irritation.

This paralysis or irritation of the sympathetic system results unquestionably from the surgical operation. What that operation really does; how the removal of those organs affect the brain, whether it is from the cessation of the menstrual function or not, I am not quite so clear.

In answer to Dr. Hammond's query concerning just how the operation should interfere with the nervous centers it is only necessary to call the attention of those of you who are daily operating to the normal anatomy of the pelvis, its lymphatic, its sympathetic and its vasomotor nerve supply, and then ask you if it can be possible to remove a section of an electrical supply to the different parts of the body, emanating from the brain, to cut out a section of its conductors on both sides of the body, and have the work go on as before until such time as that removal can be repaired by nature. It is only a homely comparison between the machinery of the body and the machinery of electricity and mechanics, but it seems to me only reasonable to suppose that if it produces defective action in the latter (mechanics) it must also do the same to the body.

It would seem as if the ovaries and probably the testicles add something to the system which is necessary for that individual's complete development, and by removing the ovary or testicle, you deprive the system of something which causes a perversion of nutrition. There is a progressive failure of sexual orgasm from

coitus, with the progressive changes in the nerves which supply the clitoris, but whether there is a failure of desire or not would be another matter, because desire is purely cerebral. As the clitoris degenerates the power of experiencing the orgasm will diminish little by little

Fig. 3.—Case 2. Posterior view showing left tube and ovary removed and healthy portion of right tube and ovary seen in Figure 2 sewed up.

until it finally fails altogether. These women for a time have erotic dreams showing the desire which they can not appease by natural cohabitation. In a little while they stop.

Fig. 4.—Case 2. Posterior view showing fistula from tube to bowel, and showing Figure 2 opened.

There are some women who are abnormally sexual, and in such women the power of experiencing the orgasm lasts much longer than it does in the average woman. In some rare instances the sexual appetite is

Fig. 5.—Conservative work on the adnexa. (Drawn for Dr. A. H. Ferguson, Chicago.) A. Bisection of ovary. B. Shortening ovarian ligament. C. Salpingostomy and the closed end removed. D. Hysterosalpingostomy, right. E. Proximal end of tube and horn of uterus removed. F. Left tube obstructed proximally; into the open fimbriated extremity is inserted the nozzle of an inflator, by which an attempt is made to force air through the tube.

greatly increased' after removal of the uterus and its appendages.

There are occasional cases which are unable to experience the orgasm and who turn from coitus with ter-

ror on account of the suffering which they undergo whenever coitus is attempted. These patients are, of course, greatly relieved by the removal of those organs which have caused their suffering. Sometimes in such cases as these the sexual desire is greatly increased after an operation and this increase may continue for years.

In some women with a pronounced neurotic history there appears to develop after operations on the pelvic organs a periodical mania in which sexual fury is the pronounced symptom. In such cases there are periods in which the woman indulges in sexual excesses for days at a time, going clandestinely to houses of easy virtue for the purpose; and then there follows a period in which (very often of several weeks' duration) there is little or no sexual desire at all for them, to be followed in its turn by another period of sexual fury. These are cases of recurrent sexual mania, akin to recurrent attacks of dipsomania.

I would say this: that there is little doubt that the removal of the pelvic organs is very prone to induce degenerative cerebral changes in those who are predisposed by heredity to a neurosis. In other words, you take a woman who has a tendency to nervous disease in the family, and who is nervous herself, and that operation may induce paranoia, which might not have developed until the natural menopause at the age of fifty, or might not develop at all.

Reflexes.—In regard to the pain in the back, you can account for that by pressure on the nerve centers in the pelvis.

Constipation.—Simply in those cases where neurasthenia is produced.

Typical Symptoms of Neurasthenia Resulting from this Operation in the Case of a Patient.—Walks with difficulty on account of weakness and pain, the pain being located in both thighs. She has vertigo, insomnia, disagreeable dreams, depression of spirits, crying attacks, irritable, fretful and a feeling of pressure in the head, and headache; flatulency, dyspepsia and constipation. Now, these are typical symptoms. In a good many neurasthenic subjects there is a great degeneracy of mind because they think that people can tell they have had this operation done by looking at them, and they get depressed from that, avoid society and hate to go out. I have seen a number of such cases.

When we remove the testicles from the male, he becomes timid and loses his virility and courage; he becomes fat and gross; there is also a similar change in the animal. The horse has not the health, the virility or the courage of the stallion. Now, simply cutting off his toe would not make this change. There is something vital taken away from him, and the parts taken out constitute something that he especially requires.

With regard to hysterectomy, it is well-known that a woman on whom hysterectomy has been performed loses her sexual desire in about eighteen months therefrom, barring cases I have already mentioned. If it is possible to save the uterus, why not do it? If it is possible to save only half an ovary, save it. If it is possible to save only part of a tube, save it, provided that it is, or can be made, patent. If there is a fibroid in the uterus, remove the fibroid and leave the uterus, in selected cases. If there is a cyst in the ovary, remove the cyst and leave what healthy ovarian tissue you can. You know that this work can be done and that the resected ovary or tube will heal. If there is mild oozing of blood, the pelvic peritoneum will take care of it. This is conservative surgery. May it continue to develop in the future!

BIBLIOGRAPHY.

- Beashan, A. L., *THE JOURNAL A. M. A.*, 1900, xxxv, 539.
 Burrage, W. L., *Amer. Jour. Obstet.*, 1900, xlii, 195.
 Harris, P. A., *Ann. Gyn. and Ped.*, 1900, xiii, 752.
 Dudley, *Amer. Jour. Obstet.*, 1900, xliii, 397.
 Jayle, *Clinique (Montreal)*, 1900, vi, 286.
 Kelly, J. K., *Glasgow Med. Jour.*, 1900, lili, 115.
 Massey, C. G., *Amer. Gyn. and Obstet. Jour.*, 1900, xvi, 116.
 Jayle, *Presse Medical*, 1900, 133.
 Vidal, *Revue de Gynecologies (Paris)*, 1900, iv, 81.
 Jarsaillon, L., *Lyon Medical*, 1899-1900.
 Goldspohn, *Trans. Amer. Assoc. Obstet. and Gyn.*, 1898, 307-315.
 Johnson, J. T., *Amer. Jour. Obstet.*, 1899, xxxix, 221-224; also *Amer. Gyn. and Obstet. Jour.*, 1899, xiv, 1-6.
 Coe, H. C., *Trans. Amer. Gyn. Soc.*, 1898, xxlii, 381, 95.
 Palmer, C. D., *Clin. Lancet-Clinic*, 1899, n. s., xlii, 1.
 Carstens, J. H., *Internat. Clinics*, 1898, 8 s. iii, 283.
 Martin, C., *Med. Press and Circular (London)*, 1898, n. s., lxxv, 503, 1897-1898.
 Wiener, J., *N. Y. Med. Jour.*, 1897, lxx, 853-57.
 Champneys and Robinson, *Practitioner*, 1897, lviii, 641-654.
 Jayle, *Revue de Gyn. et de Chirur.*, 1897, i, 403-456.
 Polk, W. M., *Amer. Gyn. and Obstet.*, 1897, xi, 287.
 Stinson, J. C., *Occidental Med. Times*, 1897, xi, 565, 1.
 Pozzi, *Paris*, 1897.
 Dunn, B. S., *Med. Mirror*, 1898, ix, 55.
 Knauer, *Centralbl. f. Gyn.*, 1898, xxii, 201, 1896-7.
 Halley, *Kansas City Med. Record*, 1896, xlii, 73.
 Cragin, E. B., *Med. News*, 1896, lxxviii, 719.
 Thomas, *Medical Record*, 1896, i, 769.
 Coe, H. C., *N. Y. Poly.*, 1896, viii, 107.
 Clark, J. G., *Thera. Gaz.*, 1896, 3 s., xii, 802.
 Polk, W. M., *Trans. Amer. Gyn. Soc.*, 1896, xxi, 3.
 Porter, M. F., *Amer. Jour. Surg. and Gyn.*, 1896, viii, 164.
 Fish, E. F., *Milwaukee Med. Jour.*, 1896, iv, 370.
 Lee, E. W., *Omaha Clinic*, 1896, ix, 98.
 Dunn, B. S., *South California Practitioner*, 1896, xi, 455.
 Montgomery, E. E., *Med. Council*, 1897, ii, 5.
 Johnson, J. T., *Amer. Jour. Gyn. and Obstet.*, 1899, xiv, 1.
 Johnston, Geo. Benn., *Med. News*, May 13, 1899.
 Glass, J. H., *Med. News*, April 29, 1899.
 Kelly, H. A., *Brit. Med. Jour.*, Jan. 26, 1898.
 Madden, T. M., *Amer. Gyn. and Obstet. Jour.*, 1897, xi, p. 502.
 Henrotin, F., *N. Y. Jour. of Gyn. and Obstet.*, 1895, vi, 769.
 Polk, W. M., *N. Y. Jour. Gyn. and Obstet.*, 1893, iii, p. 649; also *Amer. Jour. of Obstet.*, xxiv, 9, 1891, 1050; also *Amer. Jour. of Obstet.*, 1887, xx, 630; *Jour. of Obstet.*, 1896.
 Munde, P. F., *Amer. Jour. of Obstet.*, 1888, xxi, 317; Dudley, 1890, xxlii, 185.
 Gordon, *Amer. Gyn. Soc. and Amer. Med. Asso. and Me. Med. Asso.*
 Doleris, *Amer. Jour. Obstet.*, 1890, xxlii, 1009; Dudley, 1336; Martin, 800; Landau, 1157; Polk, 1375; Mitchell, 555.
 Polk, *Amer. Jour. Obstet.*, 1891, xxiv, 1039.
 Doleris, *Amer. Jour. Obstet.*, 1892, xxv, 130.
 Polk, *Amer. Jour. Obstet.*, 1893, xxvii, 883.
 Barrows, *Amer. Jour. Obstet.*, 1893, xxviii, 804; Pozzi, 446.
 Apostoll, *Amer. Jour. Obstet.*, 1894, xxx, 775; Vulliet, 285; Dudley, 129; Delangre, 455; Glasgow, 705-747.
 Praeger, *Amer. Jour. of Obstet.*, 1895, xxxii, 891.
 Dunn, *Amer. Jour. Obstet.*, 1895, xxxvi, 571; Robb, 289.
 Dudley, *Amer. Jour. Obstet.*, 1895, xxxvii, 214; Russell, 293.
 Dudley, *Amer. Jour. Obstet.*, 1895, xxxviii, 407.
 Lucas, *Amer. Jour. Obstet.*, 1899, xxxix, 115; Johnson, 221.
 Dudley, *Amer. Jour. Obstet.*, 1900, xli, 114.
 Dudley, *Amer. Jour. Obstet.*, 1900, xliii, 397; Montana, 268; Burrage, 42, 90, 195.
 Morris, *Amer. Jour. Obstet.*, 1901, xliii, 582; Vidal, 267; Maurice, 266.
 Beyea, *Amer. Jour. Obstet.*, 1901, xliiv, 324-374; Dudley, 417.
 Burrage, W. L., *Med. News*, April 13, 1902.
 Goldspohn, A., *Trans. Amer. Assoc. of Obstet. and Gynecologists*, 1901, 250.
 Beyea, H. D., *Amer. Jour. of Obstet.*, September, 1902.
 Harris, P. A., *Med. News*, Oct. 27, 1900.

THE CAPACITY OF A HUMAN MUSCLE FOR WORK.*

JESSE GEORGE HOLMES,

From the Physiologic Laboratory of Northwestern University Medical School.

CHICAGO.

HISTORICAL REVIEW.

Each year adds its share to the work that is being done by the different investigators in the study of muscular contractions, neuromuscular fatigue and the ability of a muscle to do work. To Mosso¹ must be given the credit of first making investigations with the human muscle. The instrument used by him in his work consisted in a weight and pulley. The muscular power obtained he expressed as weight multiplied by the dis-

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Pathology and Physiology, and approved for publication by the Executive Committee: Drs. L. Hektoen, F. B. Wynn and W. S. Hall.

1. Mosso: Ueber die Gesetze der Ermüdung, *Archives für Physiologie*, 1890, p. 89.