

to the individual by a cultivation of those higher faculties, a respect for himself and an increase in his sources of pleasure, and a widening of his capacity for enjoyment which nothing else can bring. To the man with a broadly cultivated mind there is no time or place, with freedom of mind and body, when he need suffer from *ennui*. He is ever prepared, alike, for work or recreation. To him the world offers always its best, and it is to be had for the taking. To him Nature lays bare the beauties hidden from the eyes that have not learned to see. The artists of all past times have wrought their ideas into lasting forms for his pleasure, and the accumulated literature of all ages is at hand for his instruction and entertainment. The processes of civilization as seen from his higher vantage ground have a unity, a relation and a connected purpose to an end which are in gratifying and hopeful contrast to the workings of the world as seen from the lowlands of narrowmindedness and desponding and despairing wonderment at the apparently purposeless scheme of the universe.

But, my friends, in the garment of life which we wear for this brief season here upon earth, there must needs be not only the warp of joy but also the woof of sorrow. The sun of prosperity and peace shines not always, and in the lives of all of us there are periods when the dark clouds of despondency cast themselves athwart his smiling face. In the course of nature there must come times when the sky is no longer blue, and the sunlight has lost its brightness; when the color has faded from the flowers and there is no music in the laughter of children; when affliction takes up its abode on our hearth-stone, and when grief becomes our constant companion; when life means only the beginning of death; when we stand alone in this vast universe with no human hand to sustain and the arm of God seems afar off. It is then that we must look within for that power which must hold us up if we would not fall. It is then that our higher manhood, with its understanding widened by culture and deepened by sympathy, and the aspirations of that which makes us what we are, give us glimpses of what the awful Mystery may mean, and the light of Duty shines upon the path we are to follow. It is that only which can save us from despair and give us the courage to live and to do as faithfully as we can the work that is at our hands to do. The world wants not less now than it has ever done, that courage and that faith which can only come from the liberal culture of the nobler and higher elements of our nature, and nowhere can they work for greater good than in the daily duties of the profession which it is our honor to follow. There is need not only of physicians, but men; and the nobler the man the greater the physician.

ORIGINAL ARTICLES.

A PLEA FOR EARLY VAGINAL HYSTERECTOMY FOR CANCER OF THE UTERUS.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-first Annual Meeting of the American Medical Association, held in Nashville, Tenn., May, 1890.

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It is, at present, a generally conceded fact that cancer can be permanently eradicated from the human body if the parts of primary development and subsequent invasion can, early in the progress of disease, be absolutely separated and removed from the surrounding normal tissue. This implies that the operation for cancer which will go the farthest beyond the diseased limits, is the one most liable to accomplish absolute removal, consequently the one by which the most satisfactory curative results must be expected. With this fact well established, we can have no hesitancy in making the assertion that the operation which will obtain the best ultimate results in cancer of any portion of the uterus is the one which will accomplish its total removal, together with as much of the tissue which lies in close proximity to it as can be removed without unduly increasing immediate mortality.

Hence my first proposition is: *Vaginal hysterectomy is the most justifiable surgical procedure we yet know for the cure of cancer of the uterus.*

A second fact which is as incontrovertible as the first, and one made obvious from the very nature of the first, is that the *earlier* cancerous tissue is removed in the process of its development, the greater are the probabilities of a non-return of the disease. Hence my second proposition:

Vaginal hysterectomy should be attempted for the cure of cancer of the uterus, at the earliest possible moment after the disease is diagnosed.

Thus it shall be the effort of the author of this paper not only to convince his hearers that vaginal hysterectomy is the most justifiable operation for cancer of any part of the uterus, but that it is an operation which should be resorted to early in the progress of the disease.

The facts to be proven in support of these propositions, in order to make them acceptable, must be as follows:

1. That vaginal hysterectomy will remove the entire disease in cancer in any portion of the uterus, in a greater proportion of cases than will any other surgical procedure now recommended.
2. That vaginal hysterectomy for cancer of the uterus will enable an operator to go farther beyond the diseased tissue into healthy tissue, than will any other surgical procedure now recommended.
3. That vaginal hysterectomy is a more ideal surgical operation, and leaves the remaining tis-

sues in a less favorable condition for the return of the disease, than will any other surgical procedure now recommended.

4. That vaginal hysterectomy for cancer of the uterus will give in the future an immediate mortality sufficiently low to make it preferred to all other surgical procedures.

1. Will vaginal hysterectomy remove the entire disease in cancer of any portion of the uterus in a greater proportion of cases than will any other surgical procedure?

Let us first examine the uterus, and then the other possible operations which might possibly be selected.

The uterus is divided arbitrarily into two portions, the body and the neck. The body, which represents two-thirds of the entire organ, is supported and suspended upright in the centre of the pelvis by numerous connecting bands, with its two branching arms of tissue, which have a direct continuity with itself, reaching out into the folds of the peritoneum from either side, all covered with peritoneum, all closely associated with other important organs, the rectum behind, the bladder in front, the ovaries on either side, the intestines above and the vagina below, and with an elaborate connecting network of veins, arteries, lymphatic vessels and glands distributed throughout its entire structure.

The neck of the uterus, which in anatomical structure is a direct continuation of the uterus and represents but one-third of that organ, is suspended from its uterine attachments above into the vaginal tube below, where it is free from all direct tissue communication with its surroundings except as it is supplied from the body and the vaginal attachment above.

The operations which may be urged as possible rivals of vaginal hysterectomy: the cautery—chemical, actual, Paquelin or electro—curetting, amputation and abdominal hysterectomy. When it is remembered that at this stage of the paper, we are considering whether vaginal hysterectomy will remove the entire disease in cancer of any portion of the uterus in a greater proportion of cases, than will any of the above named operations, it becomes obvious at once, that the only one which can compete with vaginal hysterectomy at all in this respect is abdominal hysterectomy. It must be admitted, however, that abdominal hysterectomy, when performed so as to remove the entire uterus, including the cervix and Fallopian tubes, will accomplish the same end in the same proportion of cases as will vaginal hysterectomy; but the operation has other disadvantages which are obvious to many which render it inferior to vaginal hysterectomy, and which will be touched upon under the heading of mortality. I do not care to bring an array of arguments to prove obvious facts. I will therefore pass to our second consideration.

2. Will vaginal hysterectomy for cancer of the uterus enable an operator to go farther beyond the diseased tissue into healthy tissue than any other surgical procedure?

The cautery can be employed in these cases to follow out the limits of the disease, if it is confined to the cervix, and possibly the lower portion of the body and any encroachment on the vaginal walls which has not involved deep underlying tissues. Much can be accomplished in cancer of the cervix with this remedy, but when the disease begins to involve the body of the uterus, the dangers of subsequent hæmorrhage, from the imperfect closure of those large vessels which must be destroyed in reaching those portions, makes one tremble for the result. When cautery is employed to its fullest extent, however, we are still far short of what is accomplished in total removal of the uterus.

Curetting.—With curetting, from the nature of the instruments employed, we do not expect to go any great distance beyond the friable tissue made so by the march of the disease. Dull curettes do not remove, readily, healthy tissue which it is necessary to get into beyond the diseased portions, and sharp ones possess no remedy for the hæmorrhage they produce. So, with this remedy, we cannot hope to go far beyond the limits of the disease, and never approach anything like the amount of tissue removal that is accomplished by hysterectomy.

High Amputation.—High amputation of the cervix can accomplish the removal of considerable tissue if it is properly performed. The vaginal mucous membrane can be removed to the extent of $\frac{1}{2}$ to 2 inches from the vaginal attachments. Ligatures may transfix the base of the broad ligament at least an inch away from the uterus, and a corresponding amount of tissue be removed. The amputation may extend well into the body of the uterus, and with great care to suppress the hæmorrhage, the fundus may be pretty well approached. Here, however, we reach the limit of our possibilities with high amputation.

Abdominal Hysterectomy.—With abdominal hysterectomy the ovaries and the tubes can be removed with the body of the uterus; and by performing a very unusual abdominal hysterectomy the cervix may be included with the body. It would not be practicable, however, for one to remove very much of the vaginal mucous membrane.

Vaginal Hysterectomy.—With this operation the whole upper portion of the vagina to the extent of $1\frac{1}{2}$ or 2 inches from its cervical attachment can be severed at the outset, to be included in the tissues to be removed. After separating well the bladder from the uterus, and carrying the separation well to the side, so as to certainly dissect the ureters from the broad ligaments, the base of the broad ligaments can be ligated well

out to their pelvic attachments, by first drawing the cervix forcibly to the opposite side. When the base of one broad ligament is ligated and the uterus well drawn down upon that side, the large broad ligament lock forceps (Byford's pattern) can be adjusted to the remaining portion of the ligament, and at such a distance from the uterus as to leave the ovary and tube attached to the latter ready to be removed with the diseased tissue. When one broad ligament is severed, the uterus can, ordinarily, be delivered. It is an easy matter then, by commencing to ligate at the upper margin of the broad ligament, which remains intact, to get well away from the uterus, and, by carefully ligating and severing by sections, each ligature being crowded farther away from the uterus, it is possible to get the ligatures, which are applied to the base, well out to the side of the pelvis. To summarize then, without unduly complicating the operation we may, when necessary, remove the following tissues with vaginal hysterectomy: the uterus entire, the upper portion of the vagina for a distance of 2 inches from its uterine attachments, both broad ligaments to a distance of 1 to 2 inches from the uterus, both Fallopian tubes and both ovaries.

Compare with this, what is accomplished with the most thorough cauterization, curetting, or high amputation which can be made. It will be found after these operations, that we have remaining, the fundus of the uterus, the Fallopian tubes, the ovaries and much cellular tissue surrounding them which must be removed in the most ordinary vaginal hysterectomy. The points of comparison are so apparent, and the comparison so favorable to vaginal hysterectomy under this heading, that I feel it superfluous to go into further detail.

3. Is vaginal hysterectomy a more ideal surgical operation, and does it leave the remaining tissues in a less favorable condition for a return of the disease? This interrogation seems to me somewhat axiomatic. I shall, therefore, employ but little time in its discussion.

With vaginal hysterectomy an organ in its entirety is removed. With curetting, cauterizing, or amputation, only a portion of an organ is removed and crushed, cauterized, or cut surfaces of a tissue remains to be cared for which previously had a direct continuity with the diseased tissue. With vaginal hysterectomy satisfactory and safe stumps are secured which contain all bleeding-vessels of importance and also all channels through which absorption of infectious material may occur. With curette, cautery or amputation no regular stumps are secured, and large ugly surfaces of tissue are left exposed which stand ready to absorb infectious matter. To the extent, too, that the stumps are imperfect to that extent is the security against hæmorrhage imperfect. With vaginal hysterectomy the facil-

ities for drainage are almost imperfect, while with the other operations, the very nature of the remedy employed against hæmorrhage, viz.: packing or tamponing may oftentimes interfere with satisfactory drainage.

The above remarks do not apply to abdominal hysterectomy. With this operation, however, we have an additional complication of an abdominal incision, and the responsibility of treating two openings into the peritoneal cavity instead of one as in vaginal hysterectomy. The difficulty of securing the broad ligaments in their entirety from an abdominal incision is much greater than when they are handled from below.

4. Will vaginal hysterectomy for cancer of the uterus give in the future an immediate mortality sufficiently low to make it preferable to all other surgical procedures?

I shall leave the subject of abdominal hysterectomy for cancer out of my calculations here because we have seen that it is really not an appropriate operation for the difficulty under consideration, and also because of a recognition of this fact, in this connection it has been almost entirely abandoned.

In discussing this question I shall take the liberty of assuming, that the older operation—curetting, cauterization and amputation—have for years been out of their experimental stage, while with vaginal hysterectomy, recent statistics only are of any value in determining the future of the operation.

With partial removal of the uterus, or high amputation in the hands of expert American operators, recently reported, an immediate mortality of more than 4½ per cent. has been the result. These represent the fifty-five cases reported by Reamy in 1888, with two deaths or a mortality of 3.6 per cent., and of thirty cases reported by Reeves Jackson in January, 1890, with two deaths or a mortality of 6.6 per cent. This mortality seems rather high for an operation which at its best is considered but a conservative method for treating a grave disease. It is considerably lower, however, than we get from our foreign brethren, for instance: Verneuil in January, 1889, records twenty-two cases, with two deaths, or a mortality of 9 per cent. Hofmeier's table of ninety-six Berlin-cases, gives a mortality of 7.4 per cent. Thus, with the best statistics which can be obtained for the so-called conservative treatment of cancer of the uterus, we must grant a mortality of 3.6 per cent., while with the *two* best records, a mortality of more than 4.5 per cent. is obtained. In the face of these statistics from expert operators, can I be said to be unfair, if I assume the legitimate mortality of partial removal of the uterus to be at least 5 per cent.?

What is the present mortality of vaginal hysterectomy? The published statistics of this op-

NAME OF OPERATOR.	Age.	DISEASE.	MANNER OF OPERATING.	DATE.	RE- SULT.	CAUSE OF DEATH.	ULTIMATE RESULTS.
1 H. J. Boldt, New York City.	39	Epithelioma of cervix.	Ligature to br'd ligament.	April 3, '87.	R.	Unknown.	No recurrence.
	51	"	"	May 2, '87.	R.	"	"
	54	(?)	"	June 15, '87.	D.	"	"
	56	"	"	July 3, '87.	R.	"	Recurred Dec., 1888.
	42	"	"	Aug. 4, '87.	R.	"	Recurred Dec., 1887.
	49	"	Lig. on one side, clamp on one side.	Jan. 22, '88.	R.	"	No recurrence, Jan., 1890.
	40	"	Clamp.	Jan. 29, '88.	R.	"	" Feb. 6, 1890.
	37	"	"	Mar. 4, '88.	R.	"	" Jan. 9, 1889.
	45	"	"	Jan. 10, '88.	R.	"	" Jan. 10, 1890.
	58	Epith. cerv. and body.	"	Feb. 5, '89.	R.	"	Recurrence in Jan., 1890.
	35	Cancer cervix.	"	Feb. 24, '89.	R.	"	No recurrence.
	34	Cancer body & l. ovary	"	Jan. 18, '89.	R.	"	"
	60	Cancer body.	"	Oct. 31, '89.	R.	"	"
		Cancer cervix.	"	1890.	R.	"	"
		"	"	1890.	R.	"	"
1 W. T. Ball, New York City.	45	Epithelioma cervix.	Ligature.	Jan. 27, '83.	R.	"	Recurrence in 3 years.
	35	"	"	Sept. 22, '83.	R.	"	No recurrence.
	36	"	"	Aug. 16, '84.	R.	"	Recurrence March 25, 1886.
	43	"	"	Aug. 27, '86.	D.	Shock.	"
	41	Prolapse uterus.	"	Feb. 5, '89.	R.	"	Perfectly well.
	46	"	"	Nov. 18, '89.	R.	"	"
1 H. T. Byford, Chicago, Ill.	29	Cancer cervix.	Ligatures	Aug. 3, '87.	R.	"	No return.
	57	Papilloma cervix and posterior vag. wall.	" and forceps.	Dec. 7, '87.	R.	"	Returned in two months.
	47	Fibrosarcoma of uter.	"	Jan. 5, '88.	R.	"	No return.
	55	Adenoma of uter., can- cerous degeneration.	"	Mar. 4, '88.	R.	"	Perfectly well.
	43	Three small fibroids.	"	Mar. 25, '88.	R.	"	Cured.
	25	Cancer cervix.	Forceps and ligatures.	May 17, '88.	R.	"	Returned.
	42	Fibromyoma.	Ligatures	Jan. 9, '88.	R.	"	Cured.
	52	Sarcoma uterus.	" and forceps.	July 18, '88.	R.	"	Still well.
	39	Carcinoma cervix.	"	Aug. 4, '88.	D.	Delirium tremens.	"
	48	Sarcoma.	Forceps.	Aug. 8, '88.	R.	"	This patient refused to eat 2 weeks after operation, and died in consequence.
	46	"	"	Aug. 22, '88.	R.	"	Still well.
	53	Carcinoma cervix.	Ligatures and forceps.	Mar. 25, '89.	R.	"	Died in January, 1890.
	51	"	"	May 8, '89.	R.	"	Disease returned in 4 mos.
	35	"	"	May 20, '89.	R.	"	No recurrence.
	52	Sarcoma.	Forceps.	July 28, '89.	R.	"	"
	49	Carcinoma of cervix.	"	Aug. 16, '89.	R.	"	Returned.
	43	Fibroids of corpus.	Ligatures	Nov. 28, '89.	R.	"	Well.
	53	Cancer of cervix.	"	Dec. 18, '89.	R.	"	"
	28	"	Forceps.	Mar. 3, '90.	R.	"	"
	24	Abscess.	Ligature and forceps.	Mar. 13, '90.	R.	"	"
1 H. C. Coe, New York City.	55	Epithelioma uterus.	Clamp.	May 13, '89.	R.	"	Well.
	29	" cervix.	"	June 19, '89.	D.	Intest. obstruction	[mos. after operat'n.]
	48	Procidencia.	Ligatures	Sept. 7, '89.	R.	"	Became insane and died 4
	63	Adenoma, carcinoma corpus uterus.	Clamp.	Dec. 16, '89.	R.	"	Well.
	50	Cancer corp. uterus.	"	Dec. 18, '89.	R.	"	Well.
	39	Epithelioma cervix.	"	Feb. 19, '90.	D.	Intest. obstruction	Exactly like case 2, shock after secondary laparot- omy, 4th day.
	39	"	"	Feb. 19, '90.	R.	"	"
	50	" uterus.	Ligatures	Feb. 19, '90.	D.	Uræmia.	Contracted kidneys.
1 A. B. Carpenter, Cleveland, O.	44	Cancer of uterus.	Clamp.	1890.	R.	"	"
1 A. Palmer Dudley, New York City.	48	Epithelioma cervix.	Ligatures	Dec. 20, '83.	R.	"	No return of disease.
1 E. C. Dudley, Chicago.	30	Carcinoma.	Silk ligatures.	April, '84.	D.	Acute nephritic	"
	51	Sarcoma.	Forceps.	Nov. 19, '84.	R.	" [shock.]	Return of disease in 3 mo.
	38	Carcinoma.	"	May 5, '88.	R.	"	No return of disease.
	36	"	"	Mar. 22, '89.	R.	"	"
	53	"	"	Jan. 9, '89.	R.	"	"
	30	"	"	Aug. 6, '89.	R.	"	"
1 E. W. Cushing, Boston.	68	Malig. adenoma corp. uterus.	Clamp.	June 13, '88.	R.	"	Well and active at present.
	43	Carcinoma cervix.	"	Nov. 16, '88.	R.	"	Died 8 mos. later from dis.
	66	"	"	Dec. 10, '88.	R.	"	[later of carcinoma.
	26	"	"	Jan. '89.	R.	"	Said to have died some mo.
	38	"	"	Mar. 28, '89.	R.	"	"
	40	"	"	Mar. 21, '89.	D.	10th day of cerebral embolism when in full convalesc.	[abdomen.]
	41	"	"	May 14, '89.	R.	"	Alive, but has cancer in
	58	"	"	May 28, '89.	R.	"	Well at present.
	25	"	"	Dec., '89.	D.	From continued vomiting 8 days after operation.	"
	50	"	"	Oct. 24, '89.	R.	"	Well.
	48	"	"	Feb. 1, '90.	R.	"	"
	38	Cancer cervix.	"	Mar. 26, '90.	R.	"	"
1 Geo. J. Engelman, St. Louis.		Carcinoma fundus.	Freund method	1885.	R.	"	"
		"	"	1885.	R.	"	"
		Cancer cervix.	Ligatures	Jan. 14, '90.	R.	"	No recurrence as yet.
		"	"	Jan. '90.	R.	"	"
1 S. C. Gordon, Portland, Me.	36	Epithelioma.	Ligatures by catgut.	Feb. 28, '88.	R.	"	Died 18 months after.
	52	"	"	April 1, '88.	R.	"	Died one year after.
	46	"	Silk ligatures	April 10, '88.	D.	Peritonitis, 1 week after operation.	"
1 Rufus B. Hall, Cincinnati, O.	40	Cancer of cervix.	Clamp.	Feb. 4, '90.	D.	[See foot-note.]	"

NOTE—Died tenth day from hæmorrhage. The patient was doing exceedingly well up to three minutes before death occurred.

NAME OF OPERATOR.	AGE.	DISEASE.	MANNER OF OPERATING.	DATE.	RE- SULT.	CAUSE OF DEATH.	ULTIMATE RESULT.
1 Edward J. Ill, Newark, N. J.	44	Cancer of cervix . . .	Ligatures	May 30, '85.	R.	.....	Return and death in 20 mo.
1 Charles N. Dixon Jones, New York.	60	Carcinoma	"	Jan. 4, '87.	R.	.....	Well two years after.
2	46	"	Partial extirpation . . .	April 15, '86.	R.	.....	Died 6 mos. after operat'n
3	45	"	Ligatures and forceps.	May 30, '86.	R.	.....	Well.
4	46	"	Forceps	Nov. 8, '88.	R.	.....	Well.
5	52	"	"	April 25, '89.	R.	.....	Well. [turn of disease.
1 J. Tabor Johnson, Washington, D.C.	36	Cancer uteri	Ligatures	1885.	R.	.....	Died 1 year later from re-
2	26	"	"	1886.	D.	Peritonitis, 6th day	
3	43	"	Clamps	1887.	D.	Peritonitis, 3d day.	
4	52	"	"	Dec., '88.	R.	.....	Died in 2 yrs. from return.
5	56	"	"	Nov., '88.	D.	Shock	
1 H. Graff, Eau Claire, Wis.	50	Car. cervix and vagina	Silk ligatures	Jan. 30, '85.	R.	.....	Unknown.
1 Paul F. Mundé, New York City.	55	Epith. cervix	"	Feb. 2, '87.	R.	.....	"
2	31	" " and vagina.	"	Feb. 23, '87.	R.	.....	Tho't to be perm'n't cure.
3	31	"	"	July 16, '87.	R.	.....	Recurrence in 2 mos.
4	34	"	"	Oct. 10, '88.	R.	.....	" " 3 mos.
5	40	"	Clamp forceps	April 10, '88.	R.	.....	In good health.
1 E. E. Montgome- ry, Philadelphia.	46	Carcinoma body	"	Feb. 14, '89.	R.	.....	Unknown.
2	38	Epith. cervix	"	July 15, '89.	D.	Periton., 14th day.	
3	46	" body	"	Oct. 4, '89.	R.	.....	Doing well.
4	49	Fibroid	"	Jan. 20, '90.	R.	.....	"
1 H. O. Marcy, Boston.	43	Cancer	Ligatures	July, '87.	D.	Shock	
2		"	"	Sept. 20, '87.	D.	Death in 12 hours from hæmorrh.	Operated upon by Dr. Au- gust Martin, of Berlin, while visiting the U. S.
3		Interstitial myoma . . .	"	Sept. 20, '87.	R.	.....
4		Adenoma	"	Sept. 21, '87.	R.	Recovery slow . .	
1 Franklin H. Mar- tin, Chicago.	46	Cancer cerv. and body.	Clamp and ligatures . .	April 24, '89.	R.	.....	Still well.
2	45	Cancer cervix	"	Dec. 26, '89.	R.	.....	Well.
3	36	"	"	Jan. 14, '89.	R.	.....	Well.
4	30	"	"	Feb. 19, '89.	R.	.....	Still Well.
5	34	"	"	April 18, '89.	R.	.....	Cancer returned.
1 Matthew D. Mann, Buffalo.	27	"	Ligatures	Feb. 18, '88.	R.	.....	Death in 8 mos. from ret.
2	52	" supravag. port'n	"	April 22, '88.	D.	Peritonitis	[a year.
3	24	" cervix	Clamp	June 18, '88.	R.	.....	Relapse and death within
4	38	"	"	Oct. 23, '88.	R.	.....	Relapse and death within 14 months.
1 Daniel T. Nelson, Chicago.	47	Carcinoma	Silk ligatures	Dec. 26, '89.	R.	.....	Not returned.
2	66	"	Forceps	Jan. 4, '90.	R.	.....	Returned.
1 J. S. Pinkham, Lynn, Mass.	47	Sarcoma	Clamp	April 15, '89.	R.	.....	Pat. now in good health.
2	58	Cancer of cervix . . .	"	June 18, '89.	R.	.....	Not known.
3	38	"	"	July 18, '89.	R.	.....	Had symptoms of return.
4	54	" of body	"	Sept. 6, '89.	R.	.....	In good health.
1 F. A. Reamy, Cincinnati.		Cancer	Ligatures	1885.	D.	Shock	At this writing 10 of the 12 subjects are dead. In 8 cases recurrence in less than 12 mos. In 1 case within 13 mos., 1 within 15 mos. Of the two re- maining cases, I will, in my opinion, have no re- currence. The last one is too recent to be con- sidered.
2		"	"	1885.	R.	.....
3		"	"	1885.	R.	.....
4		"	"	1885.	R.	.....
5		"	"		R.	.....
6		"	"		R.	.....
7		"	"		R.	.....
8		"	"		R.	.....
9		"	"		R.	.....
10		"	Clamp		R.	.....
11		"	"		R.	.....
12		"	"		R.	.....
1 C. A. von Ram- dohr, N. Y. City.	33	Sarcoma of cervix . . .	Silk ligature	June 1, '86.	R.	.....
1 J. Algernon Tem- ple, Toronto, Ont.	62	Epithelioma of cervix.	Clamp	Aug. 6, '88.	R.	.....
1 Alex. J. C. Skeene, Brooklyn.	37	Epithelioma of body . .	Forceps	Nov. 30, '88.	R.	.....	Died nine months later.

eration have shown a gradual lowering of mortality since 1880. The statistics of all published cases, gathered by Dr. S. E. Post, showed for the cases published before 1880 an immediate mortality of 37 per cent.; for those published in 1880 and 1881 26.5 per cent.; for additional ones to the end of 1882, 27 per cent.; for additional ones to the end of 1885, 24 per cent.; while the additional ones to the end of 1887, gave a mortality of only 20 per cent. The above statistics are valueless to prove the legitimate ultimate mortality of this operation. First, because they contain the records of operators of experience, not only, but also those of scores of operators with their first one or two cases and the result of all their inexperience; second, because these statistics are the records of operations performed while the procedure was in its primitive and experimental stage, and, too, many of the results represent work performed before the establish-

ment of the present antiseptic surgery. In order to get more nearly at the present status of this operation in this country, and to be able to forecast with greater accuracy the future immediate mortality of this operation, I sent circular letters to many of the leading operators of this country requesting them to fill out enclosed blanks with histories of all operations of vaginal hysterectomy performed by them since January, 1885. I received replies from twenty-five operators, representing 134 operations, with 20 deaths, or a mortality of less than 15 per cent. Of the 25 who responded, 4 had operated but once, 3 twice, 2 three times, 3 four times, 5 five times, 2 six times, 1 eight times, 1 twelve times, 1 thirteen times, 1 fifteen times and 1 twenty times.

The average mortality of the four highest operators is just 10 per cent. The operator having the greatest number of operations to his credit, has also the lowest average mortality. The mor-

tality being but 5 per cent. with twenty cases. The operator having the next highest number of cases, has also the next lowest mortality, or $6\frac{2}{3}$ per cent. in fifteen cases.

These figures are all significant. They show conclusively that vaginal hysterectomy is no exception to the rule, that with experience in operating comes proficiency and lowering of death-rate. They demonstrate, to my mind, that the legitimate death-rate among good surgeons, ought not to exceed 10 per cent., and that the death-rate with the expert will not exceed 5 per cent.

This then, is the burden of my proof: With the best record, in this country, for the so-called conservative treatment, we have a mortality of 3.6 per cent., while the best record for the radical operation is but 1.4 higher, or 5 per cent. With the next best record for the conservative treatment, we have a mortality of 6.6 per cent., while for the radical operation we have but 6.6 per cent. Thus, we find, without any manipulating of statistics, the comparatively new operation of vaginal hysterectomy presents a mortality, which is but a shade higher than the old and imperfect so-called conservative method.

I will leave this subject now with the society. I am aware that not all the proof which I have been able to array, in support of my propositions, has been conclusive; they do, however, represent my honest convictions.

GENERAL SUMMARY:

1. Vaginal hysterectomy is the most justifiable surgical procedure, we yet know, for the cure of cancer of the uterus.

2. Vaginal hysterectomy should be attempted, for the cure of cancer of the uterus, at the earliest possible moment after the disease is diagnosed.

The following facts are given in support of the foregoing proposition:

a. Vaginal hysterectomy will remove the entire disease in cancer of any portion of the uterus in a greater proportion of cases than will any other surgical procedure now recommended.

b. Vaginal hysterectomy for cancer of the uterus will enable an operator to go farther beyond the diseased tissue into healthy tissue than will any other surgical procedure now recommended.

c. Vaginal hysterectomy is a more ideal surgical operation, and leaves the remaining tissue in a less favorable condition for the return of the disease, than will any other surgical procedure now recommended.

3. Vaginal hysterectomy, for cancer of the uterus, will give in the future, an immediate mortality among general operators of not more than 10 per cent., while in the hands of experts it will not exceed 5 per cent.

TESTS FOR VISUAL ACUTENESS; THEIR ILLUMINATION; AND THE STANDARD OF NORMAL VISION.

Read in the Section of Ophthalmology at the Forty-first Annual Meeting of the American Medical Association, at Nashville, Tenn., May, 1890.

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The adoption of a definite series of tests for visual acuteness, constitutes an important advance in the diagnosis of ocular conditions. The Jaeger scale and method of notation added greatly to the definiteness of our knowledge. But the work of Snellen brought a further advance, of perhaps equal importance; and his series of test-type, and system of fractional notation have almost entirely supplanted their predecessors. Probably most of us have realized that the Snellen system, too, is not perfect; and whether or not we are prepared to at once supersede it, a discussion of its deficiencies, leading to a more exact appreciation of them, will certainly be profitable.

We use tests of visual acuteness for two purposes, the determination of visual power of the eye, and the ascertaining what lens from the trial set best corrects its error of refraction. For the former use we require of our standard that it shall have a fixed and definite significance. Variability and indefiniteness in our standards are absolutely fatal to scientific accuracy. For the latter use we require a test that shall not mislead us into resting satisfied with an imperfect correction when a better one is obtainable.

The observation on which the Snellen scale was based was, that in healthy eyes free from manifest ametropia, two points to be seen as separate points must be far enough apart to subtend an angle of one minute, or a little less. This observation has been abundantly verified, and for the great mass of eyes its substantial correctness cannot be questioned. Snellen, experimenting and reasoning on this subject, came to the conclusions that only a block letter can have all its different parts equally visible, and that to have each of the component parts of a letter visible to the normal eye, each of these parts must subtend the angle of one minute. He also found that in some of the capital letters of the alphabet, as B and S, to make the letter at all complete there must be at least five component parts both vertically and horizontally. Therefore he constructed his test-type on such a scale that each letter should occupy a square, each side of which should subtend an angle of five minutes at the nodal point of the eye.

But the majority of the letters of the alphabet do not require that five component parts shall be seen in order that the letter shall be recognized, O will be recognizable if the angle it subtends is but three minutes, and an L can be constructed