Swanberg Improved Adjustable Uterine Applicator

Designed by

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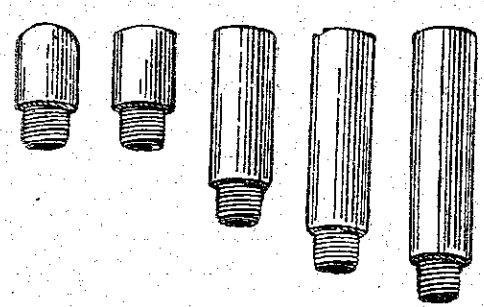
(First described in J. A. M. A., 90:1289, April 21, 1928)

The **Swanberg Uterine Applicator** is designed for intra-uterine radium application, and is especially adapted for carrying out the Paris (Regaud) technic, so successful in treating uterine cancer. (Prof. Claude Regaud of the University of Paris, Associate of the late Mme. Curie, reports 40 per cent of his patients suffering from all stages of cervical cancer, free from the disease, five years after radiation treatment.)



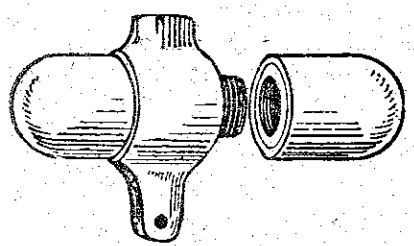


Fig. 1—Individual Parts of Applicator

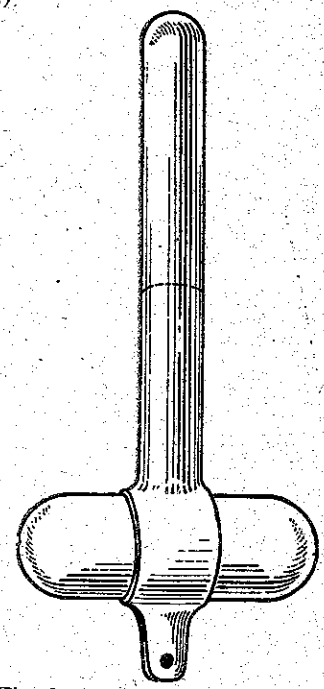


Fig. 2—Applicator Assembled for Use in Average Length Uterus

The **Swanberg Uterine Applicator** is a "T" shaped instrument, the slender portion consisting of a number of graduated sections which permit assembling the applicator to individual uterine canal measurements (1.5 to 10 cm. long). The filtration in the vaginal portion is greater than in the uterine part, and offers additional protection to the sensitive vaginal mucous membrane. The outside can be readily covered with one or more thicknesses of ametal rubber. The applicator is easily introduced by a special introducing handle or an ordinary uterine dressing forceps.

One of the chief features of the **Swanberg Uterine Applicator** is the dense filtration it provides. This permits a deep, penertating pure gamma-ray radiation. The primary beta rays are absorbed by the platinum, gold, silver or brass filtration. The hard secondary emergent rays given off from the platinum, gold, silver or brass are absorbed by the aluminum.

In treating uterine malignancy, the best results are secured by combining the applicator with a colpostat or vaginal capsule applicators of the London type. This increases the total number of radium centers by permitting additional centers in the vaginal vault.

Reprints describing in detail the Paris (Regaud) technic for treating carcinoma of the uterine cervix will be gladly sent upon request.

SWANBERG UTERINE APPLICATOR MADE IN SEVEN FORMS

No. 1—Provides heavy filtration through 22 karat gold of special alloy (density 18.4) covered with aluminum. Dimensions are as follows:

GOLD	Uterine Portion	Central bore 3.5 MM.	
		Wall thickness	1.75 MM. gold
		Outside diameter 8 MM.	0.5 MM. aluminum
	Vaginal Portion	Central bore 3.5 MM.	
		Wall thickness	2.9 MM. gold
		Outside diameter 10.3 MM.	0.5 MM. aluminum

This filtration is equivalent in density to 1.5 MM. of platinum (density 21.4) in the uterine and 2.5 MM. in the vaginal portions.

No. 2—Provides somewhat lighter filtration than No. 1 through gold covered with aluminum. Dimensions are as follows:

GOLD	Uterine Portion	Central bore 3.5 MM.	
		Wall thickness	1.2 MM. gold
		Outside diameter 6.9 MM.	0.5 MM. aluminum
	Vaginal Portion	Central bore 3.5 MM.	
		Wall thickness	1.75 MM. gold
		Outside diameter 8 MM.	0.5 MM. aluminum

This filtration is equivalent in density to 1 MM. of platinum in the uterine and 1.5 MM. in the vaginal portions. It corresponds with the filtration used at the University of Paris.

No. 3—Provides the same density as No. 2 except through brass (density 8.5) covered with aluminum. Dimensions are as follows:

BRASS	Uterine Portion	Central bore 1.9 MM.	
		Wall thickness	2.5 MM. brass
		Outside diameter 7.9 MM.	0.5 MM. aluminum
	Vaginal Portion	Central bore 3.5 MM.	
		Wall thickness	3.8 MM. brass
		Outside diameter 12.1 MM.	0.5 MM. aluminum

No. 4—Provides a lighter filtration than No. 2 or No. 3 through brass covered with aluminum. Dimensions are as follows:

BRASS	Uterine Portion	Central bore 3.5 MM.	
		Wall thickness	1.25 MM. brass
		Outside diameter 7 MM.	0.5 MM. aluminum
	Vaginal Portion	Central bore 3.5 MM.	
		Wall thickness	2.5 MM. brass
		Outside diameter 9.5 MM.	0.5 MM. aluminum

This filtration has the density of 0.5 MM. of platinum in the uterine and 1 MM. in the vaginal portions. This applicator is only recommended when it is to be used with 0.5 MM. wall thickness of platinum tubes or needles.

No. 5—Provides lighter filtration than No. 2 through special silver alloy (density 10.3) covered with aluminum, the uterine stem being especially slender. Dimensions are as follows:

SILVER	Uterine Portion	Central bore 2.8 MM.	
		Wall thickness	1.45 MM. silver
		Outside diameter 6.7 MM.	0.5 MM. aluminum
	Vaginal Portion	Central bore 3.5 MM.	
		Wall thickness	2.5 MM. silver
		Outside diameter 9.5 MM.	0.5 MM. aluminum

This filtration has the density of 0.7 MM. of platinum in the uterine and 1.2 MM. in the vaginal portion. This applicator is recommended when used with 0.3 MM. wall thickness of platinum tubes, needles or cells.

No. 6—Provides lighter filtration than No. 5 through special silver alloy covered with aluminum. Dimensions are as follows:

SILVER	Uterine Portion	Central bore 3.7 MM.	
		Wall thickness	1.0 MM. silver
		Outside diameter 6.7 MM.	0.5 MM. aluminum
	Vaginal Portion	Central bore 4.3 MM.	
		Wall thickness	2.1 MM. silver
		Outside diameter 9.5 MM.	0.5 MM. aluminum

This filtration has the density of 0.5 MM. of platinum in the uterine and 1 MM. in the vaginal portion. This applicator is only recommended when used with 0.5 MM. wall thick-

If you have radium in 1 MM. platinum cells, write us about the new No. 7 Swanberg Uterine Platinum-Silver Applicator with uterine stem only 3.8 MM. in diameter.

USERS OF THE SWANBERG UTERINE APPLICATOR

Scores of these applicators have been sold to radiologists and hospitals in many countries of the world. The following is a PARTIAL list of some of the purchasers:

Arnett-Crockett Clinic, Lafayette, Indiana.
Battle Creek Sanitarium, Battle Creek, Michigan.
Bethany Methodist Hospital, Kansas City, Missouri.
Beth Israel Hospital, Boston, Massachusetts.
Boulder-Colorado Sanitarium, Boulder, Colorado.
Duluth Clinic, Duluth, Minnesota. (Dr. Russell J. Moe)
Employees' Hospital, (Tenn. Coal, Iron & R. R. Co.), Fairfield, Alabama.
Gallinger Municipal Hospital, Washington, D. C.
Hamilton General Hospital, Hamilton, Canada. (Dr. A. E. Walkey)
Henry Ford Hospital, Detroit, Michigan.
Jeanes Hospital, Fox Chase, Philadelphia, Pennsylvania.
Jewish Hospital, Cincinnati, Ohio. (Dr. Archibald Fine)
Los Angeles Medical Group and Clinic, Los Angeles, California. (Dr. Hiram Weaver)
Lovelace Clinic, Albuquerque, New Mexico.
McGill University (Royal Victoria Hospital), Montreal, Canada.
Medical and Surgical Clinic, San Antonio, Texas.
Mercy Hospital, Canton, Ohio. (Dr. Chester M. Peters)
Methodist Episcopal Hospital, Philadelphia, Pennsylvania.
Monmouth Memorial Hospital, Long Branch, New York.
Mountainside Hospital, Montclair, New Jersey.
Oklahoma Skin and Cancer Clinic, Oklahoma City, Oklahoma. (Drs. Lain & Roland)
Philadelphia General Hospital, Philadelphia, Pennsylvania.
(Drs. B. P. Widmann and J. L. Weatherwax)
Quain and Ramstad Clinic, Bismarck, North Dakota.
Roper Hospital, Charleston, South Carolina. (Dr. Hillyer Rudisell, Jr.)
Royal Jubilee Hospital, Victoria, Canada. (Dr. W. M. Carr)
St. Bernard Hospital, Chicago, Illinois. (Dr. L. B. Donkle)
St. Louis City Hospital, St. Louis, Missouri. (Dr. Leroy R. Sante)
St. Mary's Hospital, Decatur, Illinois. (Dr. F. Flinn)
St. Paul's Hospital, Vancouver, Canada.
Shreveport Charity Hospital, Shreveport, Louisiana. (Dr. H. G. F. Edwards)
Sutter Hospital, Sacramento, California.
Tuomey Hospital, Sumter, South Carolina. (Dr. W. G. Benjamin)
University of Alberta, Edmonton, Canada, (University Hospital).
University of Kansas, Kansas City, Kansas, (Bell Memorial Hospital).
University of Toronto, Toronto, Canada, (Toronto General Hospital, Dr. G. E. Richards).
Victoria Hospital Association, Victoria, Texas.
Woman's Hospital, Detroit, Michigan.
Dr. H. W. Ackerman, Rockford, Illinois.
Dr. O. D. Baxter, Sumter, South Carolina.
Dr. G. D. Bliss, Altoona, Pennsylvania.
Dr. Milton A. Broemser, San Jose, California.
Drs. Brown & MacKenzie, Huntington, West Virginia.
Dr. Alfredo G. Dominguez, Havana, Cuba.
Dr. F. H. Dommissee, Cape Town, South Africa.
Dr. Edwin C. Ernst, St. Louis, Missouri.
Drs. Grover, Christie & Merritt, Washington, D. C.
Dr. A. E. Hatcher, Wellington, Kansas.
Dr. Stakely Hatchette, Lake Charles, Louisiana.
Drs. Ivey & Howard, Goldsboro, North Carolina.
Dr. Peter J. Kapo, Mahoney City, Pennsylvania.
Dr. Sidney Lange, Cincinnati, Ohio.
Dr. W. S. Larrabee, Tulsa, Oklahoma.
Dr. H. I. L. Loverud, Manchester, New Hampshire.
Dr. Gonzalez Martinez, San Juan, Porto Rico.
Dr. H. G. Maul, Denver, Colorado.
Dr. W. H. McGuffin, Calgary, Alberta, Canada.
Dr. Arthur R. Metz, Chicago, Illinois.
Dr. O. L. Norsworthy, San Antonio, Texas.
Drs. Padgett, Helwig and Randall, Kansas City, Missouri.
Dr. R. K. Paterson, Ottawa, Ontario, Canada.
Dr. Robert A. Powers, Palo Alto, California.
Dr. Edward Reinert, Columbus, Ohio.
Dr. E. T. Rulison, Sacramento, California.
Dr. Harry C. Saltzstein, Detroit, Michigan.
Dr. A. G. Schnack, Honolulu, Hawaiian Islands.
Dr. W. M. Sheridan, Spartansburg, South Carolina.
Dr. Robert W. Shipp, Austin, Texas.
Dr. Roscoe L. Smith, Lincoln, Nebraska.
Dr. F. W. Smythe, Memphis, Tennessee.
Dr. F. C. Swearingen, Pamona, California.
Dr. O. W. Swope, Wichita, Kansas.
Dr. M. A. Thomas, Cleveland, Ohio.
Dr. M. Truehart, Sterling, Kansas.
Dr. Alex Van Ravenswaay, Boonville, Missouri.
Dr. W. Warner Watkins, Phoenix, Arizona.
Drs. Watt & Watt, Austin, Texas.
Dr. L. S. Weaver, York, Pennsylvania.

ADVANTAGES OF THE SWANBERG UTERINE APPLICATOR

1. Provides a single, heavily filtered instrument for irradiating the entire uterine canal as well as the vaginal portion of the cervix, thus reducing the number of applicators to carry out the Paris (Regaud and Lacassagne) technic in uterine malignancy.

2. Being readily adjustable, uterine canals of various lengths may be adequately irradiated.

3. Offers heavy filtration which permits only the penetrating radiation from the hard gamma rays of the smallest wave length, thus avoiding caustic radiation with its attending necrosis and subsequent sloughing.

4. Provides heavier filtration in the vagina than in the uterus, therefore furnishing adequate protection to the sensitive vaginal mucosa and reducing the possibility of fistula formation.

5. By the use of separate screw caps, it is possible to convert the uterine extension parts into separate capsules of variable lengths, thus converting the applicator into one of universal applicability.

6. Can be procured at a much lower cost than an applicator of platinum filtration.

KAPLAN VAGINAL COLPOSTAT

(As used in Bellevue Hospital and New York City Cancer Institute)

Designed by Ira I. Kaplan, M.D., Prof. of Clinical Surgery, New York University Medical College, the Kaplan Vaginal Colpostat is a modification of the Curie Colpostat. It consists of two rubber barrels (in which heavily filtered radium capsules are placed) held together by a clock spring covered with rubber. The applicator is inserted in the vagina and manipulated so that a barrel is placed in each lateral vaginal fornix, thus radiating the cervix and parametria. Used in conjunction with the **Swanberg Uterine Applicator**, it is the principal vaginal applicator for carrying out the Paris (Regaud) technic for treating uterine malignancy. The barrels are about 3 cm. long and are 5 MM. in thickness. Screw cap capsules described in this leaflet can be placed in the barrels.

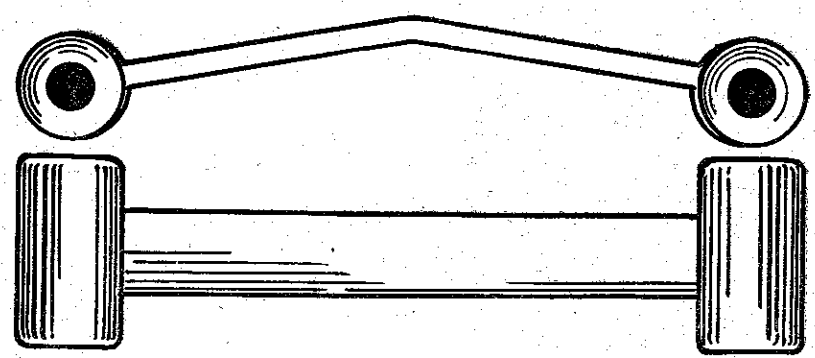


Fig. 10—Upper, end view. Fig. 11—Lower, side view of Kaplan Colpostat. (Three-quarter actual size.)

STATISTICAL DATA OF RADIATION TREATMENT OF CERVICAL CANCER

The following are the five-year results of the 1930 series (latest to be reported) of patients treated at the University of Paris. Irradiation therapy was used exclusively and all patients had microscopic proof of the disease:

Stage of Disease	Patients Treated	% Each Stage	Cured End 5 Years	% 5 Yr. Cures
Stage 1	16	14	12	75
Stage 2	34	31	19	55.9
Stage 3	47	42	16	34
Stage 4	14	13	5	35.7
Total.....	111	100%	52	Aver. 46.8%

(Annual Report on the Results of Radiotherapy in Cancer of the Uterine Cervix. First Volume. League of Nations

LONDON BAKELITE VAGINAL RADIUM APPLICATOR

(As used at The Radium Institute of London)

This new type of vaginal radium applicator is especially designed to administer heavily filtered radium from multiple centers in the treatment of malignant conditions of the vagina, uterine cervix, or parametria. It consists of a cylindrical bakelite capsule with rounded ends in which is placed a gold, silver, brass or lead capsule containing the radium. The applicator is introduced by means of a long holder about eight inches long, which screws into the side of the bakelite capsule. In treating uterine cervical cancer, three or four of these vaginal applicators are generally used, in addition to an intra-uterine applicator. The applicators are placed and held in proper position by means of the holders. The vagina is then packed and the holders are not unscrewed and removed until the packing of the vagina is complete.

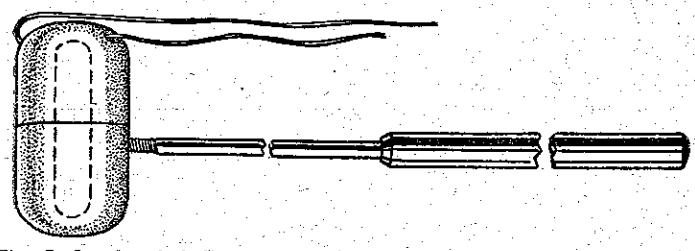


Fig. 7—London bakelite vaginal applicator with introducing handle. (Actual size No. 2 applicator)

ADVANTAGES OF LONDON VAGINAL RADIUM APPLICATOR

This new applicator is especially designed to replace the use of a vaginal colpostat in treating uterine cancer. The advantages are:

1. The ends are so rounded that the applicators can be comfortably placed and the pressure on the vaginal mucous membrane is evenly distributed.
2. The wall thickness of the bakelite is sufficient to form a secondary screen which permits of a large radium dose within the limits of tissue tolerance.
3. As many applicators can be used as the anatomical size of the part will permit.
4. The applicators can be inserted with ease and correctly placed by means of the holders.
5. By holding the applicators in accurate position by means of the holders while the vaginal pack is placed, the applicators will remain in correct position during the treatment period.
6. The applicators are ideal in carrying out the Paris (Regaud) or the Radiumhemmet (Stockholm) technic in treating uterine cancer, especially when used in connection with the **Swanberg Uterine Applicator,** either with or without its cross-arm vaginal part.

LONDON VAGINAL RADIUM APPLICATOR MADE IN FOUR SIZES

The London Applicator is a screw-cap capsule of bakelite composition with eyelet at one end and threaded on side for introducing handle. It is designed to enclose a heavily filtered radium capsule. Four sizes are available:

No. 1—Designed to enclose the 3K GOLD capsule.

Inside length 31 MM. Central bore 5.6 MM. — Wall thickness 5 MM. — Outside diameter 15.6 MM. Outside length 35.5 MM.

No. 2—Designed to enclose the 3L GOLD capsule.

Inside length 24 MM. Central bore 5.6 MM. — Wall thickness 5 MM. — Outside diameter 15.6 MM. Outside length 28.5 MM.

No. 3—Designed to enclose the 3D GOLD capsule, 3M LEAD capsule, 3O or 3Q SILVER capsules, and 3S or 3U BRASS capsules.

Inside length 33.5 MM. Central bore 8.2 MM. — Wall thickness 3.7 MM. — Outside diameter 15.6 MM. Outside length 38 MM.

No. 4—Designed to enclose the 3N LEAD capsule, 3P or 3R SILVER capsules, and 3T or 3V BRASS capsules.

Inside length 24 MM. Central bore 8.2 MM. — Wall thickness 3.7 MM. — Outside diameter 15.6 MM. Outside length 28.5 MM.

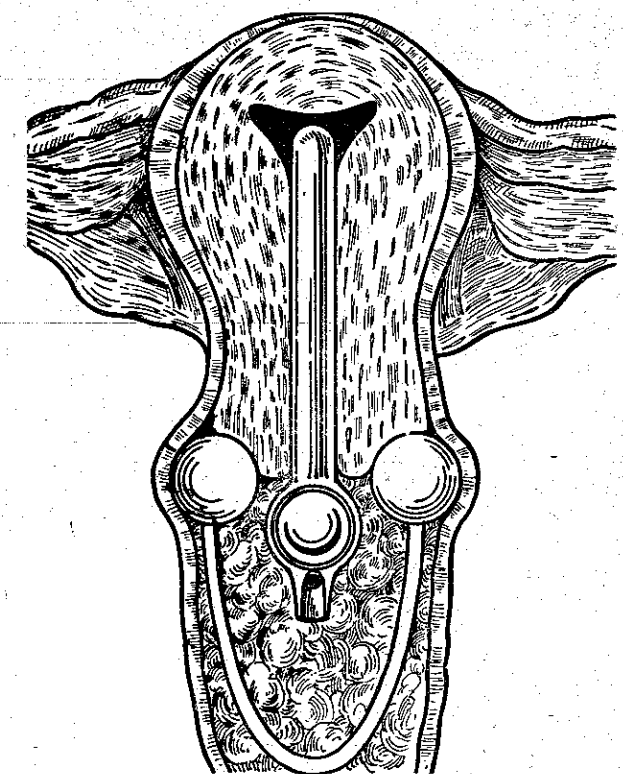
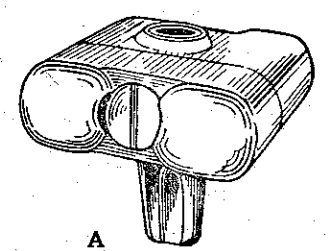


Fig. 3—This illustrates how the Swanberg Uterine Applicator and the Kaplan Vaginal Colopstat appear when placed in position for treating uterine cervical cancer. By this means six centers of heavily filtered radium are provided in the average case, three in the uterine canal and three in the vaginal vault.



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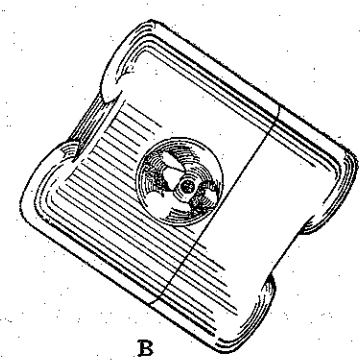
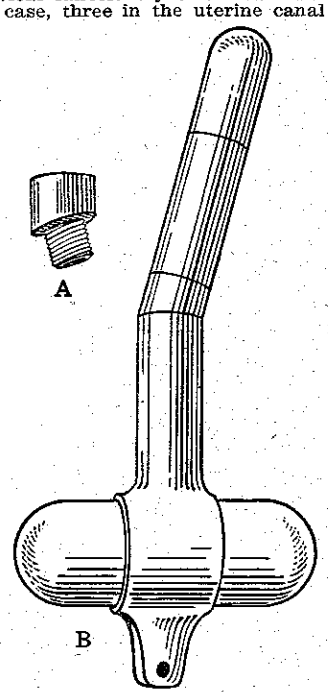


B

Fig. 4-A—Side View; Fig. 5-B—End view.

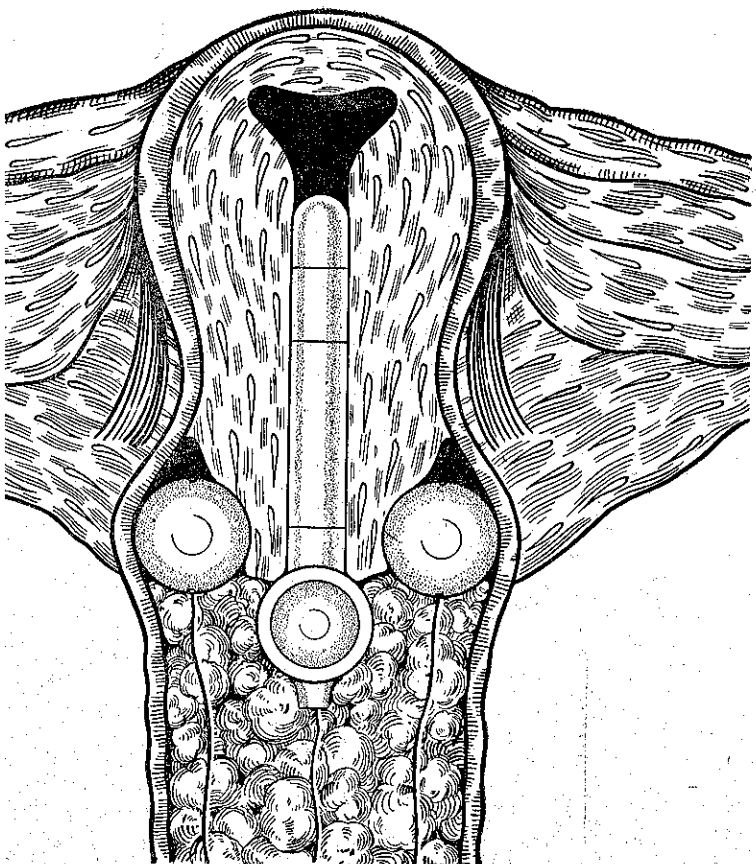
This illustrates the double vaginal end for the Swanberg Uterine Applicator which can be supplied as an "extra" part. With this device two radium centers can be used in the vagina instead of one. This is highly desirable when the vaginal vault is large and the applicator used in conjunction



A

B

Fig. 6-A—Uterine Angle-wedge. B.—Appearance of the Swanberg Uterine Applicator with a 15-degree uterine angle-wedge in position. The angle



—Illustrating the **Swanberg Uterine Applicator** (assembled to radiate two-thirds of the uterine canal) and two of the London Vaginal s in proper position for treating an early carcinoma of the uterine ctual size.)

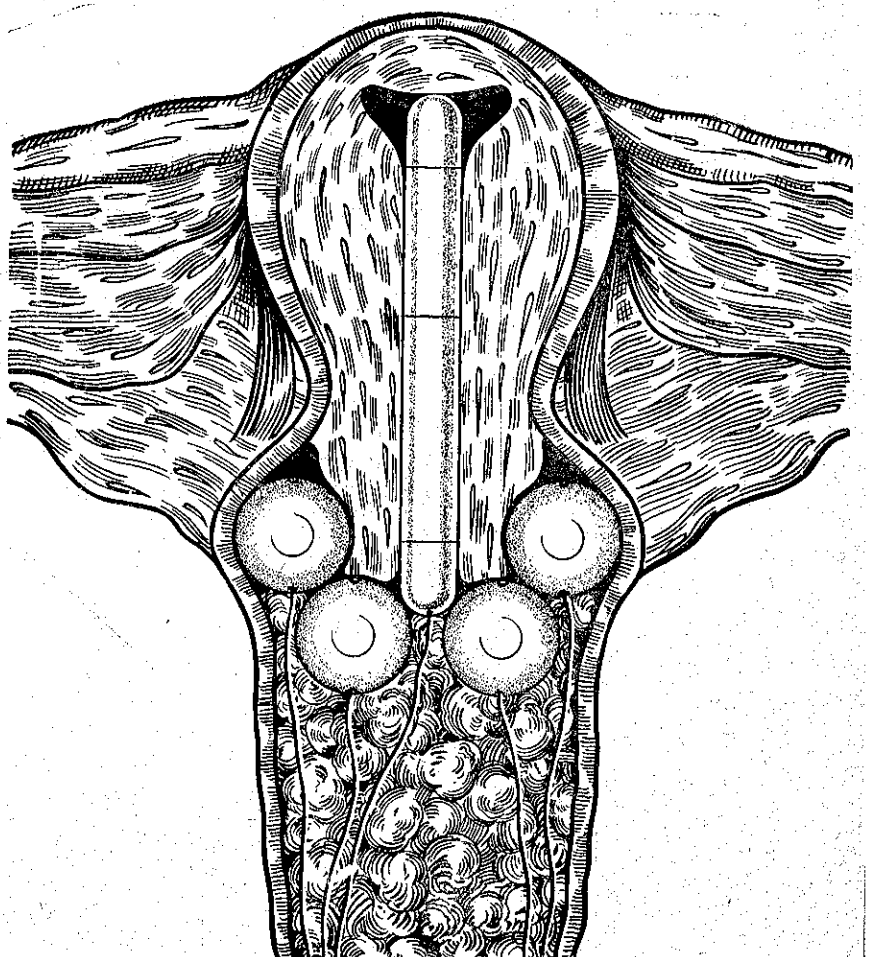


Fig. 9—Illustrating the **Swanberg Uterine Applicator** (without vagina cross-arm piece) and four of the London Vaginal Applicators when placed in a large sized vaginal vault, for treating uterine cervical cancer. (Actual size.)

SCREW CAP CAPSULES

In order to provide heavily filtered radium for the colpostat or the London bakelite vaginal capsules (which should be used in conjunction with the **Swanberg Uterine Applicator** to secure the best results in uterine malignancy) the following capsules are provided: (the Gold capsules have an approximate density of 18.4, the Lead 10.8, the Silver 10.3 and the Brass 8.5).

3F—GOLD capsule (density 18.4) covered with aluminum, and inserted in colpostat when Swanberg No. 1 Applicator is used. (Density equivalent to 2.5 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 1.9 MM.
Wall thickness { 2.9 MM. gold / 0.5 MM. aluminum
Outside diameter 8.7 MM.
Outside length 33 MM.

3D—GOLD capsule covered with aluminum, and inserted in colpostat or No. 3 London bakelite capsule when Swanberg No. 2 or No. 3 Applicator is used. (Density equivalent to 1.5 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 3.5 MM.
Wall thickness { 1.75 MM. gold / 0.5 MM. aluminum
Outside diameter 8 MM.
Outside length 33 MM.

3H—BRASS capsule (density 8.5) covered with aluminum, and inserted in colpostat when Swanberg No. 2 or No. 3 Applicator is used. (Density equivalent to 1.5 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 1.9 MM.
Wall thickness { 3.8 MM. brass / 0.5 MM. aluminum
Outside diameter 10.5 MM.
Outside length 33 MM.

3J—BRASS capsule covered with aluminum, and inserted in colpostat when Swanberg No. 4 Applicator is used. (Density equivalent to 1 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 3.5 MM.
Wall thickness { 2.5 MM. brass / 0.5 MM. aluminum
Outside diameter 9.5 MM.
Outside length 33 MM.

3K—GOLD capsule (density 18.4) for insertion in No. 1 London bakelite capsule when Swanberg No. 2 or No. 3 Applicator is used. (Density equivalent to 1.5 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 1.9 MM.
Wall thickness 1.75 MM. Gold
Outside diameter 5.4 MM.
Outside length 30.5 MM.

3L—GOLD capsule for insertion in No. 2 London bakelite capsule when Swanberg No. 2 or No. 3 applicator is used. (Density equivalent to 1.5 MM. platinum.) Dimensions:

Inside length 21.5 MM.
Central bore 1.9 MM.
Wall thickness 1.75 MM. Gold
Outside diameter 5.4 MM.
Outside length 23.5 MM.

3M—LEAD capsule (density 10.8) for insertion in colpostat or No. 3 London bakelite capsule when Swanberg No. 2 or No. 3 applicator is used. (Density equivalent to 1.5 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 1.9 MM.
Wall thickness 3 MM. Lead
Outside diameter 7.9 MM.
Outside length 32.5 MM.

3N—LEAD capsule for insertion in colpostat or No. 4 London bakelite capsule when Swanberg No. 2 or No. 3 applicator is used. (Density equivalent to 1.5 MM. platinum.) Dimensions:

Inside length 21.5 MM.
Central bore 1.9 MM.
Wall thickness 3 MM. Lead
Outside diameter 7.9 MM.
Outside length 23.5 MM.

3O—SILVER capsule (density 10.3) for insertion in colpostat or No. 3 London bakelite capsule when Swanberg No. 5 applicator is used. (Density equivalent to 1.2 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 2.8 MM.
Wall thickness 2.5 MM. Silver
Outside diameter 7.8 MM.
Outside length 32.5 MM.

3P—SILVER capsule for insertion in colpostat or No. 4 London bakelite capsule when Swanberg No. 5 applicator is used. (Density equivalent to 1.2 MM. platinum.) Dimensions:

Inside length 21.5 MM.
Central bore 2.8 MM.
Wall thickness 2.5 MM. Silver
Outside diameter 7.8 MM.
Outside length 23.5 MM.

3Q—SILVER capsule for insertion in colpostat or No. 3 London bakelite capsule when Swanberg No. 6 applicator is used. (Density equivalent to 1 MM. platinum.) Dimensions:

Inside length 28.5 MM. Outside diameter 7.8 MM.

3R—SILVER capsule for insertion in colpostat or No. 4 London bakelite capsule when Swanberg No. 6 applicator is used. (Density equivalent to 1 MM. platinum.) Dimensions:

Inside length 21.5 MM.
Central bore 3.6 MM. Wall thickness 2.1 MM. Silver Outside diameter 7.8 MM.
Outside length 23.5 MM.

3S—BRASS capsule (density 8.5) for insertion in colpostat or No. 3 London bakelite capsule when Swanberg No. 4 or No. 6 applicator is used. (Density equivalent to 1 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 2.8 MM. Wall thickness 2.5 MM. Brass Outside length 32.5 MM.
Outside diameter 7.8 MM.

3T—BRASS capsule for insertion in colpostat or No. 4 London bakelite capsule when Swanberg No. 4 or No. 6 applicator is used. (Density equivalent to 1 MM. platinum.) Dimensions:

Inside length 21.5 MM.
Central bore 2.8 MM. Wall thickness 2.5 MM. Brass Outside length 23 MM.
Outside diameter 7.8 MM.

3U—BRASS capsule for insertion in colpostat or No. 3 London bakelite capsule when Swanberg No. 5 applicator is used. (Density equivalent to 1.2 MM. platinum.) Dimensions:

Inside length 28.5 MM.
Central bore 1.9 MM. Wall thickness 3 MM. Brass Outside length 32.5 MM.
Outside diameter 7.9 MM.

3V—BRASS capsule for insertion in colpostat or No. 4 London bakelite capsule when Swanberg No. 5 applicator is used. (Density equivalent to 1.2 MM. platinum.) Dimensions:

Inside length 21.5 MM.
Central bore 1.9 MM. Wall thickness 3 MM. Brass Outside length 23 MM.
Outside diameter 7.9 MM.

A 3W-SILVER capsule, for use with No. 5 London Applicator, with 2.7 MM. wall, size 8.9x23.5 MM. is now available.

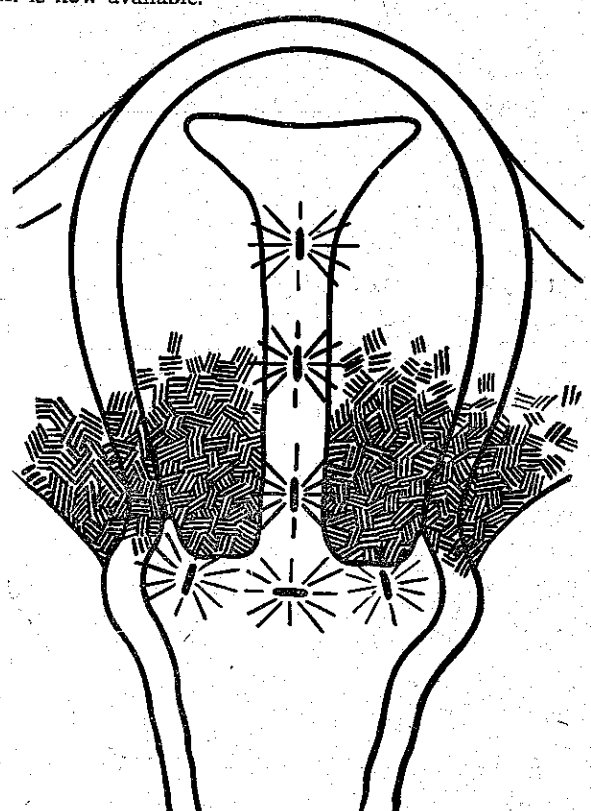


Fig. 12—A schematic drawing showing an early Stage 3 uterine cervical carcinoma, the type most commonly present when the patient presents herself for treatment. The position of the radio-active centers, in accordance with the Paris (Regaud) technic, are shown in the uterine canal and vaginal vault, thus radiating the entire uterus, cross-firing on the cervix and sending radiation into the parametria. This technic is readily carried out by using the Swanberg Uterine

Fig. 13—Swanberg Special 1 MM. Brass Applicator with flexible wire screw cap. (Other cap types are available.) The flexible wire provides a semi-rigid handle which facilitates ready insertion.

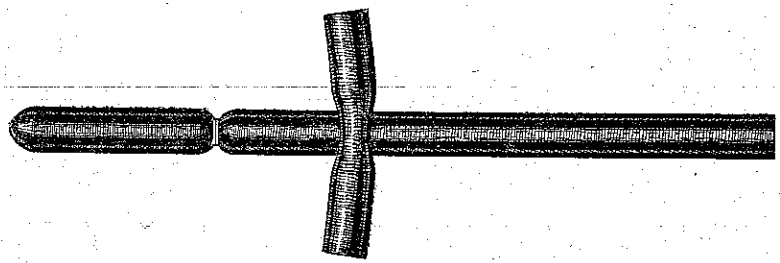


Fig. 14—Swanberg Special 1 MM. Brass Applicator enclosed in a blind-end rubber tube with adjustable rubber cross-arm piece.

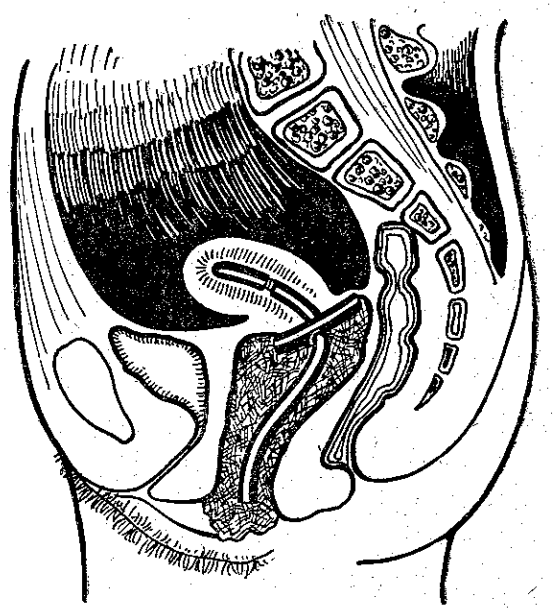


Fig. 15—Illustrating the **Swanberg Special 1 MM. Brass Applicator,** covered with a blind-end rubber tube and adjustable rubber cross-arm piece, as it appears when placed in the body of the uterus. It can be assembled in any desired length (depending upon length of the uterine canal) and the flexible wire screw cap facilitates ready insertion but permits the applicator handle to be bent to conform to the direction of the uterine canal. It is maintained in correct position by a voluminous gauze vaginal packing.

SWANBERG SPECIAL 1 MM. BRASS APPLICATOR

The **Swanberg Special 1 MM. Brass Applicator** is designed for **lightly filtered** intra-uterine application and is especially adapted for treating non-malignant conditions, although it is of universal applicability. It is a simple tubular applicator consisting of a number of graduated sections which permit assembling the applicator to any desired length. The filtration is 1 MM. of brass (density 8.5). It is made with a central bore of 4 sizes—2.8 MM., 3.5 MM., 4 MM., and 4.5 MM., with individual sections, 1 CM., 2 CM., and 3 CM. in length, and is provided with four different types of screw cap ends. It can be readily covered with one or more layers of ametal rubber or enclosed in a blind-end rubber tube

BIBLIOGRAPHY OF SWANBERG RADIUM APPLICATORS

1. Swanberg, Harold: Radium in the Treatment of Uterine Hemorrhage, Arch. Physical Therapy 9:1-7 (Jan.) 1928.
2. Swanberg, Harold: New Radium Applicator for Carcinoma of Cervix, J.A.M.A. 90:1289 (April 21) 1928.
3. Swanberg, Harold: Malignancy of the Uterine Cervix and Its Treatment with Heavily Filtered Multiple Centers of Radium: Use of New Applicator, Radiol. Rev. & Chicago M. Rec. 51:107-123 (March) 1929.
4. Swanberg, Harold: Regaud's Technic in Cervical Cancer; Use of New Radium Applicator, Radiology 12:435-443 (May) 1929.
5. Harold Swanberg: Uterine Hemorrhage and its Treatment by Radium, Clin. Med & Surg. (July) 1929.
6. Swanberg, Harold: Regaud Technic of Radium Application (with modifications) in Uterine Cervical Malignancy, Radiol. Rev. & Chicago M. Rec. 51:375-383 (Sept.) 1929.
7. Swanberg, Harold: An Improved Uterine Radium Applicator, Am. J. Surg. 8:862-865 (April) 1930.
8. Swanberg, Harold: Radium in the Treatment of Benign Uterine Hemorrhage, Med. Arts & Indianapolis M. J. 36:367-374 (September) 1933.
9. Swanberg, Harold: The Pre-Radium Treatment of Uterine Cervical Malignancy, Arch. Phys. Therapy 15:214-219 (April) 1934.
10. Swanberg, Harold: Heavily Filtered Radium in the Treatment of Uterine Cancer, J. Am. Inst. Homeop. 8:462-464 (August) 1934.
11. Swanberg, Harold: A New Type of Vaginal Radium Applicator, Radiol. Rev. & Chicago M. Rec. 57:113-115 (May) 1935.
12. Swanberg, Harold: Simplifying the Radium Technic in Uterine Cervical Cancer, Radiol. Rev. & Mississippi Valley M. J. 58:59-65 (March) 1936.

PRICE LIST

A. SWANBERG UTERINE APPLICATOR

No. 1—Swanberg Uterine Applicator (GOLD) 7 parts	$150.00
No. 1—Swanberg Uterine Applicator (GOLD) 7 parts (without cross-arm piece but with special introducing screw cap and cervical wheel)	125.00
No. 2—Swanberg Uterine Applicator (GOLD) 7 parts	100.00
No. 2—Swanberg Uterine Applicator (GOLD) 7 parts (without cross-arm piece but with special introducing screw cap and cervical wheel)	85.00
No. 3—Swanberg Uterine Applicator (BRASS) 7 parts	28.00
No. 3—Swanberg Uterine Applicator (BRASS) 7 parts (without cross-arm piece but with special introducing screw cap and cervical wheel)	25.00
No. 4—Swanberg Uterine Applicator (BRASS) 7 parts	28.00
No. 4—Swanberg Uterine Applicator (BRASS) 7 parts (without cross-arm piece but with special introducing screw cap and cervical wheel)	25.00
No. 5—Swanberg Uterine Applicator (SILVER) 7 parts	38.00
No. 5—Swanberg Uterine Applicator (SILVER) 7 parts (without cross-arm piece but with special introducing screw cap and cervical wheel)	35.00
No. 6—Swanberg Uterine Applicator (SILVER) 7 parts	38.00
No. 6—Swanberg Uterine Applicator (SILVER) 7 parts (without cross-arm piece but with special introducing screw cap and cervical wheel)	35.00
No. 7—Swanberg Uterine Applicator (PLATINUM-SILVER) 7 parts	85.00

B. SWANBERG SPECIAL 1 MM. BRASS APPLICATOR

End piece, 2 cm. long, any diameter (central bore 2.8, 3.5, 4 or 4.5 MM.) each	$ 1.00
Individual sections (1, 2 or 3 cm. length) any diameter (2.8, 3.5, 4 or 4.5 MM.) each	1.75
Screw cap ends, Type A, B, C, D, any diameter:	
Type A—With simple eye, each	.75
Type B—Grooved end for introducing forceps or handle, each	1.75
Type C—Threaded for introducing handle, each (Handle $1.00 extra)	.75
Type D—With flexible wire, each	1.75
Complete Applicator consisting of 2 cm. end piece, 1, 2 and 3 cm. extension parts with choice of two of the four screw cap ends listed. (Please state diameter of central bore desired)	

C. CAPSULES

No. 1-2-3-4-5 London Vaginal bakelite capsules, each	$ 2.75
3F GOLD Screw cap capsule, each	40.00
3D GOLD Screw cap capsule, each	35.00
3K GOLD Screw cap capsule, each	28.00
3L GOLD Screw cap capsule, each	23.00
3H or 3J BRASS Screw cap capsule, each	4.00
3S, 3T, 3U or 3V BRASS Screw cap capsule, each	3.00
3M or 3N LEAD Screw cap capsule, each	3.50
3O, 3P, 3Q, 3R or 3W SILVER Screw cap capsule, each	5.00
1MM. wall BRASS Screw cap capsule, any diameter not to exceed 35 MM. length, each	1.75
As above, except wall thickness greater than 1 MM., each	3.00
Introducing handle (for London bakelite capsules and Swanberg Uterine Applicator), each	1.00

D. EXTRA PARTS FOR SWANBERG UTERINE APPLICATOR

Screw cap for uterine extensions (with or without eye), each	Gold	$11.00
	Brass	3.00
	Silver	4.00
Screw cap for uterine extensions (with grooved end for introducing forceps or threaded for introducing handle), each	Gold	15.00
	Brass	4.00
	Silver	5.00
Uterine angle wedge (15 degree), each	Gold	17.00
	Brass	5.00
	Silver	7.00
Uterine angle wedge (15 degree) adjustable, each	Gold	28.00
	Brass	10.00
	Silver	14.00
Cervical wheel, for converting Swanberg Uterine Applicator into a cervical one each		1.50
Double vaginal end for Swanberg Uterine Applicator (2.5 MM. or 3.8 MM. BRASS), each		20.00
Double vaginal end for Swanberg Uterine Applicator (2.1 MM., 2.5 MM. or 2.7 MM. SILVER), each		28.00
Introducing handle (for London and Swanberg Applicators), each		1.00

E. ACCESSORY SUPPLIES

Swanberg 1 MM. Brass Urethral Applicator, each	$ 9.00
Kaplan Vaginal, Double-Barreled, Rubber Colpostat with extra Barrel, each	7.50
(Gold, Brass, Lead and Silver Capsules are available for use in the colpostat)	
Special ametal gum rubber, odorless and tasteless; 4-inch, 1¼ to 1½ lb. spool, each	3.00
Blind-end rubber tubes (1.5 MM. thick, 4 MM. central bore, 150 MM. long), each 75c; 1 doz.	7.50
Blind-end rubber tubes (2 MM. thick, 5 MM. central bore, 150 MM. long), each 75c; 1 doz.	7.50
Blind-end rubber tubes (2MM. thick, 7 MM. central bore, 150 MM. long), each 75c; 1 doz.	7.50
White braided silk thread (waxed) for applicators, 14 lb. test, 50-yard spool, each	1.25
Black hard braided silk needle thread, special small diameter, 12 lb. test, 50-yard spool, each	1.25
Dental modeling compound, 1 lb. box, each	1.00
0.5 MM. sheet lead, per lb.	.50
1.0 MM. sheet lead, per lb.	.50

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