

balancing place in mental and physical processes.

(3) Energy of muscle and nerve. This refers to the principle of the storage and discharge of energy, and the biological theory that functional activity of a specialized tissue depends primarily upon chemical changes in its individual cells. The fundamental idea is that in the resting state the cell elaborates highly complex compounds and that these break down to yield the energy by which the cell does its work; discharge and restoration of energy is common to both nervous and muscular elements. Hughlings Jackson characterizes the animal organism as "an apparatus for the storage and expenditure of nerve force." These principles are of essential importance in the study of mental disorders. Inasmuch as functional efficiency must be taken as measure of the available energy, it should be expected that exhausting influences would reduce functional power. Such reductions characterize all forms of the functional psychoses, and the variations of their symptoms are consistent with this principle.

(4) Physiological use and fatigue, — waste and repair. The law of use includes the wholesome effects of those just cited; normal use develops functional activity and strengthens power, while disuse weakens function. Overuse begets fatigue, and normal fatigue presents mental as well as physical effects. *Physiological fatigue* may be continued beyond the point of regular recovery by rest and nutrition; it then becomes the *pathological fatigue* of nervous exhaustion or neurasthenia with the characteristic symptom-groups. A functional conception of the significance of these groups of mental and physical symptoms should stimulate not only such a precise observation of them as is needed to constitute "disease-forms" and mature types, but should lead to their being analyzed and traced to their functional sources in the whole organism in accordance with the principles of general pathology. This method reveals the genesis in physical states of some of the most characteristic mental manifestations. Beginning with the fundamental attribute of irritability, for example, wide variations occur within normal limits, but more striking and significant changes appear in all forms of pathological fatigue, and the functional psychoses; the irritable weakness and languor of neurasthenia, and the psychomotor excitations, retardations and "confusions" of melancholia and mania are examples. The study of these alterations of irritability involves the whole problem of reflex-action and the mechanism of responses to stimulation of both mental and physical functions. It is to be recognized also that all of these reactions contribute to the sensory returns from the whole organism, — from the viscera, muscles, and even the special senses including the special dermal sensations, to the central nervous system, constituting the kinesthetic and organic sensations. In mental physiology a functional conception of these reactions reveals their importance for an understanding of the genesis of emotional changes and

the alterations of the affective tone in states of persistent mental depression. The sense of well-being and ill-being depends upon these variations. Most important of all, because so completely neglected in psychiatry, are the bluntings and losses of organic sensations and the consequent effects upon the feeling-tone and ideation; in this regard attention should be called, especially, to a remarkable fact well-established in physiology and psychology. It is evident that the normal irritability of nerve and muscle requires the maintenance of a certain chemical constitution; slight variations from this, temporary or continuous, alter or may destroy the irritability. Further, it is noticeable in most cases that the first step toward deterioration is a rise of irritability; the cause being increased or continued, sooner or later exhaustion supervenes, the irritability lessens and is finally lost.<sup>23</sup> These functional reductions of sensibility, in a wide range of varied degrees and combinations, are constant symptom factors in psychiatry.

The relation of mental physiology having an essential importance for psychiatry there should be a first reference of all mental symptoms to their functional sources in the organism as far as possible with respect to their correlation and association with alterations of bodily functions. By the genetic method study should begin with the minor changes from normal action; these alterations show intensifications and losses of function, and symptom-groups are modified by their varied combinations.

(To be continued.)

## Original Articles.

### VAGINAPEXY.

BY W. P. GRAVES, M.D., BOSTON.

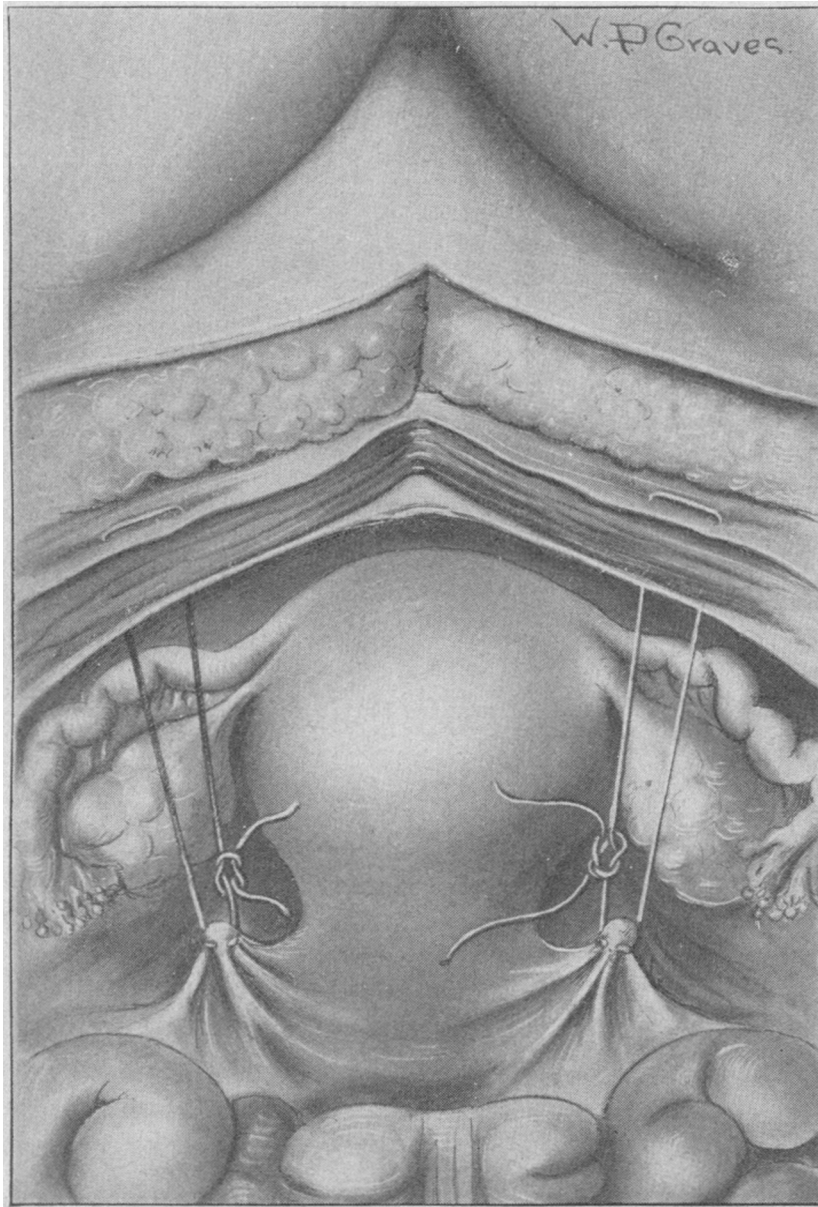
THE encouraging results of the operation for procidentia devised by Dr. W. H. Baker and named by him vaginapexy have led us to make a preliminary report of its progress.

Vaginapexy, as the name implies, denotes an operation for stitching the vagina to the abdominal wall and is used in cases of extreme vaginal relaxation, such as prolapse, incomplete and complete procidentia and advanced cystocele. The idea of attaching the vagina to the abdominal wall, although independently worked out by Dr. Baker, cannot be claimed as a new procedure for it has been suggested, and, to some extent used, since 1893, and during the past year employed with success by Dr. Polk of New York, also working independently, and described by him at a meeting of the Practitioners' Society in New York, May 5, 1905.<sup>1</sup> The operation developed by Dr. Polk at about the time that Dr. Baker was working on his operation consisted essentially of the same fundamental principle, namely, the attaching of the vagina to the abdominal wall, and was given by him the Greek name

<sup>23</sup> Am. Text Book of Physiology, vol. 2, p. 61.

<sup>1</sup> New York Medical Record, Aug. 10, 1905.

## VAGINAPEXY — GRAVES



Drawing showing the sutures placed in position for vaginapexy. For the purposes of illustration the sutures are represented *as not drawn tight*. When the sutures are drawn tight, the two folds of the posterior cul-de-sac are approximated to the peritoneum of the anterior abdominal wall, while the fundus of the uterus is tipped directly over and forward toward the bladder. The drawing represents semi-diagrammatically a view directly into the wound, the patient being in the Trendelenburg position.

colpo-orrhaphy, synonymous, of course, with the Latin term vaginapexy, adopted by Dr. Baker. The two operations have differed in several features in the process of their parallel development, and for that reason vaginapexy is here described as an independent operation.

In the practice of gynecological plastic surgery the treatment of prolapse, procidentia and cystocele by numerous and ingeniously devised operations has always been uncertain and often discouraging. In the more severe cases a complete cure could never be truthfully, promised and even in moderate cases it was often necessary to do repeated operations in order to meet recurrences of the original condition. It has been a not uncommon circumstance to find patients with distressing forms of procidentia who had suffered for years because they had been told by their physician that their trouble was surgically incurable. The operation devised by Dr. Baker has not only completely revolutionized our surgical treatment of these cases, but has encouraged us to give a far more hopeful prognosis than could have been given under the surgical treatment formerly used.

It seems to me that the reason that former operations for procidentia, prolapse and cystocele were only partially successful was due to the lack of appreciation of the mechanical principle, essentially needed to repair these conditions. Severe cystocele, procidentia and prolapse are phases of one and the same anatomical lesion, namely, loss of fascial support made by the attachment of the vagina to the rami of the pubes. This attachment of the vagina is, in my opinion, far the most important element in maintaining the integrity of the position of the female pelvic organs. There is no doubt that the uterus is maintained largely in its normal horizontal plane in the pelvis by this vaginal attachment, and the same can be said of the lower portion of the bladder. Prolapse, procidentia and the accompanying cystocele are invariably the result of lack of this vaginal support, and conversely it follows that the rational cure for these conditions must be the restoration of this same vaginal support.

If this premise be accepted as true it is obvious that the first object in devising a cure for the conditions mentioned is to select some method of restoring the *vaginal support* of the pelvic organs. It has proved an uncertain procedure to attempt to attach the vagina to the rami of the pubes, although in an early operation invented by Dr. Baker and used by him for many years the vagina was sewed by deep stitches to the periosteum of the pubes. This in many cases resulted successfully, but, as can be imagined, even at the best such an attachment could hardly be strong enough to withstand permanently the powerful abdominal pressure from above. Disregarding then the rami of the pubes as fixed points from which to suspend the vagina it is manifest that the only available point of fixation is the anterior abdominal wall.

The fixation of the vagina to the anterior ab-

dominal wall after the removal of the uterus and appendages is a plausible operation, but this operation with the appendages and uterus *in situ* would at first seem to be an unsurgical and well nigh impossible procedure. It can at once be seen that by seizing the vault of the vagina from the abdominal side and drawing it up to the abdominal wall the uterus is completely anteverted and would suggest symptoms such as pressure on the bladder and tension on the abdominal wall or on the vagina, to say nothing of the possible dangers in a future conception.

Although a year's time is possibly too short a period in which to make the most definite claims with regard to the results in such an operation as this, yet it is certainly long enough to give correct information with regard to most of the above mentioned symptoms. In not one single case, even where there has been extreme anteversion or much tension on the vagina and abdominal wall, have there been any bladder symptoms whatsoever, but, on the contrary, cases in which there were distressing bladder symptoms due to the accompanying cystocele, have been completely relieved in a comparatively short time. It may also be said that the anteversion itself disappears in a very few weeks and examination shows the uterus to have settled into its normal position with regard to its longitudinal axis. It may be said, too, that the deep depression which is often seen in the abdomen following one of these operations usually completely disappears before the patient leaves the hospital and in no instance have any symptoms which might be referred to the tense drawing of the vagina been complained of. With regard to the possible dangers which might ensue in view of a future conception we are obliged to be more guarded in our statement. None of our cases have become pregnant following operation. Of course, as a rule, the majority of cases which require vaginapexy are either near the close of or past the child-bearing period. In younger women the presence of procidentia almost always implies at least two or more previous conceptions, so that it is usually no hardship for such women to be deprived of the privilege of having more children. There must, of course, be a certain possibility of trouble following fixation of the vagina in the case of pregnancy and in all cases where that might be possible we have advised our patients to avoid further child-bearing.

Indications for operation: The indications for vaginapexy are present in all cases where the vaginal attachment to the rami of the pubes has completely or incompletely given way and would, therefore, imply conditions of marked prolapse, complete or incomplete procidentia with accompanying cystocele. It may be well in this connection to define clearly the manner in which the terms "prolapse" and "procidentia" are used. Prolapse includes those cases where the uterus has dropped down from its normal horizontal plane in the pelvis, but has not dropped far enough to appear at the vaginal outlet. Partial procidentia includes those cases where the os appears at the

vaginal outlet and protrudes from it. Complete procidentia signifies that the uterus may be forced by abdominal pressure entirely beyond the vaginal outlet. The following then may be formulated: Vaginapexy is indicated in all cases of incomplete or complete procidentia; in those cases of prolapse where the ordinary suspension or fixation of the uterus does not draw the vagina firmly up into the pelvis; and, finally, in those cases of cystocele where the lateral attachments of the vagina have given way. It will thus be seen that the operation is especially valuable for the cure of the worst forms of cystocele and goes far toward solving the difficult problem of curing this condition. It is, of course, true that many cases of cystocele occur where the uterus still maintains its normal level in the pelvis and that the protrusion of the bladder into the vagina is simply a thinning out of the anterior vaginal wall without the loss of the lateral supports. This class of cases can nearly always be cured by some one of the numerous forms of anterior colporrhaphy, if it be borne in mind continually that the real support in an anterior colporrhaphy should be taken from the lateral attachments of the vagina.

It must be remembered that in all cases where vaginapexy is indicated one or more operations must always be done in conjunction with it. Dr. Polk advocates a complete hysterectomy in every case of procidentia. This is not, it seems to me, necessary excepting where the body of the uterus itself is extremely heavy and burdensome, either from a long standing congestion and gland hypertrophy or from the presence of fibroids or malignant disease. In the majority of cases of procidentia we find that the fundus of the uterus is undergoing atrophy, that the cervix itself is long, attenuated, sometimes to the extent of four or five inches, and that the cervix terminates, in its exposed part, in a greatly hypertrophied and ulcerated mass. In other words the chief weight of the uterus is not at the fundus, but in the hypertrophied, elongated cervix. In my own cases it has seemed to me advantageous instead of performing a hysterectomy to amputate the cervix and to carry this amputation as far up toward the body of the uterus as it is possible to go without opening the abdominal cavity. This leaves the small atrophied fundus of the uterus to act as a firm cap to the vault of the vagina, and its weight is so inconsiderable as not to affect the future outcome of the operation. The amputation of the cervix, if properly performed, involves almost no risk to the patient's life such as is incurred in a complete hysterectomy, and this consideration is of no small importance in the case of elderly or even aged women who often present the most distressing forms of procidentia.

The amputation of the cervix, or hysterectomy, if deemed advisable, is performed first; the patient is then put in the Trendelenburg position and the operation of vaginapexy is done. This completes the first step of the treatment and the patient should be allowed to recover completely from these two operations. She is then allowed

to be up and about on her feet for several days. At the end of this time it can be seen how completely the vagina is held up and how much slack is to be removed in the plastic operation now necessary. The patient is again etherized and placed in the perineal position. In our first operations we usually found it necessary to perform an anterior colporrhaphy and then do a deep and thorough perineorrhaphy. In our later operations, where undoubtedly the vagina has been somewhat more boldly attached to the abdominal wall, it has usually not been necessary to perform an anterior colporrhaphy, but instead an extensive Emmet's perineorrhaphy, where the denuded lateral sulci are carried well up toward the cervix and high up on the lateral walls so that when the lateral stitches are tied the caliber of the vagina is very much lessened and a thick, firm, perineal support is gained. The vaginal outlet is made somewhat smaller than in the ordinary operation of perineorrhaphy and the denudation of the external perineum carried somewhat further out toward the buttock in order to give added strength and thickness to the perineum.

The operation of vaginapexy has been done 19 times at the Free Hospital for Women and at Dr. Baker's Private Hospital. Of these Dr. Baker has done 8, Dr. Pease, 1, and I have done 10. These operations have been done at intervals for more than a year and though it is too early to claim a permanent cure of those more recently done, the results as carefully observed are extremely satisfactory and far exceed in value for a proportionate length of time the results of operations formerly used for the relief of prolapse, procidentia and cystocele. In only one case has there been a recurrence, and in this case which was one of the earliest cases done, the vagina was stitched only to the peritoneum of the abdominal wall in the manner of a ventro-suspension. The operation was performed a second time and the stitches carried through the fascia instead of the peritoneum in the manner of ventro-fixation. A perfect result followed. This procedure has been employed in all of the other cases and in none of them at the present time has there been the least suggestion of a recurrence. It is, of course, necessary to avoid too great enthusiasm in the early stages of operative experimental work, and it is for that reason that this paper is presented only as a preliminary report. It can, however, be said that we now feel the greatest encouragement in undertaking the surgical treatment of the distressing condition of procidentia and our prognosis to the patient can be made with far greater hope and confidence of a permanent cure than was possible from the employment of former surgical measures.

The technique of the operation is as follows: The patient is placed in the Trendelenburg position and a small median abdominal incision made. The intestines are then packed away with gauze in order thoroughly to expose the posterior cul-de-sac. Beginning first on the right side, a point is selected a little posterior and external to the

peritoneal reflexion of the posterior cul-de-sac from the wall of the uterus. This point is then seized with the bullet forceps, the forceps being carried deep enough in order actually to seize the wall of the vault of the vagina. In order to ascertain whether or not the wall of the vagina is included within the teeth of the bullet forceps it is a safe plan to have an assistant insert his finger in the vagina so that he can give information as to whether the vagina is really being drawn up by the traction of the bullet forceps. When it is found that the vagina is firmly grasped, a silk suture, preferably No. 10 braided silk, is passed through the tissue to take the place of the bullet forceps. The suture is then passed up through the peritoneum, rectus muscle and fascia of the abdominal wall about one half to three quarters of an inch from the incision. It is then passed back again into the abdominal cavity and included with the other end of the suture in a pair of snaps. The same procedure is then carried out on the left side and the two sutures tied, drawing the vagina firmly up to the anterior abdominal wall and completely anteverting the uterus, the knots being thus left within the abdominal cavity. The abdominal incision is then closed with great care, in layers. In passing the suture through the floor of Douglas's pouch I have found it advantageous to employ the stitch devised by Mr. Max Brödel for the suspension of prolapsed kidneys as it gives far greater tensile strength. This stitch is depicted in the accompanying drawing. It is, of course, essential to avoid carrying the suture through into the vaginal cavity.

#### CONTRACTILE PROCESSES IN THE LUNG AS A RESULT OF PHTHISIS, WITH REFERENCE ESPECIALLY TO THEIR PRODUCTION OF PERMANENT DEXTROCARDIA.\*

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AFTER a careful search through numerous published reports, I have been able to collect about twenty cases of acquired dextrocardia as the result of a chronic contractile pulmonary tuberculosis. Although only able to find record of twenty cases of acquired dextrocardia of the variety described (the left side of the chest appearing sound, or practically so), I think that many unreported cases must have occurred.<sup>1</sup>

The question as to whether the heart is chiefly pulled or pushed over, although of small consequence, is interesting as a pathological study. In Albutt's system, Vol. V, p. 207, Dr. Percy Kidd says: "In the fibroid or contractile form of pulmonary tuberculosis signs of excavation are generally to be recognized at one apex, associated with much dullness over the upper lobe or over the whole lung, together with displacement of neighboring organs. When the right lung is

contracted the heart is drawn over and may lie wholly to the right of the middle line. In extreme contractile cases the opposite lung is always considerably enlarged and may pass beyond the middle line of the sternum into the opposite half of the thoracic cavity."

The above description fits all of the cases, but does not explain why there should be actual enlargement of the left half of the thorax as in a true compensatory emphysema.

In both my cases mensuration of the chest early in the course of the disease and then after the displacement shows that bulging of the ribs on the left side has surely occurred. The circumference of the thorax on the left side is not only greater than the right, but is greater during both inspiration and expiration than was formerly the case. The chest expansion, however, is much diminished, being about one half of the former measurement.

A fairly accurate idea of the period of time required for complete transposition of the heart in these cases is of some value, but in all cases previously reported the displacement was already complete when the patient came under observation. In all cases the right lung was the site of the tuberculosis, which always seemed to be of a chronic fibroid type with sclerosis of the lung tissue and bronchiectasis. The left lung seemed always either sound or very slightly affected. All of the observers lay great stress upon the contraction and sclerosis of the right lung and said either nothing or very little of the compensatory hypertrophy of the left lung as a factor in the causation of the malposition. An x-ray examination of my two patients' chests shows a decided augmentation in volume of the left lung. There is perfect transparency over the normal site of the heart, and upon percussion good resonance is elicited over the same area. Of all the recorded cases only one was reported as having been examined with the assistance of the x-ray, and in this instance (Barbier) there was found "augmented volume" of the left lung. This feature strikes me very forcibly as being a potent causative factor of the complication. With one of the patients the change was gradual and unnoticed other than the fact of a realization that the heart was beating upon the right side instead of left where he had ordinarily been accustomed to feel it. In the other case transposition was sudden, at least in part, because the patient was conscious of the change in position, which occurred during a coughing attack which he had while working, and he felt something move in his chest towards the right side. If coughing was responsible in any way for the movement within his chest, then certainly augmentation of volume of the left lung must have been a more important factor at that instant than the adhesions or sclerosis of the right lung, which occurred but gradually.

The present measurement of the left chest is greater than one half of the circumference of the whole chest as taken, both now and before the transposition, for chest measurements were made

\* Presented with two illustrative cases at a meeting of the Rutland Clinical Club, July 28, 1905.

<sup>1</sup> The numerous cases of dextrocardia, acquired temporarily, as a result of effusion or pneumothorax in the left pleural cavity, obviously are not this type of displacement.