

NEW GYNÆCOLOGICAL INSTRUMENTS.

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1. *Self-retaining Vaginal, Uterine, and Anal Speculum, combined, for examinations and operations.*—The fact that each month chronicles the advent of a new speculum, is an evidence that the instruments hitherto employed have not fulfilled all the indications which it is thought possible to accomplish in the use of such an instrument; this, then, will constitute the apology offered for again describing another new instrument.

The original intention of the author in inventing his first instrument was designed to impart to the bivalve speculum a parallel expansion, or expansion at base, in addition to the angular expansion.

The application of this principle was intended to prevent the collapsing of the vaginal walls, which takes place when the ordinary bivalve is used.

The upper blade was made shorter than the lower, to correspond with the difference in the length of the anterior and posterior walls of the vagina. Both of these principles were successfully applied, and the instrument presented the appearance shown in the fol-

lowing cuts, Nos. 1 and 2, and was described with the aid of three wood-cuts.*



FIG. 1.

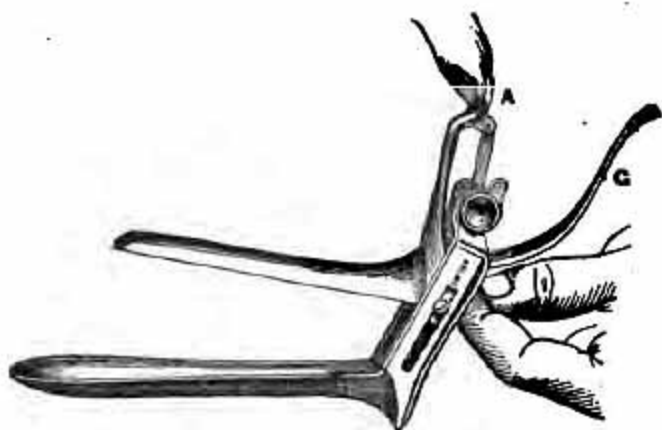


FIG. 2.

This instrument, though excellent in principle, was, however, too complicated in mechanism for the comprehension of the majority, and was consequently modified, so as to become extremely simple in the manipulation of the mechanism,—at the same time preserving the original movements. This was accomplished by substituting a screw for the arc G (shown in the above cuts), to produce the parallel movement, and a screw and loose nut instead of the notched lever and catch A (also shown in the above cuts). Many of these were made and are now in use, and are superior instruments for examinations, but the guides, which are slot-

* Amer. Jour. Med. Sci. for July, 1869, p. 294.

ted, on either side, were in the way for operations; and it was for this reason, principally, that the next modification was made. In the mean time, however, another instrument was devised, *de novo*, in which the above-named objection was overcome, and having a mechanism of different construction.

This instrument is figured in the following cuts, Nos. 3, 4, and 5, and was described with the aid of four wood-cuts.*

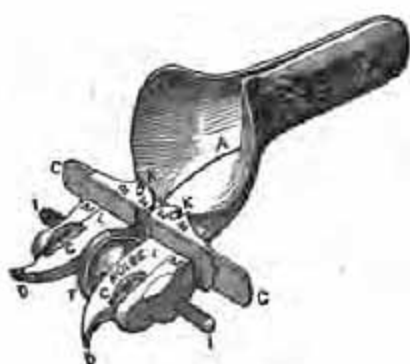


FIG. 3.

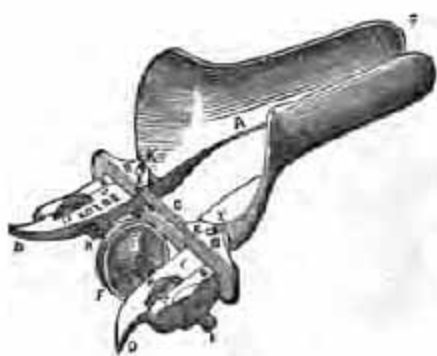


FIG. 4.



FIG. 5.

This instrument also had the parallel and angular expansion, as may be seen by referring to the cuts. There were three sets of blades, a long and short vaginal set (the former for examinations and the latter for operations), and an anal set; all adapted to the

* Amer. Jour. Med. Sci. for Oct., 1869, p. 409.

same mechanism by simply locking them to slide B, seen in the cut. In this combination we have an instrument which will accomplish all that comes within the range of any bivalve speculum.

The original instrument, Figs. 1 and 2, was next modified in its mechanism by Mr. Gemrig, so as to leave one side entirely free, as shown in the cuts below, 6 and 7.



FIG. 6.

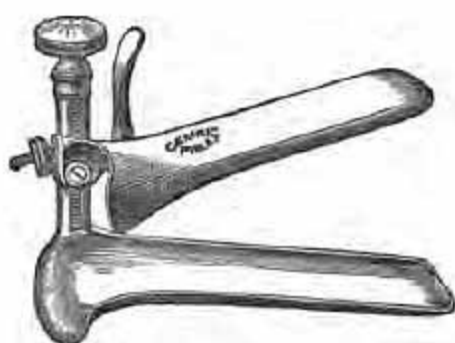


FIG. 7.

This instrument was also perfected by Mr. Kolbe, and presented the appearance shown in the cuts below, Figs. 8 and 9, from which pattern it is also made by Mr. Gemrig.

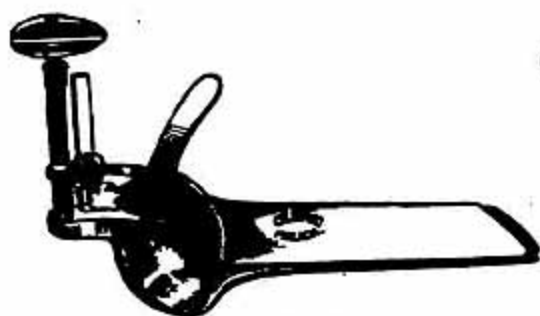


FIG. 8.



FIG. 9.

Both of these instruments have been extensively used, and for examinations are probably unequalled by any

bivalve speculum hitherto devised. Both were designed for operations as well as examinations, as was the *combined* instrument, Figs. 3, 4 and 5, but it was discovered that a bivalve instrument, when expanded *laterally*, notwithstanding the combined parallel and angular movement, would allow the vaginal walls to collapse, on account of the pressure of the viscera above and below, which was not the case when expanded antero-posteriorly.

To obviate this last-named difficulty, in *other* bivalve instruments, a third (upper) blade has been added, but signally failed to accomplish the desired end,—probably because it was not adapted to the mechanism of the speculum. Again, a distinguished London practitioner, Dr. Alfred Meadows,* added a blade to each side of the Cusco instrument, but soon abandoned it, and devised a three-bladed instrument, which in turn finally gave way to his five-bladed speculum,—both of which were described with the aid of four cuts.†

This is certainly strong testimony in favor of a five-bladed instrument, inasmuch as those having respectively two, three, and four blades have not fulfilled the indications nearly so well as those having the last-named number.

To return again to the instrument figured in cuts 3, 4, and 5, we may describe the simplification of the mechanism as made by Mr. Gemrig, and illustrated in the following cuts, Nos. 10 and 11.

The expansion of base is secured by the projecting levers, to which the blades are attached by means of the screw at the extremity, while each blade has an independent angular expansion, secured by the screw near the handle. In this instrument we have a *free*

* London Lancet, Vol. 1., p. 125.

† Ibid., May, 1870, p. 692.

open space on *both sides*, which is peculiar to this speculum alone. In antero-posterior expansion this is an advantage, but in lateral expansion, a third (upper) blade would probably be of advantage, *if properly* applied.



FIG. 10.

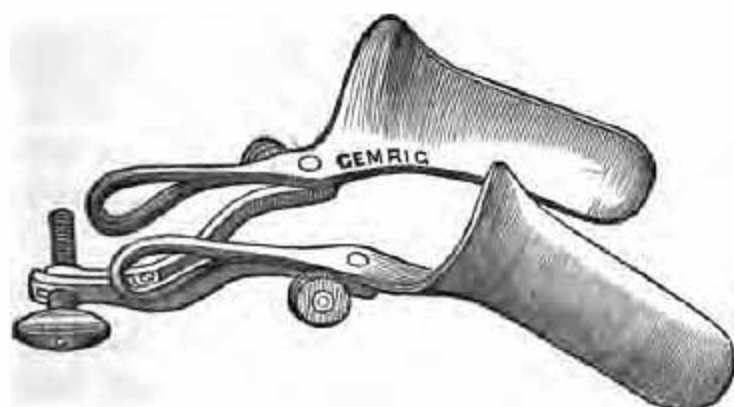


FIG. 11.

Either the long or short set of blades may be used.

That there is an actual necessity for so many (five) blades will be seen from the description of the author's instrument given below. One of the disadvantages of the bivalve instrument when expanded laterally, arises from the fact that the surfaces exposed above and below are equal, while it is desirable to have as wide a space as possible at the point at which you intend to operate. This is obtained by using a narrow middle (upper) blade in conjunction with four side blades, giving an opening of a somewhat triangular shape.

Another fault of most bivalve instruments is the projecting mechanism, rendering an obstruction to the view, and an impediment to instrumental and digital manipulations.

The instrument which is designed to take the place of all the other speculums described in this article is figured below. Figs. 12 and 13.



FIG. 12.



FIG. 13.

It has five blades, two of which are stationary, where they are joined to the handle-arms, while the upper blade expands throughout its entire length, and the two lower side blades are movable in the slots at the extremities of the handle-arms.

The instrument has two motions,—one allowing the angular expansion at the apex, and the other controlling the *angular* expansion at the *base*.

The *upper* (middle) blade is moved and controlled in position by a projection on each of the handle-arms, moving in a slot at the extremity of the blade.

The *upper side* blades are stationary, and are wider than the others, that they may, with the upper blade, form a *trivalved* speculum, when the two lower side blades are removed.

The *lower side* blades are one fourth of an inch longer than the upper side blades, that they may adapt themselves to the posterior cul-de-sac of the vagina. Besides their expansion at the extremity and at the vaginal outlet, they each have an independent movement of half an inch, in the slot seen at the extremity of the handle-arms. The shoulders of these blades move along the slotted *arc*, which latter *increases* the deflection of these blades from the upper side blades, — a slight movement in the slot producing a considerable movement in the extremity of the blade — (three-fourths of an inch in the slot, causing one and three-fourths inches at the extremity). These blades are fixed in any position along the slot by means of the set screws, but are not intended to be used in ordinary examinations, and only where the vagina is very much relaxed, — and are *taken out* altogether where the parts are preternaturally small, leaving a three-bladed instrument, to be used as an *anal speculum*, as well as vaginal, where the vagina is too small to allow of easy introduction when they are in.

The instrument is introduced with great ease, and is expanded by simply pressing the handles H H together, and is secured in position by the nut N, moving on the screw connecting the handles.

This single nut controls the expansion at *base* and *apex* without the aid of any other mechanism, because of the *double joint*, formed by the pivots of the handle-arms and the hinge to which they are attached. By virtue of this peculiar arrangement, the instrument *adapts itself* to the condition of the vagina, — being more or less expanded at base or apex, inversely in proportion to the relative rigidity of that part of the vagina which is in contact with either of these parts. The

speculum owes its *self-retaining* power, in part, to this peculiarity.

This instrument is made entirely of polished *steel*, plated with nickel, and weighs seven ounces avoirdupois.

The blades are one-half to three-fourths of an inch in width, and four inches in length, having the peculiar shape and disposition shown in the cut.

The minimum periphery at apex is equal to the circumference of a circle whose diameter is five-eighths of an inch, at base one inch,—maximum at apex three inches, at base two inches. Where the index finger can be introduced, the speculum will follow with the greatest ease; thus adapting itself to the capacity in any particular case.

The following is a recapitulation of the advantages claimed for this instrument: 1. The peculiar expansion in five different directions, causing equable and uniform distention of the vaginal walls, making it self-retaining; produced by the *double joint*. 2. The narrowness of the blades, displaying a large amount of vaginal surface. 3. Simplicity and compactness of mechanism, a single nut controlling the expansion in all directions. 4. Movable lower blades, on account of which it is adapted to a greater variety of cases. 5. Expansion on *one* side at base, thereby utilizing the largest possible operating space. 6. The peculiar funnel-shaped opening at base, allowing the *free admission of light*, and easy instrumental or digital manipulation. 7. The opening throughout the entire extent of the posterior wall of the vagina, allowing of the depression of the uterine sound in cases of anteversion of the uterus; and rendering the instrument less liable to corrosion from the use of cauterants. Packing the vagina is also rendered easy, and insulation is not required when the galvanic battery

is used. 8. Lightness, contributing to make it self-retaining and less cumbersome to carry. 9. No projecting mechanism to interfere with any operative procedure. All of which contribute to render it applicable to every conceivable case where a speculum can be used.

In conclusion, I may say that many thanks are due to Mr. Gemrig for the skilful manner in which he has applied my principle in the construction of the instrument.

2. *Block-holder, to be used in paring the edge of vaginal fistulous openings when a knife is used.*—The following cut illustrates a contrivance calculated to support the edge of a fistulous opening while it is being pared with a Sims' or Emmet's knife,—to be used instead of a pair of forceps.



It consists of a bone handle, having an iron shank, terminating in a curved extremity, upon which is a shoulder and screw, to which a block of *soft close-grained wood* [poplar] is easily attached. The block may be cut in any shape or size to suit the peculiarities of the case. By the aid of this instrument the *edges* can be pared *more evenly*, and with *greater ease*, than when held by the forceps. As the evenness with which the edges are pared affects the probability of union by the first intention, this appears to be an addition of some value.

3. *Scissors for paring the edges in vaginal fistula.*—The following cut represents a pair of scissors, devised by the author, for paring the edges of vesico-vaginal or recto-vaginal fistula.



They have a *single* curve, of the peculiar shape shown in the cut, and are pivoted at the beginning of the curve. The position of this joint is such as to allow of a *sliding motion* of the blades in different directions, one forward, the other backward, in addition to the ordinary *crushing* action of scissors of other kinds, thereby greatly facilitating the cutting of so dense a tissue as is usually met with in these cases. Another advantage of this curve is the parallelism of the handles to the plane upon which you are operating. The sliding action of the blades upon each other approaches the manner of cutting with a knife, and consequently does not disorganize the tissues as much as all other scissors, which have the crushing action alone. This latter is a point of some importance, not only because the *operation* is made *easier*, but because tissues crushed, when placed in apposition, do not *unite* so quickly and *surely* as when cut by a knife.

This instrument is also elegantly made by Mr. Gemrig.