TECHNIQUES OF CONCEPTION CONTROL

R. L. DICKINSON, M. D.

The information in this pamphlet is for the use of nurses under the guidance of a physician only

SECOND EDITION

THE WILLIAMS & WILKINS COMPANY
BALTIMORE

fifty cents

TECHNIQUES

OF

CONCEPTION CONTROL

by

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assisted by

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FOREWORDS

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A practical manual issued by the
Planned Parenthood Federation of America, Inc.
With 50 illustrations.

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INTRODUCTION TO SECOND EDITION

By Claude C. Pierce, M.D.

Medical Director, Planned Parenthood Federation of America, Inc.

The requests for copies of the first edition of the Techniques of Conception Control in 1941 by doctors and medical students indicated that this manual met an existing need in medical literature. This second edition has been prepared to offer the latest information as to tested methods, and to render in practical and graphic form, current teaching concerning ways of spacing children in the wisest fashion.

We heartily welcome commendation of this text by Dr. J. H. J. Upham, former President of the American Medical Association; Dean Emeritus of the School of Medicine of Ohio University; and now chairman of the Federation's Board of Directors. He has observed that medical students frequently complain that they are taught many contraindications for pregnancy, but are not given any practical instruction in technical procedures to prevent harmful fertility. Dr. Upham's long experience in teaching particularly qualifies him to express an opinion on a publication which offers help in this important field of professional training. This description of procedures will be of service in implementing the 1942 resolution of a Council of the American Medical Association, which was: Resolved, that it is desirable for medical schools to include in the curriculum for medical students adequate instruction in human fertility.

This manual is intended to be of assistance not only in this regard, but to aid all physicians to meet their responsibility as the guardians of the processes of human reproduction. Physicians are directing their attention not only to the immediate welfare of mothers and children, but to the value of child spacing in its relation to national survival. These questions are discussed in a recent publication, "The Aims of Birth Control and Their Place in Preventive Medicine," by Nicholson J. Eastman, M.D., Chairman of the Federation's National Medical Council. (Reprinted from New International Clinics, Vol. 1, Series 5. Copyright 1942, by J. B. Lippincott Company.)

Dr. Eastman has reviewed the literature and called upon his own extensive experience to make an excellent presentation of the implications of birth control and its related problems. Dr. Eastman says: "The evidence presented in this review attests clearly the fact that the medical indications for contraception are manifold and urgent. Its widespread employment promises a major reduction in needless loss of life and suffering; and it deserves, accordingly, an important place in medical practice."

In the field of preventive medicine and public health, progress in contraceptive service is making rapid advances. Eight state medical societies have passed resolutions which recommend the giving by doctors of advice and service relating to pregnancy spacing and fertility to married women in the clinics conducted by state and local health departments for indigent patients.

The first edition of this manual was printed by the Birth Control Federation, now the Planned Parenthood Federation of America, Inc., which name describes more clearly the aims of the organization: to encourage the bearing of children by married couples physically and mentally qualified to have larger families; and to limit the number of births to improve maternal and child health where there are medical and socio-economic indications for limitation. Dr. Eastman in his Review states: "By direct advice or by intimation, the physician can do more than he realizes to encourage larger families among some parents, while advising limitation in others. It is only through this dual approach, which stresses positive as well as negative aims, that birth control can hope to escape the obvious dangers and achieve its highest aims."

The Medical Department of the Federation sincerely believes that this manual is a valuable contribution toward maintaining a high ethical standard of professional practice in this important field of preventive medicine.

FOREWORD

By Nicholson J. Eastman, M.D.

Obstetrician-in-Chief, Johns Hopkins Hospital

Contraception is now recognized as an integral part of medical practice. While important to every branch of medicine, its application is most definitely correlated with obstetrics and gynecology. As a teacher of these specialties for a number of years, I am more and more impressed with the necessity of instructing students in methods of contraception, to the end that some patients suffering from chronic diseases may be spared pregnancy altogether and that others may so space their childbearing as to serve the best interests of all concerned.

An analysis of the causal factors in maternal and infant mortality makes it apparent that the health of the public requires conception control. Important factors frequently overlooked are the disastrous effect of pregnancy upon the large group of poor maternity risks (sick women) and the deleterious effect of too frequent childbearing upon even the healthy mother. In both groups the result is the same, an increased morbidity and mortality, and a higher fetal death rate. Indeed, if every woman who conceives could only be a healthy woman, I am certain that our maternal death rate would be reduced forthwith by one-quarter. Cognizance must also be taken of the fact that approximately one-fourth of the maternal deaths are due to abortion. Beyond question, any reduction in the incidence of induced abortion, whether criminal or therapeutic, must depend in large measure upon the provision of effective medical contraception.

Child spacing means the planning of each conception and pregnancy in such a way that it will occur at the best time for the mother, the child, and the family. Each family will have its own peculiar problems, but the following factors are involved in any contemplated pregnancy, whether the child be born in a hovel or a palace:

The mother's age (and to a lesser degree, the age of the father).
Her general health, present and past.
The interval since the last delivery or miscarriage.
Her record in previous pregnancies and births.
The total number of children deemed desirable and which can be adequately reared by the particular family unit.

Physicians who advise modern contraceptive methods are not concerned with a new problem. They rather substitute scientific methods under medical supervision for questionable and often ineffective procedures, many in folk practice since the days of the Pharoahs.

The question of the control of fertility has received the attention of the American medical profession for many years. More than fifteen years ago, the American Gynecological Society and the Section on Obstetrics, Gynecology, and Abdominal Surgery of the American Medical Association recognized contraception as a medical problem. In May, 1935, the medical societies of the states of Arkansas, Maine, New Mexico, New York, and the District of Columbia formally requested the American Medical Association to study the whole matter of birth control and the laws involved, taking the stand that the laws were conflicting and that the importance of the control of reproduction, where it constituted a therapeutic measure, was obvious to the medical profession. At the 1935 meeting of the House of Delegates of the American Medical Association, a resolution was unanimously adopted requesting the study of birth con-

trol by that organization. The American Medical Association's Committee to Study Contraceptive Practices and Related Problems reported its findings in 1936 and 1937. The resolutions incorporated in the 1937 report follow:

"1. That the American Medical Association take such action as may be necessary to make clear to physicians their legal rights in relation to the use of contraceptives.

"2. That the American Medical Association undertake the investigation of materials, devices, and methods recommended or employed for the prevention of conception, with a view to determining physiologic, chemical and biologic properties and effects, and that the results of such investigations be published for the information of the medical profession.

"3. That the Council on Medical Education and Hospitals of the American Medical Association be requested to promote thorough instruction in our medical schools with respect to the various factors pertaining to fertility and sterility, due attention being paid to their positive as well as to their negative aspects.

"4. All dispensaries, clinics, and similar establishments where information and advice concerning the prevention of conception are given to the public should be under legal licensure and supervision and under medical control."

This new and enlarged manual is the successor to "The Technique of Contraception," by Eric M. Matsner, M.D., F.A.C.S., published by the National Medical Council on Birth Control, first with a foreword by R. L. Dickinson, and his illustrations, and later with a foreword by Frederick C. Holden, M.D., F.A.C.S. It is part of the program of furnishing to medical students and the profession in brief form the available knowledge in this field. The first four editions, a total of 50,000 copies, are now in the hands of obstetricians, gynecologists, and general practitioners throughout this country and abroad. The manual is being used as a supplementary text in courses in obstetrics and gynecology in medical schools and is available in medical libraries.

The provision of competent contraceptive instruction for physicians is necessary if they are to fulfill their complete function to the community. The public rightfully expects them to assume responsibility in this matter. A knowledge of the subject as herein presented should enable them to do so.

"Where should we stand as medical men? To my mind there can be only one answer . . . We must give contraceptive advice whenever it is medically indicated . . . It is just as much our duty to give such advice . . . as it is to advocate the employment of any other prophylactic measure. We must advise the multiparous woman suffering from chronic nephritis not to become pregnant, and the same applies to tuberculosis and serious heart disease. Consequently, if we feel that such advice is necessary we must give directions as to how it can be made effective, for if we do one without the other we are failing in our duty as physicians . . . Similar advice is indicated when we see a patient steadily going down hill as the result of pregnancies recurring at too short intervals, as well as in certain neurotic and maladjusted women whose entire life is disturbed by a constant dread of pregnancy."—J. Whitridge Williams, M.D., (*Professor of Obstetrics, Johns Hopkins University, Medical School, President, Amer. Gyn. Soc.*), J. A. M. A. 91: 1241, October 27, 1928.

NOTE OF INTRODUCTION

By Richard N. Pierson, M.D.

Chairman Medical Committee, Planned Parenthood Federation of America, Inc.

The great potential value of contraception prescribed by doctors for health reasons is now admitted in the field of preventive medicine. Historically, it is regrettable that the stimulus and support in this movement should come chiefly from public spirited lay people and from outstanding doctors outside the field of gynecology and obstetrics, and that the leading medical schools of the country should have lagged far behind the demand of their students and of the public in adequately teaching these techniques. There have, of course, been notable exceptions in the case of such outstanding gynecologists as the senior author of this manual, Dr. Robert L. Dickinson, the late Professor J. Whitridge Williams, and several others.

It is, therefore, particularly encouraging to those of us who have worked in this field for many years, that Professor Nicholson J. Eastman, the head of the Department of Obstetrics and Gynecology in Johns Hopkins University, has written the foreword for this manual. I am confident that other leading gynecologists and obstetricians throughout the country will be persuaded by his comments to do their share also in both the teaching and the practice of contraceptive techniques.

This manual is written primarily for the general practitioner whose training in the control of human fertility was limited or non-existent in his medical school, and whose opportunities for a subsequent clinical training have been unsatisfactory. It is written also to furnish undergraduate medical students specific knowledge of principles and techniques. The manual may seem to the expert gynecologist and obstetrician elementary and too detailed. This, in my opinion, is not so, because I find contraceptive techniques difficult to apply satisfactorily after much study. I think that we still have much to learn in perfecting these services for our patients. We should be grateful to author and illustrator for original contributions based on exact anatomy with full labelling, and on a comparable scale.

References and a bibliography of the extensive literature have had to be omitted from this summary to give place to detail of technique and illustrations of practice. Indebtedness to those who have analysed results and conducted research has been acknowledged in "Control of Conception" by the senior author and in the Journal of Contraception, now entitled Human Fertility.

CONTENTS

CONCEPTION CONTROL
AIMS AND METHODS

I. Pregnancy to occur as often as it is feasible to bear and rear a child with health, happiness and usefulness to progeny, parents and community.

II. Sexual intercourse to be adjusted in frequency, duration and response to the mutual satisfaction and to the wellbeing of the partners.

III. Conception to be controlled with these requisites in view by one or more of the following methods:

A. For each occasion:

(1) Before coitus, the woman places a protective barrier in the vagina, such as a chemical, cervix cover or tampon, or

(2) The man wears a cover on the penis, or lacking the above:

(3) The man withdraws after the woman's orgasm and before his ejaculation.

(The douche, and calculations of a sterile period, are relatively undependable.)

B. For prolonged protection, such means as sperm immunity (spermatoxins), hormones, irradiation or heat to the testicles, when indicated and if it can be proved that their use is safe and effective.

C. For permanent protection, when necessary, sterilization without unsexing, by surgical closure of the spermatic duct or of the oviduct, or, for the inoperable, by irradiation.

D. Each sterile mating to be subjected to systematic study with treatment according to the findings in both members of the couple.

TECHNIQUES

OF

CONCEPTION CONTROL

THAT part of medical practice which has to do with well planned parenthood and prevention of harmful fertility calls for a medical pamphlet kept up to date. Details that crucially affect success or failure require clear exposition. New evidence of effectiveness and acceptability of contraceptives needs periodic summarizing. Advertisers' claims demand analysis. Hence a qualified central organization which is led by responsible representatives of the medical profession properly undertakes this duty, delegating it to one of its officers.*

Common sense suggests that we begin with the best accredited protective, the one used by that member of the couple primarily needing protection, even though this method is less simple than others. Thereafter we follow the order of general utility. Thus cervix cover and penis cover lead on to simpler means and then to more lasting immunities. Clinics, materials, and the instruction of the patient are discussed toward the back of the manual.

Protection—protection beyond peradventure, for nearly four million occasions each night for the United States alone—this is our insistent medical marriage problem. Between pregnancy and prevention the actual decision belongs to the partners, and is rarely the doctor's, but whenever he finds disease and disorder, the decision and the responsibility clearly must be his.

Five words define perfection of protection. Wherever pregnancy spells serious hazard to health, to happiness in marriage, to essential well-being of family or community, there contraceptives must be *certain*, *simple*, *harmless*, *not unpleasant*, *cheap*—easy to get, easy to keep, easy to use. Because the woman is more likely than the man faithfully to carry out the method of control, the means may better be in her hands.

These main characteristics may well be supplemented by two others: (1) *Variety*—No one means, however perfect, can be

* Dr. Dickinson is Senior Vice-President, Planned Parenthood Federation; former President of the American Gynecological, the New York Obstetrical and the Brooklyn Gynecological Societies; former Clinical Professor at Long Island College Hospital; long Secretary of the National Committee on Maternal Health; author of the book on "Control of Conception."

At the time of the printing of the first edition of the pamphlet Dr. Morris was General Medical Director of the Birth Control Federation, and helped edit the text and develop the tables. Statistics are condensed from G. W. Beebe and R. K. Stix.

expected to suit both partners on all occasions, any more than could one mountain peak or one symphony. Finally, (2) the ideal method would combine protection against conception with protection against infection.

Present methods are still in large part beginnings. It could hardly be otherwise. One of the most complex and difficult of problems in the world, the optional defeat of that determined tendency to excess fertility which nature took millions of years to evolve and fortify,—such a problem can only look forward to satisfactory solution when large funds back decades of systematic research. We cannot be content merely with a large proportion of users protected. We must seek fool-proof security and simplicity for all who need such safety. This is our ideal.

Let us work for it, but let us not wait for it. If it were to be demanded as a requisite before birth control could be accepted by the profession, then such counsel would constitute the only prescription or treatment for which a hundred per cent success is required before adoption. Nevertheless we must go the limit toward attaining this goal. Our difficult duty today is discovery; to improve present methods; to devise means more wise and sure. For whereas the doctor is forgiven for a mild smallpox after vaccination, he may not expect exoneration for a superfluous or forbidden pregnancy following use of his prescription to prevent it, and which he may then refuse to interrupt.

Actually reports show that most unwanted pregnancies result from omission of some detail of technique. Even the gynecologist may not be familiar with newer modifications effective for difficult cases. The physician may not have been taught in a special course in medical college or in a special clinic. The instructor may have failed to develop full understanding and competence on the part of the patient. *Physicians have to be trained.*

The ideal would seem to call for something requiring no teaching or supervised trial or acquirement of skill by practice. No such method exists. *Training of the patient is needed* for expertness and automatic, effortless usage. Even the simplest device, the condom, calls for testing after purchase, for highest security; it may call for some patience at first; it may involve surrender of maximum satisfaction for the sake of maximum protection. Indeed the sole 'control' that does away with all control or training is the closed duct, spermatic or Fallopian, in the quick and minor operation for the male and more difficult one for the female.

A further ideal is openmindedness toward a variety of methods. To date this is conspicuous by its absence in most clinics and in most physicians' offices. Wherever there has been both ample satisfaction and safety in use of a method, endorsement is in order. This may then be followed by the offer of instruction in some other reliable means.

Clinics everywhere thought they had a method so generally applicable that the extension of conception control required merely multiplication of centers. Diaphragm-jelly looked effective enough to be exclusive. Follow-up study has given this comfortable belief a jolt. The *protection rate is high, but* the refusal-rate is disconcerting when, except for selected groups, a considerable proportion of those instructed decline to begin or continue with this method.

Again, insistence on use of a douche on removal of the diaphragm in the morning is to be abandoned. Whatever sperms do within and above the cervix, they do not live any eight hours in the vagina with capacity for fertilization, even without a spermicidal jelly. Requirement of the douche may have a good deal to do with the discouragingly large proportion of our people who fail to carry on with our scientifically-best protective, the diaphragm.

This manual is designed to contain nothing which the practising physician need not know. Repletion has been sacrificed to brevity. Repetition is occasionally em-

ployed for emphasis. References and credit are omitted in order to save space. Complete consideration of each topic, for example, the 'safe period,' may be found in the author's text book on "Control of Conception" (second edition, 1938) which gives in the various sections careful abstracts from and full references to the literature and to researches under way.

The illustrations are all original and all made to scale.* They are almost all on the same scale, one-third lifesize, and are viewed from the same side (the male only is shown from the opposite side). They are too small for teaching more than one person at a time; therefore an atlas of all the more important illustrations, loose leaf in form, and life size, is in preparation, for instruction, or for wall-chart framing in classroom or clinic.

* Exception, Fig. 46 is borrowed.

For the anatomy, the lifesize pictures in the Dickinson atlas of "Human Sex Anatomy" will be reproduced by photostat and on request.

Lantern slides, plain or colored, from any of our cuts, can be made or borrowed, by application at the offices of the Planned Parenthood Federation, 501 Madison Avenue, New York City.

EFFECTIVENESS

There are several ways of gauging the effectiveness of a specific contraceptive in giving protection against pregnancy. In estimating the effectiveness of contraceptive practice, certain known variables such as illness or temporary separation of husband and wife, or periods of pregnancy, may be taken into account, but for other conditions, unknown or unrecognized, adjustment cannot be made. For this reason unless otherwise specified, all rates with contraceptives refer to all reported experience with a method and not merely to the experience of careful and regular users. This text therefore uses a simplified expression, *degree of protection*. By this expression is meant the reduction in frequency of conception when a given method is used, as compared with that expected in the absence of contraceptive precaution.*

* Knowing pregnancy histories of a group when using or not using contraceptives, the rate may be computed for each experience.

A simple comparison is between the number of pregnancies occurring and the number of months during which conception was possible, that is, the number of months of "exposure to the risk of pregnancy" for either of the two types. Dividing the aggregate months of exposure by the number of pregnancies gives the average number of months per pregnancy. The comparison of this average for experience with and experience without contraception yields the estimated *degree of protection* afforded by the contraceptive in question.

Comparison of degree of protection given by any method before and after special instruction shows an increase of 5 to 100 per cent after instruction.

We cannot fully appraise effectiveness apart from acceptability.

With *diaphragm and jelly*, for urban populations, degree of protection afforded can be expected to run around 90 per cent. This means risk of pregnancy is 90 *per cent less than if no contraceptive were used*. The range is from 85 to 95 per cent for the average kind of use. For white collar, manual labor and relief groups in Cincinnati, effectiveness ran to 96, 92 and 85 per cent respectively but Puerto Rico, Tennessee and South Carolina secured less protection by this means.

As to the *condom*, protection runs from 70 to 95 per cent, with good acceptance in one rural area.

Withdrawal gives more variable protection, 35 to 80 per cent.

Of *jelly alone* there has been less study. Reports indicate risk cut down 63 to 90 per cent.

For *foam powder*, the range is wide, from 30 to 95 per cent.

For *douche alone*, from 16 to 70 per cent.

For the *suppository* there are few data but its long popularity and English success may have meaning.

ACCEPTABILITY

Acceptability is a focal consideration in all election of methods for prescription. Among different groups and different individuals in the same group, acceptance of any given method is found to vary considerably with such factors as native intelligence, education, religious teaching, emotional adjustment to sex, and genital anatomy.

Control of conception is accepted more often where provision is made for variety in method. Exclusive concern over a single method should give way to flexibility in type of service offered. Each method has a field. Discontent with one or another method brings many to clinics who, after instruction and trial, are later found to have gone back to previous usage. It is important for the physician to explain to the patient that the first method prescribed *may* not be satisfactory, and that other methods exist which may suit her better.

For the *diaphragm and jelly* the only published series covering 4 years or more, by successive periods, is that of Stix for Cincinnati. About half the women for whom it had been prescribed were using this method at the end of two years, one third at the end of four years. Other briefer urban returns fit into this tendency towards continuous decline of use. One of the best attended clinics in the country has discovered as much decline, with but 30 per cent of users after three years. On the other hand, the Dewees series of private patients yields some 70 per cent persisting in its use after an average of three years. A six months' observation in the South found 65 per cent continuing.

For *jelly alone* we have series showing persistence of use after one year of 25, 50 and 63 per cent, dropping to 15 and 55 per cent at the end of two years for the first and third group.

For *foam-sponge*, at the end of six months, two series show 50 and 85 per cent persistence, with higher acceptability in rural areas.

CONTRACEPTIVE METHODS—EFFECTIVENESS AND ACCEPTABILITY

(As reported by patients)

METHODS	EFFECTIVENESS* (PER CENT)		ACCEPTABILITY (PER CENT)				
	After clinic instruction	Before coming to clinic	6 Mos.	1 Yr.	2 Yr.	3 Yr.	4 Yr.
Pessary—Jelly	90 (85–95)†				50	30–70	25
Condom	90 (85–95)	50–85					
Jelly alone	80 (63–90)			25–63	15–55		
Withdrawal	70 (50–90)	35–70					
Foam—Sponge	75 (55–95)‡		50–85				
Douche	65 (60–70)	16–70					

* As found among the variety of patients usually seen at birth control clinics.

† Means 90 per cent less risk of conception than if no contraceptives were used, or 90% of the users completely protected.

‡ Rural regions with instruction by nurse.

DIAPHRAGMS AND CAPS

For self-protection against conception, the method generally prescribed at present in birth control centers is the cover on the cervix uteri, the vaginal diaphragm or cervix cap. These are often called pessaries, although in any strict sense this term denotes an instrument for support of a displaced uterus or sagging bladder. For patients, the simplest word is found to be cap or cup.

Pessaries as barriers are of *two forms* based on different principles. One plan places over the cervix a cap that adheres by suction around the projecting cone (Fig. 35). The other provides a lengthwise partition dividing the passage into two sections, the upper holding the cervix; the lower to serve as the channel for the penis (Figs. 13 and 14). The first notion is simpler and the device smaller; the second is adapted to the larger percentage of interior conformations. *Anatomy*, not average, but individual, determines the choice between the two. For the patient correctly to place either takes less time than putting on a loose glove.

A high protection rate may be expected for this general method among groups of women having ready access to physicians adequately trained, or to clinics adequately equipped and well-manned. Physicians doing obstetrics and gynecology are accustomed to general pessary fitting, and they readily qualify for contraceptive clinic service. Physicians lacking such "specialty" training will usually need many hours of supervised contraceptive training.

The method is *unsuitable* where:

1. Variations of anatomy prevent ready fitting, such as a much damaged pelvic floor or relaxation to a degree that prevents pocketing the front rim of a pessary beneath the symphysis; or the juvenile short anterior vaginal wall; or where conditions hamper self-reach into the vagina, notably thick abdominal fat and short fingers.

2. There is lack of willingness to take trouble to secure protection by this means. Psychological obstacles are presented by the woman with disgusts centering on her genital sphere. The woman does not learn the method.

3. The woman can find none trained to adapt the method to her anatomy.

Skill in fitting is not difficult to acquire with opportunity to examine a moderate variety of local conditions. There are some cases with no apparent structural reason, in which the doctor can find no size or shape which will effectively block his fingertip as it seeks to pass under the pubic arch and over the front edge of the ring. Such a condition, as well as cystocele, calls for trial of the "Matrisalus" shape, which is the Smith retroversion pessary wrong side foremost (Figs. 33 and 34), or for a cervix cap like the Mizpah.

Always to be borne in mind—a full rectum or bladder will at times interfere with correct fitting.

VAGINAL DIAPHRAGMS

These formerly went by the names of Mensinga, Ramses, Lambert, Haire and Dutch. Preceding the entry of the penis, this larger form of pessary lies lengthwise of the vagina, cupped around the cervix in the posterior fornix. During coitus it fits close along the anterior or upper vaginal wall and effectively shields the cervical os. This is shown in Figures 13 and 14. One can verify the situation of the pessary by observation through the bivalve speculum or by looking down a glass test tube (of the same

diameter as the penis) used as a speculum, with good illumination, as of a headlight or throat mirror, or a light on a stalk.

The protection afforded by the diaphragm is due not alone to the thin rubber dome closely applied over the external os (together with some degree of suction) but also to its holding a spermicidal chemical paste or ointment against the opening. Essentially it forms a partition with edges that so stretch the elastic vaginal walls that the point of the glans penis cannot pass over the front rim—a rim that nestles behind the pubic bone. It is this *front fit* that prevents access to the cervix. Figure 13 shows the diaphragm in place before, and Figure 14 during coitus, and Figures 28 and 29 show what happens when a glans penis pushes past a diaphragm that is too small or too large.

Fitting the Diaphragm:

The procedure is simple, as a rule. The history is taken, then the bladder is emptied. The patient lies down on the table.

1. The doctor examines bimanually and with the speculum. Then he measures or estimates, then selects the size required and slips in the diaphragm (or measuring ring).

2. He has the woman examine the diaphragm in place and then remove and replace it, learning the feel of the covered cervix and of the sub-pubic fit. Next he leaves her to let her place it for herself several times (Figs. 17–21).

3. He returns to check up on her success.

4. He instructs her to practice at home and to come back the following week to prove she is finger-perfect.

The *time* for teaching a patient, as given in several clinics, averages fifteen minutes, the range being from five to twenty.

To choose the *size* of diaphragm one may begin with the usual numbers 70 to 80. To minimize boiling and cleaning and to avoid the need of carrying a considerable stock in any office where the demand is inconsiderable, one may start the measuring with the fitting-rings shown in Figure 10. The size that sits snugly without undue pressure behind the pubic arch while circling beyond the cervix is then matched with a diaphragm or else one is ordered of this size.

The diaphragm in place, the finger makes sure that its tip cannot pass along the anterior vaginal wall in front of this sub-pubic fit (Fig. 21, 28, 29) except with more force than the penis could exert. Trial of such anterior entry may be made with different sizes of ring or pessary.

Now the patient is asked to rise on her left elbow again and feel the diaphragm rightly placed, first, to make sure she knows the *feel of the cervix through the thin rubber* (Fig. 20) and second, to note that the finger tip cannot pass in front of the rim (Fig. 21). Then she is asked to pull out the device and is told that if removal is difficult she can squat and press down and thus succeed. The finger is hooked, palmar surface upward, under the rim, to dislodge it from behind the pubes (Fig. 25). A gentle, steady tug may be needed, as the rubber has a vacuum-fit to the vaginal wall, besides retention by a fold of the lining of the passage. In case of reluctance to start, the finger may be reversed, the better to get in behind the rim (Fig. 26).

Having removed it, she then places a half teaspoonful of *jelly* in the concavity (if used cup wise), lubricates the edges, in any case, and passes it in again (Fig. 18). Some can slide the diaphragm up one side of the vagina past the cervix. In placing the diaphragm a patient with a long thumb can use this to slip the further edge of the rim beyond the cervix (Fig. 23).

She may be told to stop at the point where the further edge catches in front of the cervix with the diaphragm all inside the passage (Fig. 18). She is instructed to feel the bare cervix, and a diagram or model is shown her to explain the situation. Thus she knows what wrong placing and false security are.

Then she is told to push the front rim in behind the symphysis (Fig. 19), so that the diaphragm tips upward and inward. By such

a push, the back end jumps over the projecting cervix. Next she must again feel the cervix covered by rubber (Fig. 20) and test the front fit (Fig. 21). One further caution is given her, that if the diaphragm balks at going in deeply enough she is likely to find the reason in lumps in the lower bowel, and that these masses are easily felt through the vagina.

Introduction of the diaphragm may usually be readily done lying on the bed, rising on the left elbow to better the reach of the right hand. Some prefer sitting on the edge of a chair or the edge of the bed with one foot raised and supported. A few find the squatting posture gives deepest reach. These latter postures may be needed only at first (Figs. 5, 15, 16).

Whenever the right sized diaphragm jumps at once into right position each time that the instructor or the patient places it during the process of instruction, this hold and this push constitute the entire procedure. Recognition of the cervix, both bare and covered, and test of pocketing behind the pubes, are unnecessary in these facile cases. The three tests may however be shown to an intelligent patient as matters of interest, if this is thought desirable, because of possible comparison of notes with a friend who needs such complex placement.

Circling cervix and pocketing in front. The projecting cervix presents the commonest obstruction to ready placing of the diaphragm (Fig. 18). The usual way of getting by the cervix is to tip the near rim so far back up under the symphysis (Fig. 19) that this lever action swings the rear rim in the opposite direction and so past the cervix.

The standard circular diaphragm, when compressed laterally to permit passage through the narrow lower end of the vagina, is so made that it cannot take the bowed or S-shape of the sweep of the curve of the vaginal canal (Figs. 12, 22). Compressed, it lies in one plane, and takes on an oblong or hourglass form and often hits the cervix (Fig. 18).

The *bow-bend hinged diaphragm* devised by Findley, however, when laterally compressed, curves of itself into an arc of even greater curve than that of the posterior vaginal wall (Fig. 22), and such a form when pushed onward must pass either a normally placed or an anterior pointing cervix. This is because this deep further rim is forced to hug the rear wall of the vagina opposite the point where the cervix projects from the front wall. When released from the lateral compression, this far rim is beneath and beyond the cervix. As the diaphragm assumes its circular shape this rim jumps into the rear pocket behind the cervix. At this juncture the new device takes on in all respects the circular form and accepted position of the standard device.

Some doctors and most clinics find the use of diagrams or models helpful in teaching patients as is shown in the narrative quoted in the second column, p. 51.

Before leaving, the patient may be again instructed by the doctor or the nurse in the order of procedure. She should be given a simply worded *slip of instructions*. She is to make a fortnightly test for holes by filling the cap with water or stretching and holding up to the light. She is to keep the diaphragm clean, dry, and powdered. She is to use a half to a level teaspoonful of lubricating, sperm-killing jelly when she places the diaphragm. She is not to use greasy or oily substances, since they shorten the life of rubber. She may put the diaphragm in either during the late afternoon or just before intercourse. She should not leave it in place more than one night. *If left in place six or eight hours after intercourse, no douche is needed.* If removed sooner after intercourse, she is to douche just before removal and just after removal, in this second case holding the outer parts around the nozzle so as to fill the vagina and let out the water with a gush (Pp. 33–35; Figs. 39–42). Half the bagful (or half the bulbful) can be used for each step.

Supplementary douche. Until recently, as standard practice, directions were to remove

the diaphragm next morning, taking a douche as described. For maximum safety it is still held by some that douche and removal soon after ejaculation is desirable. To get up at such a time is a handicap to the faithful use of any contraceptive method. Moreover, less than half the population have individual bathrooms and convenient warm water; these are even less frequent among rural dwellers. Indeed, among the poor, even the privacy for morning douching is usually lacking. As sperms do not live more than two or three hours in a vagina even in the absence of a spermicide, the requirement of a douche after overnight retention of diaphragm and jelly should not be included as a standard practice. Some women prefer douching after intercourse.

Types and Sizes of Diaphragm.

The diaphragms are made with spring edges, rubber covered (Fig. 10, etc.). The metal must be so *smoothly* covered with rubber that no roughness and unevenness is present. The Mensinga has a watchspring, and this is still in use, as the strongest type, but almost all the present demand is for the wire coil-spring variety.

The *size* most commonly used is 75, the number referring to the diameter in millimeters. Sizes 70 to 80 accommodate most persons, but the range runs from 50 to 105 (Fig. 10). There is some difference in practice and teaching as to selecting the largest that can be tolerated or the least that will hold snugly to the rear of the pubic bone. The old distinction between the larger sizes prescribed in clinics compared with smaller in private practice may have to do with better repairs and pelvic floors after better postpartum care in the well-to-do. A number of failures have been credited to sizes too small. Figs. 28 and 29 demonstrate that the glans penis passes above the rim of the misfit which is either too small or too large, because neither blocks access to the cervix along the anterior vaginal wall.

Fitting and Re-fitting.

In *premarital fitting of diaphragm*, where the hymen has not already been made sufficiently elastic for fitting, the patient is instructed in *self stretching of the hymen*, as discussed on page 55. Frequently, after intercourse has developed her vagina, the newly married woman needs a larger size. After labor, another alteration is usually called for. Vaginas differ in diameter and length and no claim has been more absurd than that of one manufacturer that his pessary would fit any normal woman. No shoemaker claims one size of shoe will fit any normal foot.

There has been considerable discussion whether the *concavity of the diaphragm should go upward or downward*, that is, cupwise or domewise, the contrast being shown in Figures 15 and 16. It is probably immaterial, except that the cup is calculated better to hold the jelly wherewith to cover the cervix, while the dome is easier to place. The slack of the rubber of the dome taken up by a rolled-over edge yields a flatter dome.

Directors.

A mechanical inserter has some advocates among those who prescribe diaphragms (Fig. 24). Most forms carry notches or buttons to allow temporary hold of the diaphragm with provision for various sizes. The director thus imposes an oval form on the diaphragm and renders passage easier as far as narrowing is concerned. The dome cavity is flattened so that less than a teaspoonful of jelly is retainable to bathe the cervix. Present directors are unsuitable for use of the diaphragm as a cup because the vaginal curve is reversed, and the far rim, thus held, will impinge on the cervix, and the whole be uncomfortable to introduce. After pushing in as far as the director and diaphragm will enter, the outer rim is slid off the ledge and the director is loose and free to slip out. The solid forms are much easier to keep clean than those with interior springs or screw-threads. Use of a director will make sure that the far rim is passed to the deepest part of the vaginal pocket well beyond the cervix before release of the ellipse into full circle. The *stout woman* and the woman with *short fingers* may need such aid. Because this constitutes one additional piece

of apparatus, it is usually to be dispensed with. It is never used with the Findley.

Several of the directors carry a blunt hook on one end. This may be used for *removal* instead of the finger tip, in the same fashion, and without fear of doing harm (Fig. 27). The hook is passed well in beneath the forward rim, then gently pressed in the direction of the navel as it is withdrawn, thus catching the spring in the rim. The angle at which the pull is made shows in the illustration. (This, however, pictures the woman on her back. To get the relations right for the sitting or squatting posture, one turns the page so that its inner edge is toward the reader, as the posture outlines demonstrate.)

ABNORMAL OR INJURED VAGINAS

Failures in protection and the misfits that have drifted into our ken have been chiefly due to five causes, all pictured in the illustrations and all verified by the penis-sized test tube that could pass the diaphragm and reach the cervix rather easily. These were cases not suited to ordinary diaphragms because of (1) cystocele (Fig. 33) or laceration; (2) rigid, short anterior vaginal wall (Figs. 30–32); (3) relaxation or stretch of the vagina as the result of labor or vigorous coitus (Figs. 33, 37), and finally to choice of a diaphragm which is (4) too small or (5) too large (Figs. 28, 29).

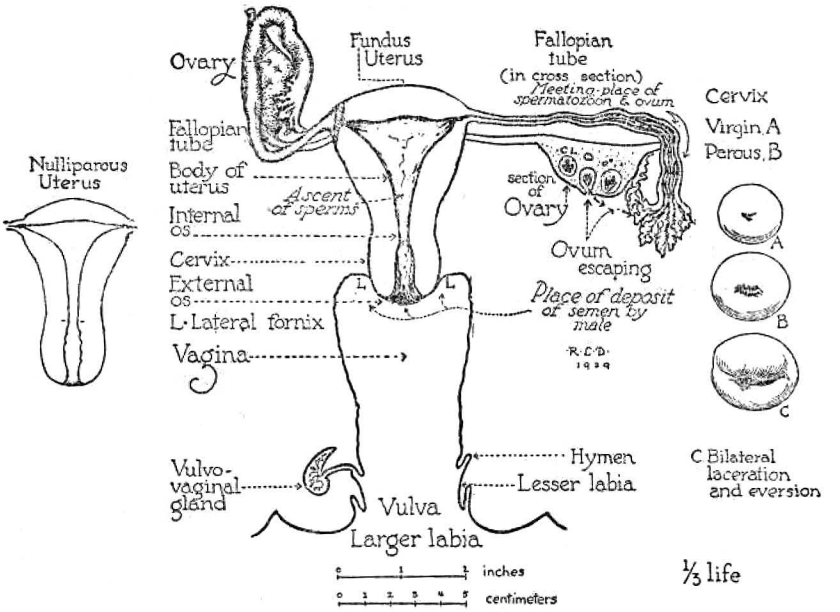
In the presence of *cystocele* or *relaxed vaginal walls* it is desirable to make a trial of the Matrisalus or Duraflex shape of pessary (Figs. 10, 34). This puts an added lift against the anterior wall. A test is easily made by taking the ordinary Smith or Hodge hard rubber pessary, reversing it end for end, and slipping it in. If now the crossbar behind the symphysis effectively prevents the fingertip from passing along the anterior wall, then a pessary of this length may be ordered. Or, as these are somewhat expensive, owing to a limited demand, an effective substitute may receive a tryout in this fashion: A rubber condom is slipped over the ordinary hard rubber pessary with which the test was made, and tied in a knot, with the surplus cut off. This cover can be a bit slack. The surface is so smooth that there is nearly as good lasting quality as with the regular forms, and replacement is easy. Indeed, wherever a doctor familiar with pessary practice lacks one of the vaginal contraceptive devices, this part of his ordinary armamentarium may fill the gap. The upbend of the front bar in this general type of pessary is such that the husband is less likely to encounter it than the rim of the circular forms, shown in Figures 13, 14, 16. The Findley hinged pessary has convenient flexibility for such experimental use (Fig. 22).

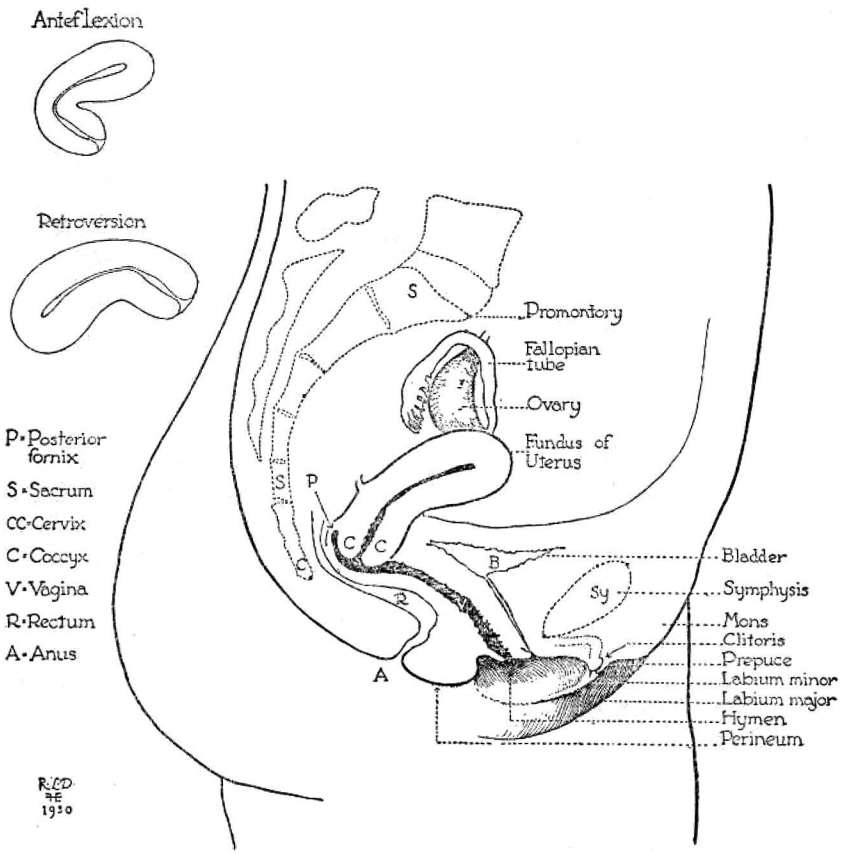
CERVICAL CAPS

The portio vaginalis of the normal adult cervix is about an inch (2.5 cm.) across (Fig. 1). It projects into the vagina a scant half inch (nearly three quarters of an inch [20 mm.] on the posterior aspect, and one quarter inch [7 mm.] on the front aspect). If the portio vaginalis always projected sufficiently and equally on all sides; if it stuck forward always, pointing toward the exit of the vagina, so as to be easily accessible for capping by the woman herself, as is the case with retroversion of the uterus and in cervical anteflexion, as shown on the left side of Figure 1 and in Figure 35; and if the penis were never to impinge upon the cap at a disadvantageous angle, then a good cervical-cap mechanism would always work.

Where these specified conditions exist, good holding is the rule, as well as in cystocele *where vaginal diaphragms will not fit.* A test can readily be made, visualizing the impact, or simulated impact of the penis, with a glass tube which is of the same dimensions as the erect male organ. The rigid cup (Figs. 10, 35) or the soft rubber circle with rubber dome (Figs. 10, 37) is held in place by suction. This pessary, in its various modifications is called the French, Mizpah, Prorace (Stopes) and also 'check pessary'. The Dumas is an intermediate form.

Hard cervix caps are used under the same conditions as the rubber. They are made either of metal (as of aluminum or silver), or of celluloid or other plastic. They have been very popular in Germany and Austria,





Female anatomy concerned in the control of conception.

FIGS. 1 AND 2

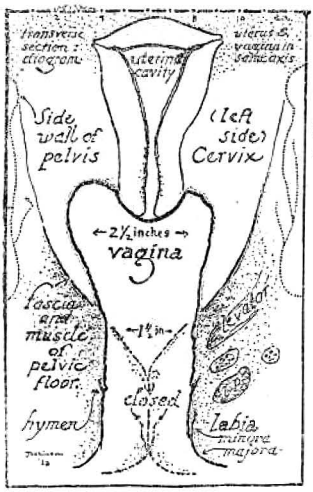


FIG. 3

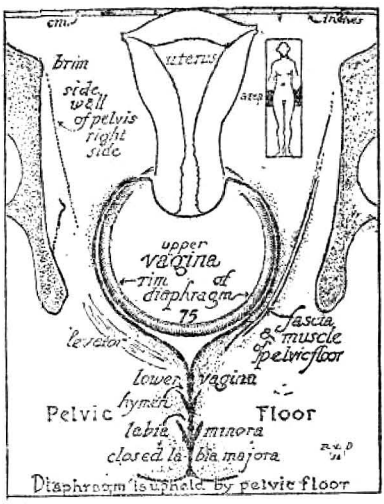


FIG. 4

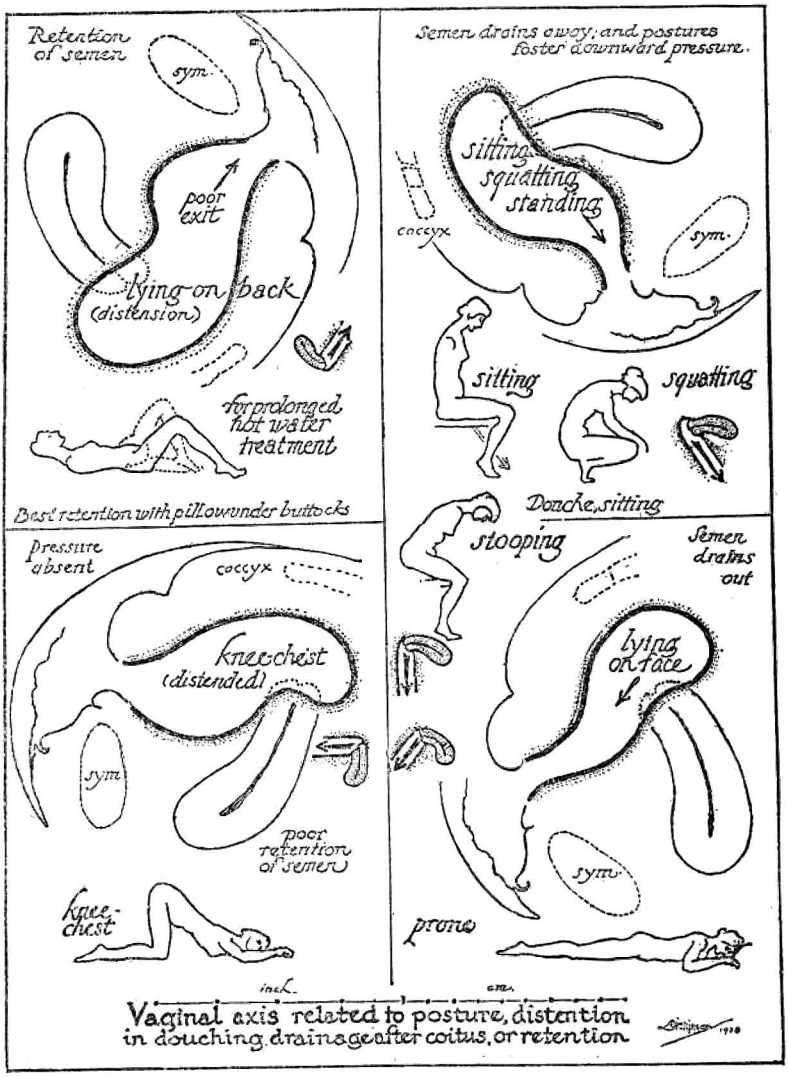
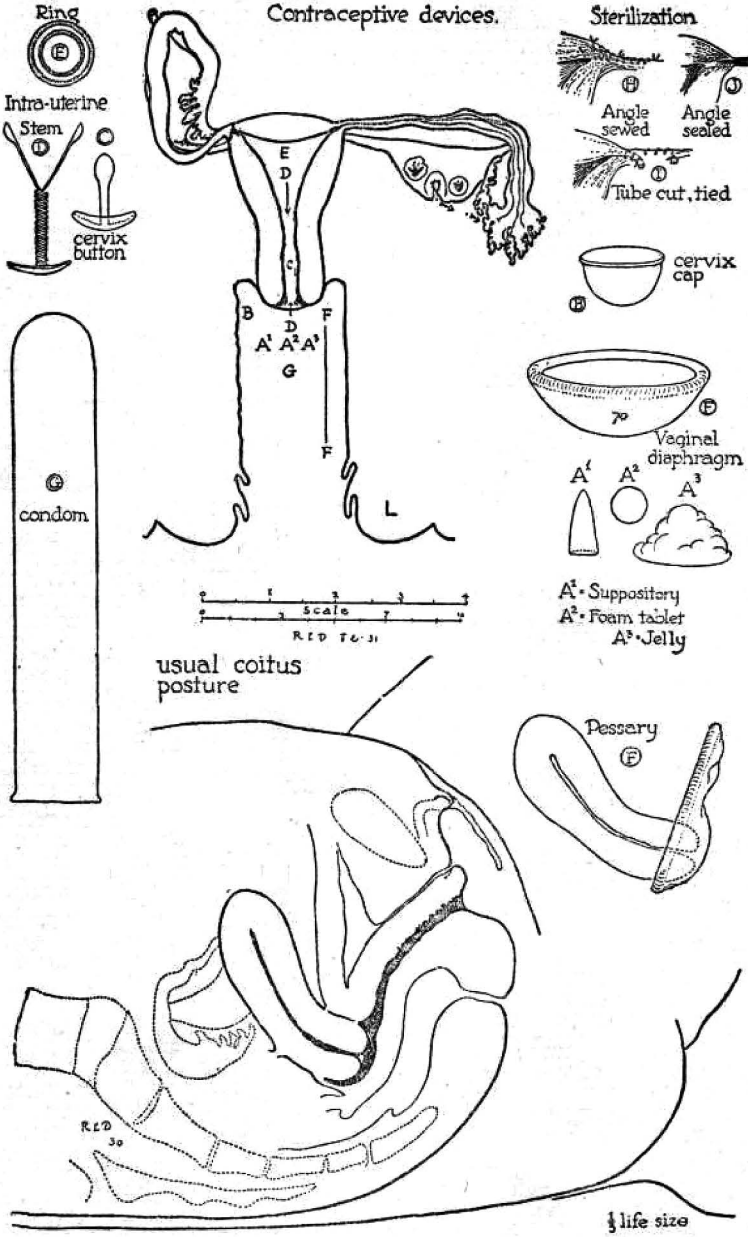


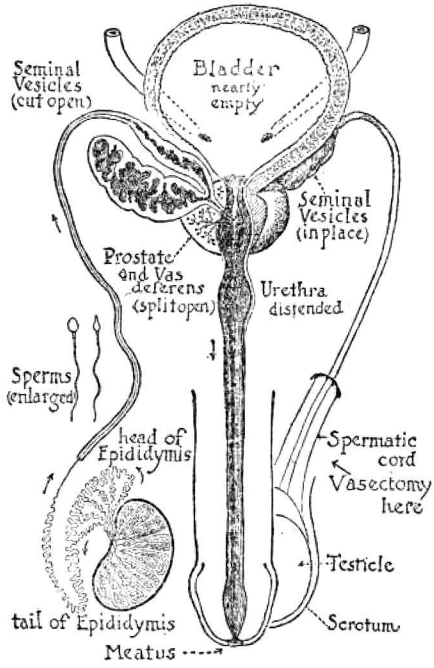
FIG. 5



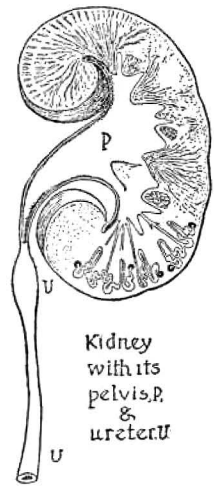
Female anatomy and mechanisms for contraception

FIGS. 6 AND 7

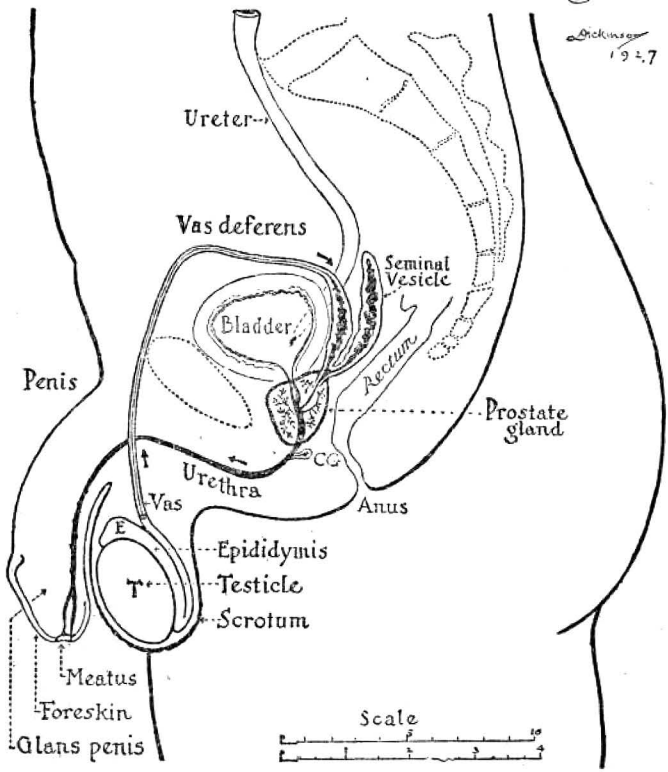
Male genito-urinary system, shown in diagram from front and in median section. Arrows show course of sperms from testicle to meatus. Note the relatively large size of seminal vesicle compared with testicle



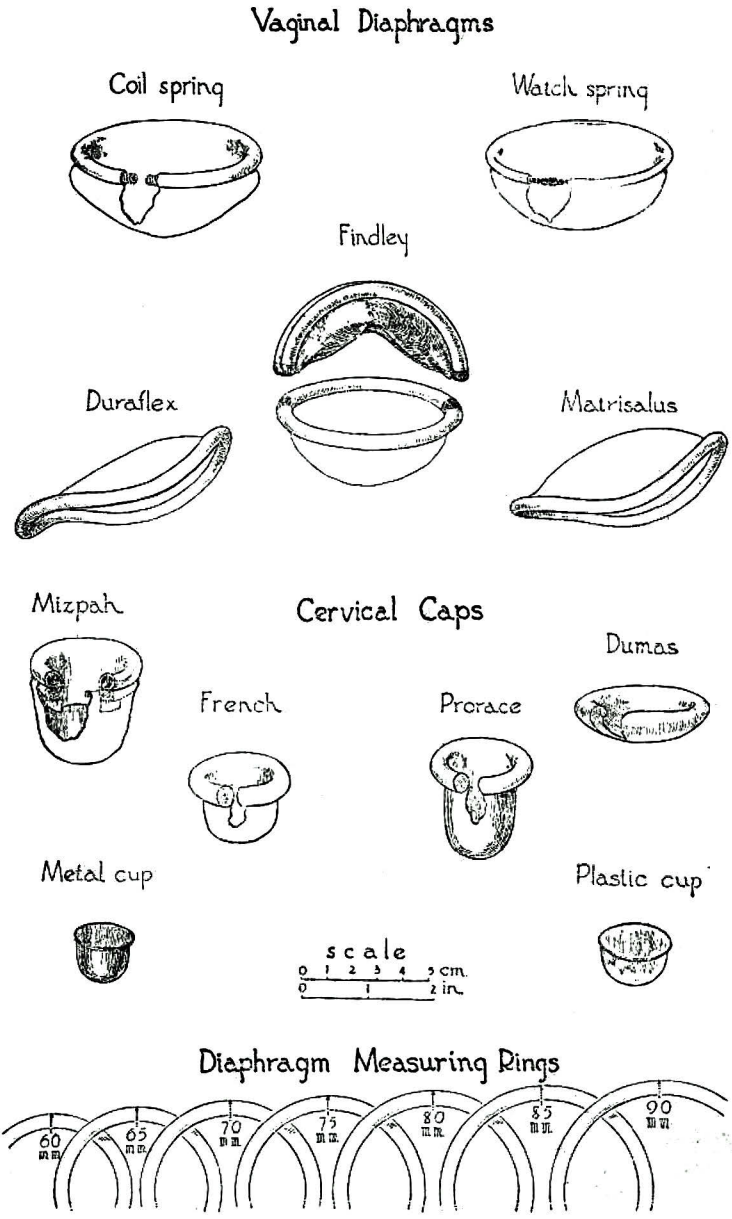
one third life size



Kidney with its pelvis P & ureter U



FIGS. 8 AND 9



Varieties of contraceptive pessaries

Fig. 10

The newer form of rigid cervix cap is of plastic, has broader rim, is more conical and adhesion is around the fornices on the vaginal wall with little cervix contact.

where they have largely supplanted rubber. There is evidence that they have a function in preventing gonococcus infection of the cervix.

A cervix cap may be partly filled with spermicidal jelly to increase the ease of fitting and the resulting total safeguard.

The metal or celluloid cap is carried like a thimble on the finger to insert into the vagina, then turned part way over to slide onto the cervix. For such use, the patient must know her cervix well, and receive instruction by the methods specified below.

Here are examples: A woman suffering as the result of excessive multiparity, stout, with short arms and fingers, was found to have other disqualifications for the diaphragm, a relaxed vagina and pelvic floor. The cervix pointed toward the vulva. Her detailed case record of three years showed regular attendance at the clinic for removal of her metal cervix cap before and placement after the period, with the following consistent finding: The cap contained a half teaspoonful of greyish fluid of a stale odor; there was no reddened line in front or back or on the sides of the cervix or cervico-vaginal junction, no erosion or cervicitis, but a rather marked invagination.

One patient able to identify her low cervix and securely cover it before each sex act, removed the device the next morning.

In one patient, wearing the cap several days at a time, there was seen a faint line on the posterior fornix showing where the edge bore, and a trifling cervicitis.

The longest usage was eight years, with pregnancy as desired when the cap was left off.

The cases that would seem best adapted to wearing the plastic cervix cap steadily between periods are women with healthy cervices who can readily place it themselves and can be trusted to do three things: first, to report often enough during the tryout for the physician to be sure that irritation is not induced; second, to make their own tests of the amount of fluid retained, and of odor; and third, to clean out the contents as often as such tests show the need.

A deep dome *Dumas* (Fig. 10) is liked by a few. The very thin spot effects gentle suction. The rubber circle of the edge of the *Mizpah* (Figs. 10, 38) is rather bulky, owing to the groove which takes the edge of the detachable thin rubber dome. It appears clumsy, but the clinical evidence in its favor offsets its looks. Incidentally, a good deal of weight may well be attached to its enduring popularity in the absence of advertising or much advocacy.

Because the cervix cap is used chiefly for the patient either with a relaxed vagina or with a forward-pointing cervix, the thrust of the penis may impinge little upon it. This is actually the factor which, added to suction, gives it security. If the case appears suitable for it, the above-mentioned test with the glass tube will demonstrate whether or not the penis will dislodge the cap. In the first instance, ample vaginal slack lets the tip of the test tube, and therefore the glans, go by (Fig. 36). In the second instance (Fig. 38) the lateral pocket accommodates the inthrust.

TAMPONS AND SPONGES

Various types of tampon have been used as contraceptives from ancient times. Vaginal barriers can be either in the form of fitted partition or cover such as vaginal diaphragm or cervical cap, or they may be of more primitive form, such as any soft material which blocks the upper vagina. A wad of wool or cotton with or without a thread tied to it for subsequent removal, may be medicated and pushed high up in the passage. This yields a rather simple shield against conception, but it may be shoved aside by the movements of the penis except in the long narrow inelastic type of vagina.

The opposite condition may call for the medicated tampon. This is indicated when the vagina is much too wide or relaxed to hold any ring, or the cervix to retain a cup, and the man refuses to use a condom. Greasy, gummy substances, and other chemicals increase the scope of tampon usefulness, particularly if these substances are spermicidal in harmless concentration, or if they tend to foam. They are held in reserve

temporarily in the meshes of the tampon or sponge and pressed out a little at a time by the penis (Fig. 45).

Whatever chemical is used, it must not irritate the male urethra; otherwise soapsuds would be a good thing with which to impregnate the tampon. Cocoa butter, of which suppositories have long been made, being effective as a smear for the cervix, may possibly be among the best chemical materials for use with tampon or sponge; but it is unpleasant in odor and becomes rancid. Various pastes, creams and jellies for this purpose have been tested, but results are not reported in sufficient numbers and in a sufficient variety of cases to be evaluated. The historical sperm paralyzers, also of uncertain dependability, are vinegar ($\frac{1}{8}$ or $\frac{1}{16}$ kitchen strength), and lemon juice (1 or 2 tablespoonfuls to the quart).

Tampons for use as menstrual guards are on sale rather generally. These may require modification for successful use as contraceptives. Absorbent cotton, when wet, compresses and packs so small as to be less serviceable than the old fashioned "cotton wool" tampon, or the newer wool one, both having the necessary quality of elasticity.

Home-made tampons as contraceptives are frequently soaked in weak vinegar.

FOAM-SPONGE

One of the more recent contraceptive developments within the past few years has been the evolution of foam-sponge methods into form which can be made inexpensively available to masses of population *without the need for examination of the individual patient* by a physician. As this booklet goes to press, there are several of the foam powders available, a foam jelly and a foam paste. Other foam powders and jellies are being developed.

Reports vary widely concerning the degree of protection afforded by this method. There appears general agreement among health officers under whose direction it has been used, that its effectiveness is now between 55 and 95 per cent. Published studies only partially substantiate this. Clinicians who have used both foam-sponge and diaphragm-jelly methods concur that the diaphragm-jelly is more reliable when properly prescribed and used, but that the foam-sponge method is so much simpler and more readily applicable as to possess a wider *range of usefulness* than diaphragms and jelly can have. It is the method adopted by many public health agencies to reach large, rural populations.

Rural acceptance of foam-sponge may become greater than that of diaphragm-jelly or condom-jelly. Reports by nurses in *rural areas* are substantially agreed that 85 per cent of interested women are willing to use this method, and that all but 10 per cent of these will give it a fair trial and continue using it over at least a six months' period. Scanty reports covering over a year lend hope for persistence somewhat greater than that reported for women fitted with diaphragms in clinics. Complaints are occasionally made of burning and irritation. The seriousness of this can not yet be adequately evaluated; it has not resulted in serious objection by sponsoring authorities.

Procedure. The *sponge* to carry the foaming agent may be a disc or flat square of rubber, or a rounded sea sponge, which is softer but more friable. (The transverse diameter of the vagina at the inner end averages $2\frac{1}{2}$ inches, being larger after childbearing than before.) One can cut rubber sponge in a shape like a shallow saucer, but its pliability may allow doubling up. In some instances, when pressed closely to the cervix, it is held by suction (Fig. 45). The process of insertion, and each thrust of the phallus, squeezes foam out of the interstices. The sponge may have more actual utility as reservoir for the contained material than as cervix cap, and the foam more importance in covering the os than as a spermicide.*

The patient is told that, a little while before intercourse, (say not over a half hour) she is to dip the sponge in water, press out most of the water, then sprinkle both sides with powder, or apply paste. Gentle

* A fitted sponge calls for the same patient instruction as a fitted diaphragm.

squeezing starts the foam. With the fingers of one hand the labia are separated; with the fingers of the other hand the sponge is passed in. This is done with as little squeezing as possible so that all the foam one can get into the passage gets there. It is pushed in as deeply as she can reach. The flat rubber sponge is doubled up to insert. The thread can hang out or be tucked inside. The sponge stays in until morning and is pulled out by the thread, the woman squatting and bearing down if it comes easier that way. Some women, finding the thread not needed to withdraw the sponge, cut it off before use.

As sperm in the vagina die after a very few hours, a douche is needed only when the sponge is taken out sooner. When douching (pp. 24, 33, Figs. 39–42), the woman holds the parts around the nozzle to fill the passage and stretch all folds inside, then lets the water gush, repeating this two or three times. The sponge is washed; it should not be boiled. A second intercourse later in the night would better have a second sponge over the first.

CHEMICAL CONTRACEPTIVES

JELLIES, PASTES AND CREAMS

Contraceptive jelly is the general term for the semi-fluid preparations made for deposit in the upper vagina to guard the uterus against the entry of sperms. There are two objectives: First, effectively to *block the opening* into the cervical canal; and second, swiftly to *paralyze the sperms*. Either function can be developed alone, but the usual combination is barrier action by the vehicle and spermicidal action by another chemical. The earlier emphasis was on sperm-killing, but much research now focuses on perfection of barrier action, with speed of spermicidal effect a secondary consideration.

Jellies and creams used without mechanical devices yield relatively high protection, but studies have not proven them fully dependable to block the external os, or to invalidate all sperm. Contraceptive jelly is invaluable as an *additional precaution* (and lubricant) to accompany the mechanical protective device, whether this be pessary or condom. However there is good reason to hope that sufficient research may develop formulas which are dependably effective alone, and which will avoid some of the handicaps of available preparations—even though the nuisance of the use and care and cleaning of some apparatus for placement is involved.

Technique of Application.

The directions concerning the placement of jelly have been needlessly elaborate. Almost all directions make much of exact deposit of half the dose high in the passage beyond the cervix and half nearer the entrance (Fig. 43). This is academic, and moreover the penis is an adequate instrument for the spreading of the material.

Fear has been expressed concerning danger of the injection of jelly within the uterine cavity. This is speculative, because, as shown in Figure 37, it is only with retroversion and a gaping bilateral tear (Fig. 1) that the big tip of the ordinary nozzle could even engage in the cervix, and the jelly can go only part way in. With prolapse or marked relaxation of the vaginal walls, jellies or creams are less effective than in the presence of good muscular tone, and consequent retentive power.

The *average amount* used is an ample teaspoonful (about 5 cc.) injected through a nozzle. This either attaches to the collapsible tube which constitutes the reservoir for the material, or else, in another form, is emptied by means of plunger, bulb or syringe (Fig. 43). An excessive amount may diminish willingness to use the method because of overflow and messiness and undue lubrication, all found least with creams.

Mechanics of Placing Jelly When Used Alone.

Deposit of a teaspoonful of semifluid material about five inches inside the collapsed

cavity of the vulvo-vaginal canal may be effected by one of three sorts of applicators (Fig. 43):

1. Nozzle on supply tube, either separate, screwed on as needed, or else as part of a tube holding a single dose.
2. Long piston syringe, attachable to tube.
3. Bulb syringe, with or without plunger, attachable to supply tube, or drawing from jar.

The dosage is automatically regulated by the size of the interior of the suction apparatus in one case, by a key on the squeezing end of the supply tube on another, and in the other by the whole outfit yielding the single dose.

The single dose outfit involves only decapping and, after intercourse, disposing of the container—a celluloid collapsible tube with nozzle, or else the tube and paper nozzle. Like the condom, it has advantages for the conditions of travel.

With the attached type, care must be taken to see that the supply is carefully capped (Fig. 43) very soon after use in order to prevent drying of that part of the jelly which remains within the nozzle. With the detached types, cleaning the interior of the applicator is required.

Hiding these devices, and their accessibility for quick need are factors. Other things being equal, cost is a large consideration. It will be noted that there are at least six steps involved in protection against conception by jelly.

1. Unscrew top of supply jar or tube.
2. Fill applicator-nozzle (or sponge).
3. Pass nozzle into vagina and discharge contents.
4. Clean device after intercourse (in some types).
5. Cap supply securely (either nozzle or collapsing tube).
6. Conceal in handy spot.

SUPPOSITORIES

For simplicity, no means of protection compares with the suppository. It is unequalled for quickness, compactness, ease of concealment, and freedom from nuisance on completion of intercourse. The suppository is a small solid cone or bolus designed usually to melt at slightly below body temperature. There are three types, the cocoa butter, the glycero-gelatin, and the soap suppository. Boric acid, quinine derivatives, and salicylic acid are the most common ingredients.

It entails no apparatus as jelly does, no place of discard as the condom does, none of the cleaning for the pessary or the re-used condom. But it lacks, to date, good keeping qualities in summer heat, certain and speedy dissolving qualities when pushed into place, and reliable barrier qualities for occluding the cervical os. It has been popular for decades in England, where hot weather temperatures rarely exceed 90°F. (Fig. 44). (An average time to melt at body heat was 7 to 11 minutes, in one series of laboratory tests.)

Clinical studies of effectiveness and acceptibility of present-day suppositories have not been published in the United States. In England, several brands have been approved by the National Family Planning Association.

THE DOUCHE

Among the better conditioned classes in Europe and this country, the vaginal douche is familiar as a contraceptive measure, as well as in the treatment of leucorrhea. In France it is a stock toilet accessory. The effective role of the douche in prevention of conception is mechanical rather than chemical and consists in the removal of the semen. On this account the physical factors are here stressed. Moreover, water itself is a spermicide.

The occurrence of conception despite the use of douches may be due in part to direct ejaculation of sperm into the cervical canal, in part to the high motility of some spermatozoa, and in part to delayed or unskillful flushing of the vagina.

ILLUSTRATIONS of TECHNIQUES OF CONTRACEPTION

THE CONDOM, THE VARIETIES OF DIAPHRAGM AND CERVICAL CAP; FOAM SPONGE, JELLY AND DOUCHING

HALF-TONE ENGRAVINGS, ONE-THIRD LIFE-SIZE DRAWINGS MADE BY

Robert L. Dickinson

AND HIS ASSOCIATES

EMILY FRERET

FRANCES ELWYN, HERBERT HARRIS

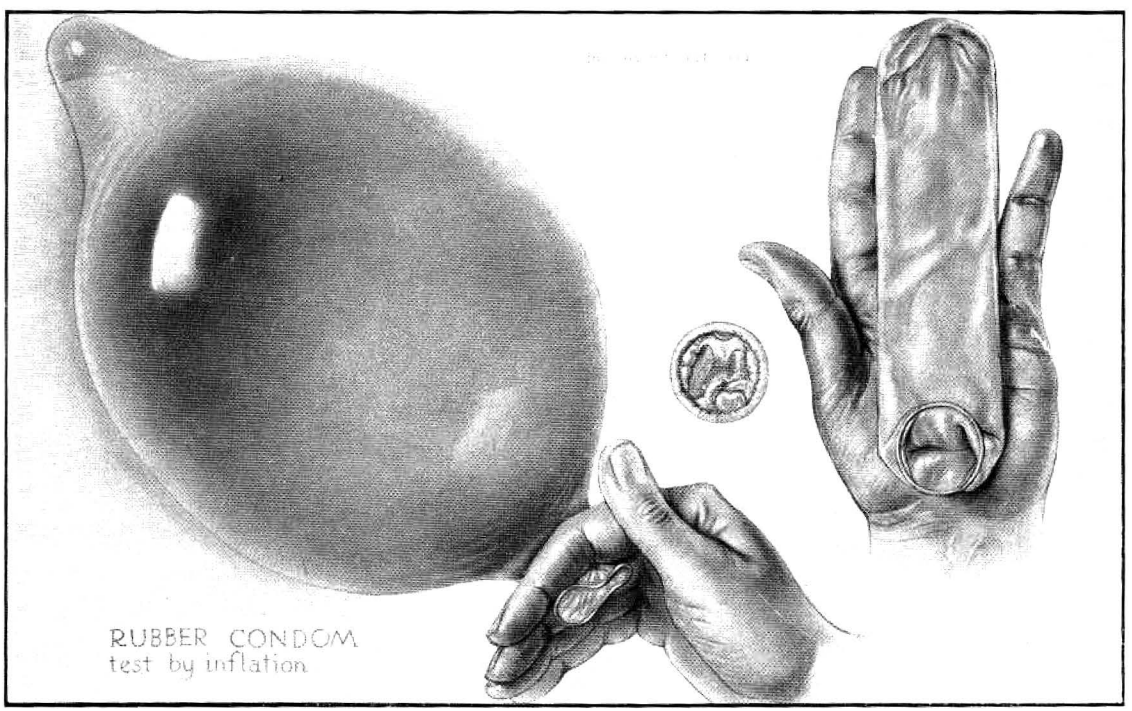


FIG. 11

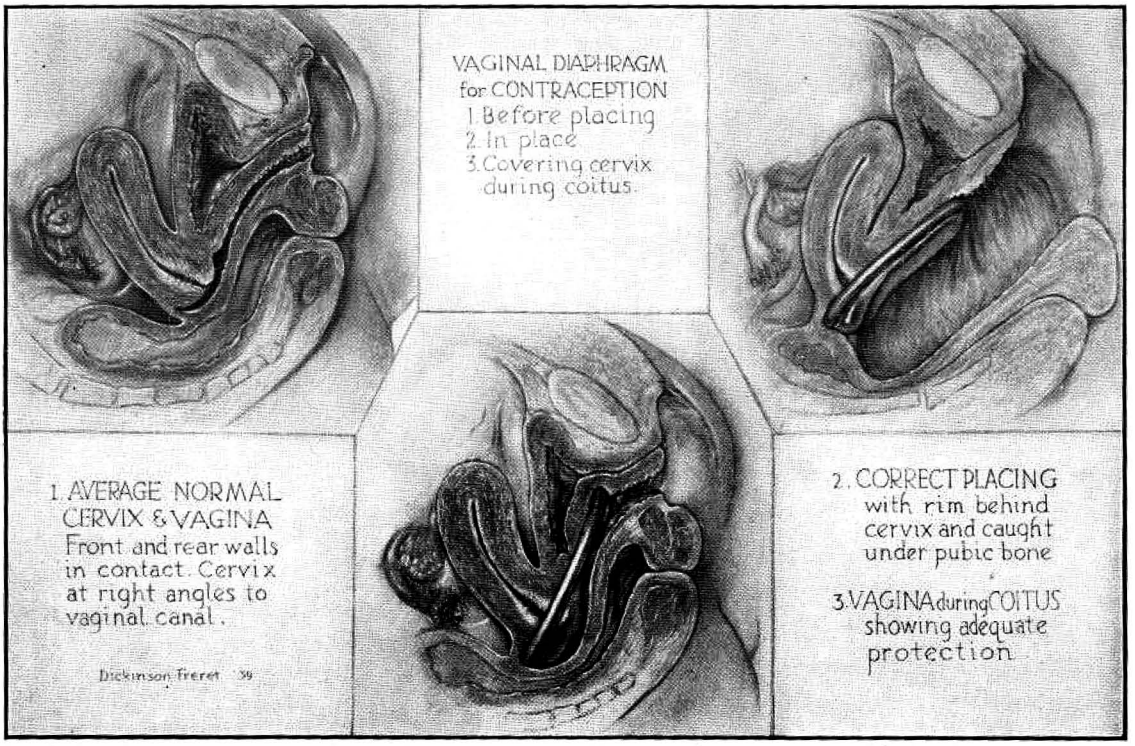


FIG. 12 FIG. 13 FIG. 14

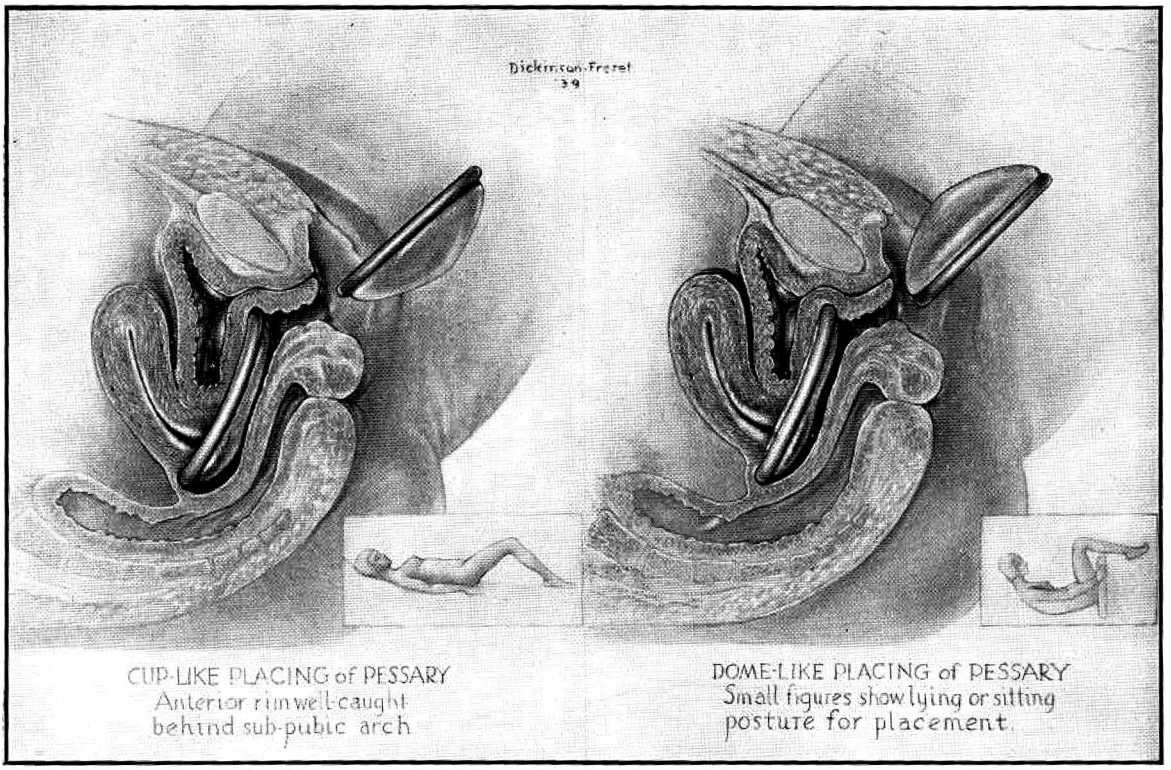


FIG. 15 FIG 16

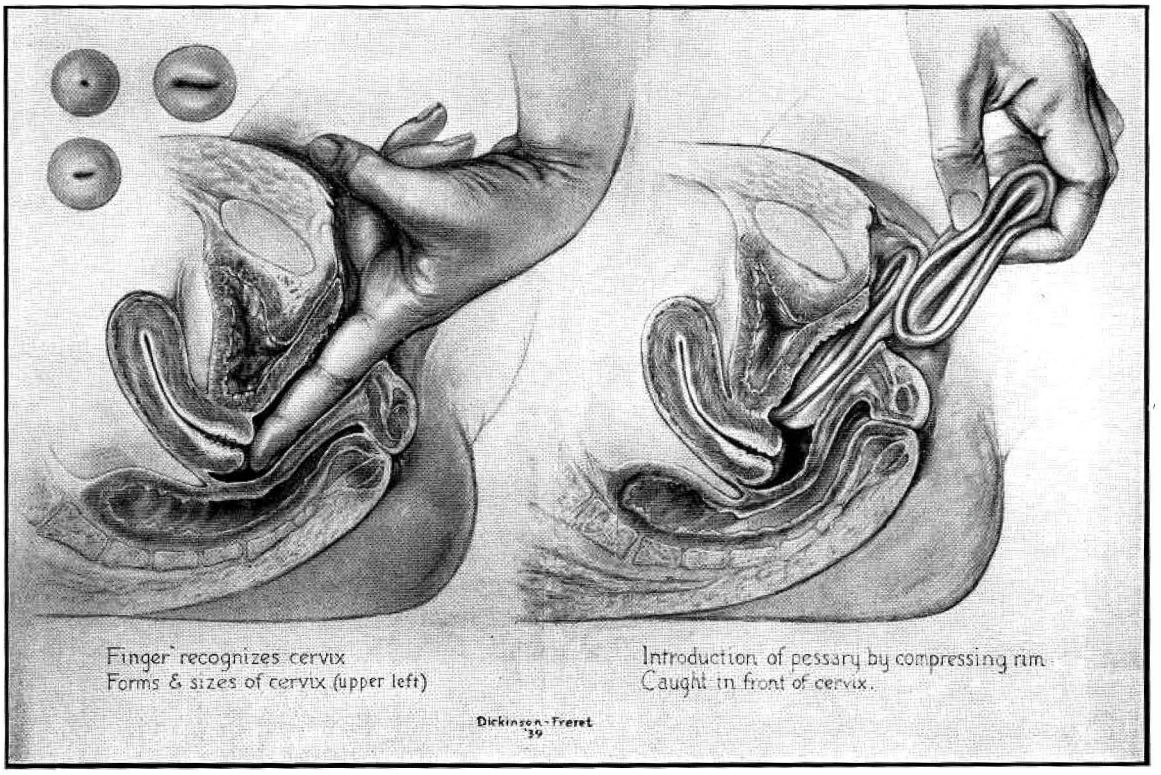


FIG. 17

FIG. 18

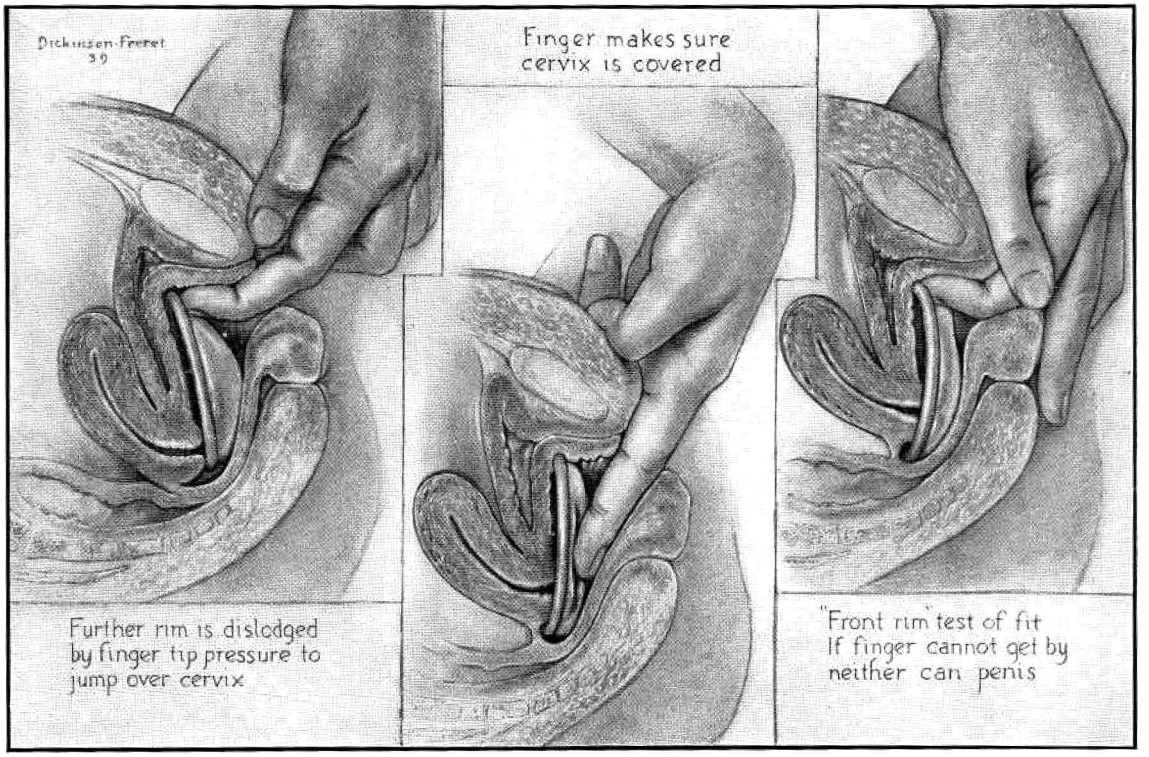


FIG. 19

FIG. 20

FIG. 21

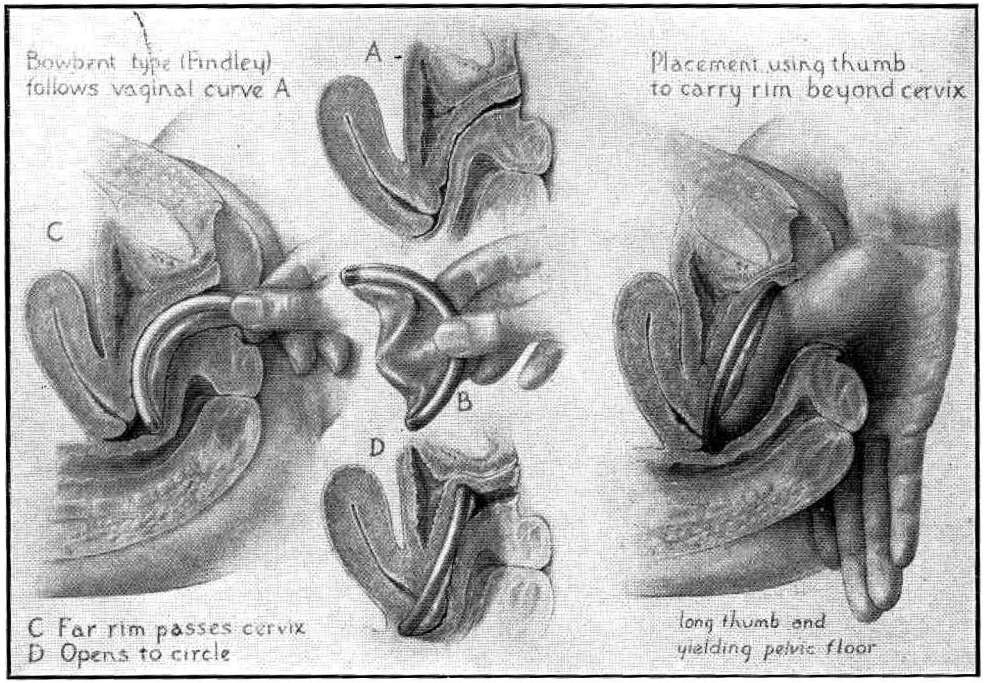


FIG. 22

FIG. 23

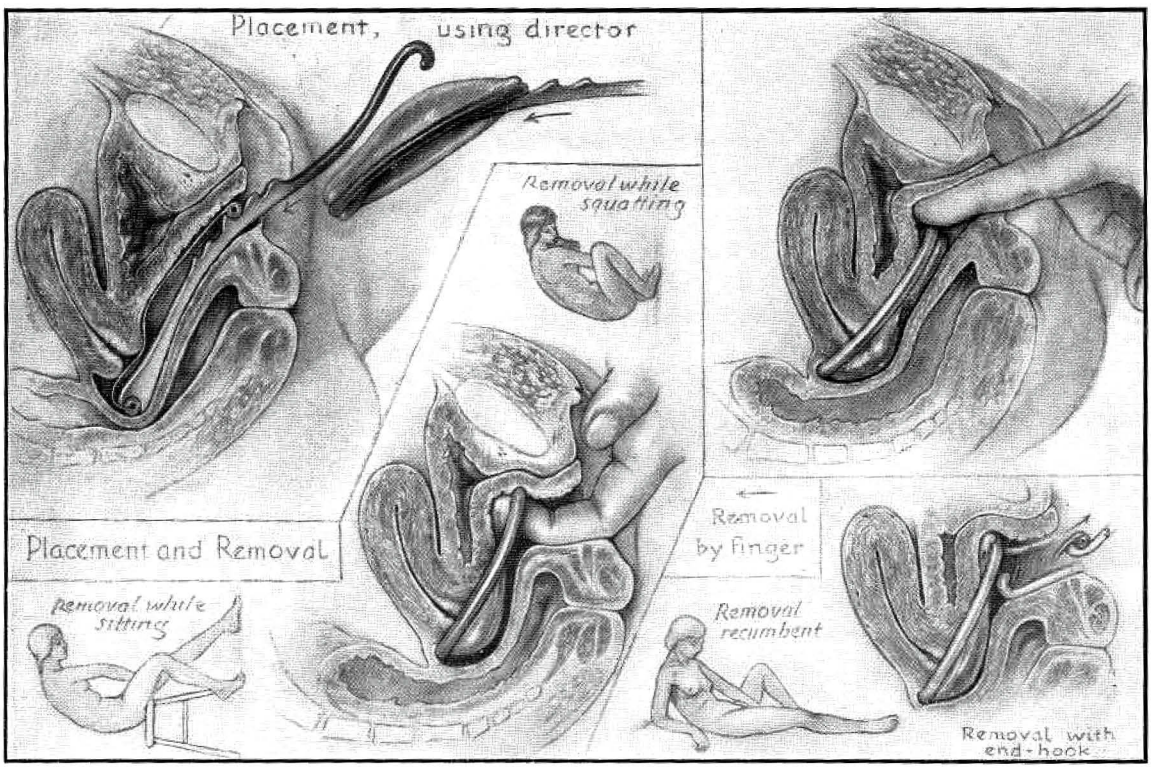


FIG. 24 FIG. 25 FIG. 26 FIG. 27

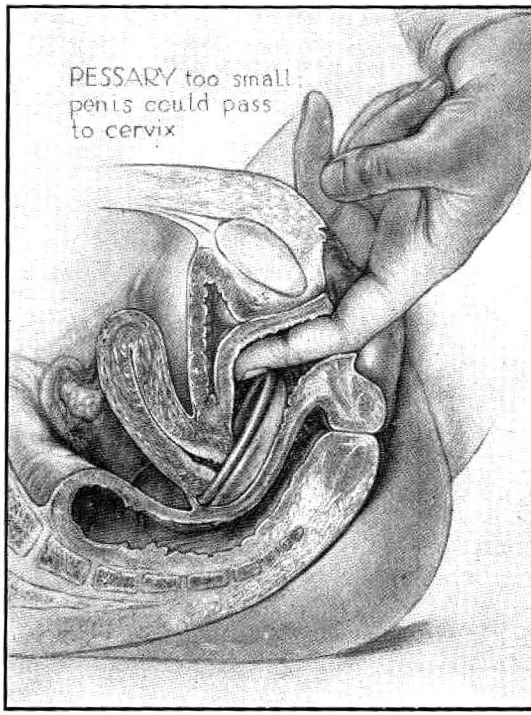


Fig. 28

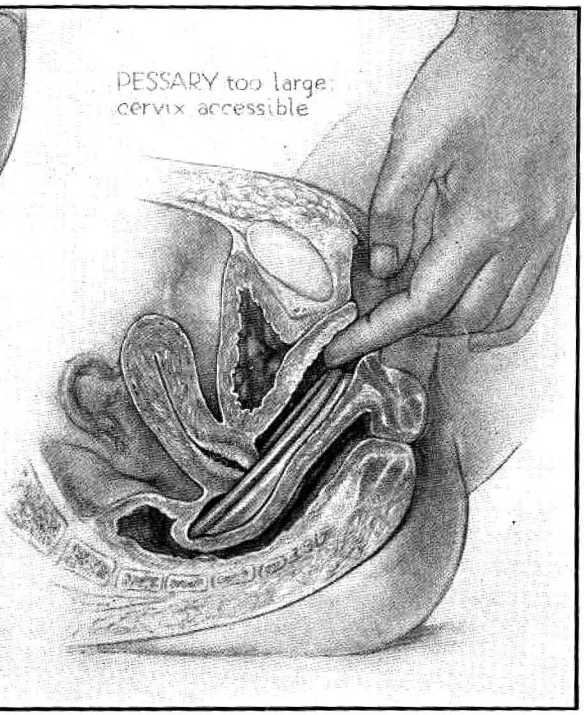


Fig. 29

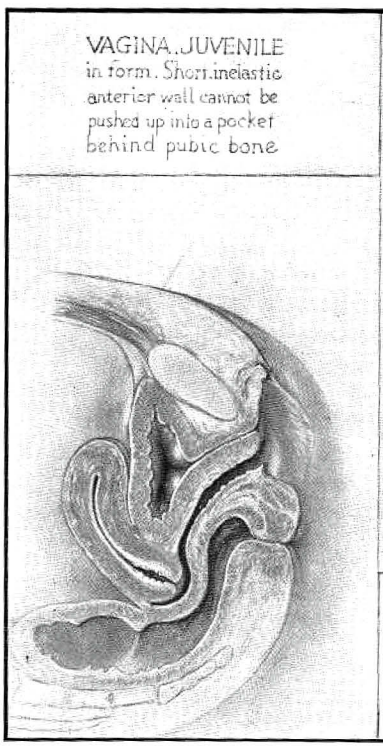


Fig. 30

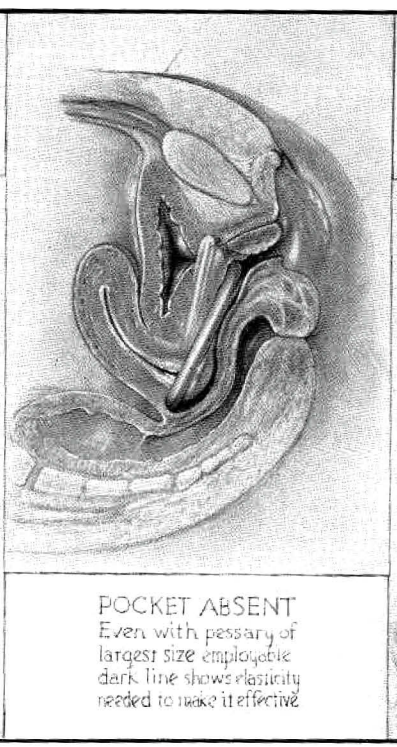


Fig. 31

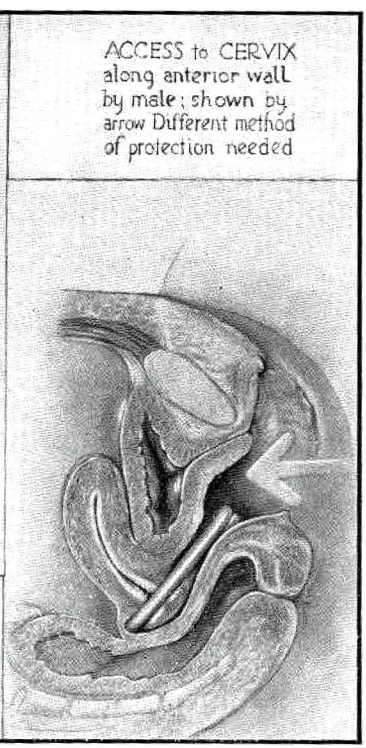


Fig. 32

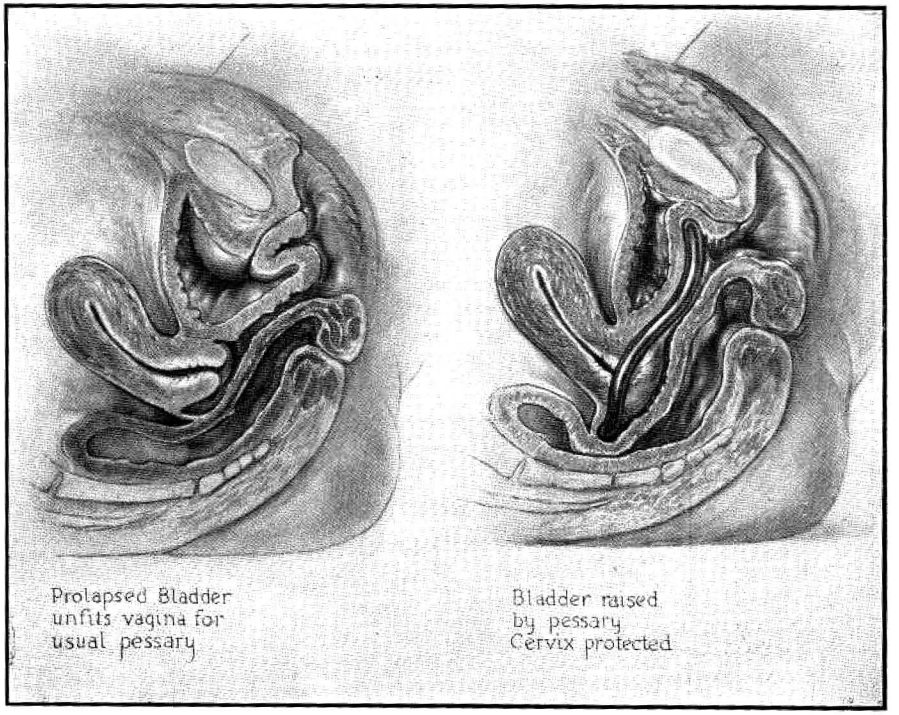


Fig. 33 Fig. 34

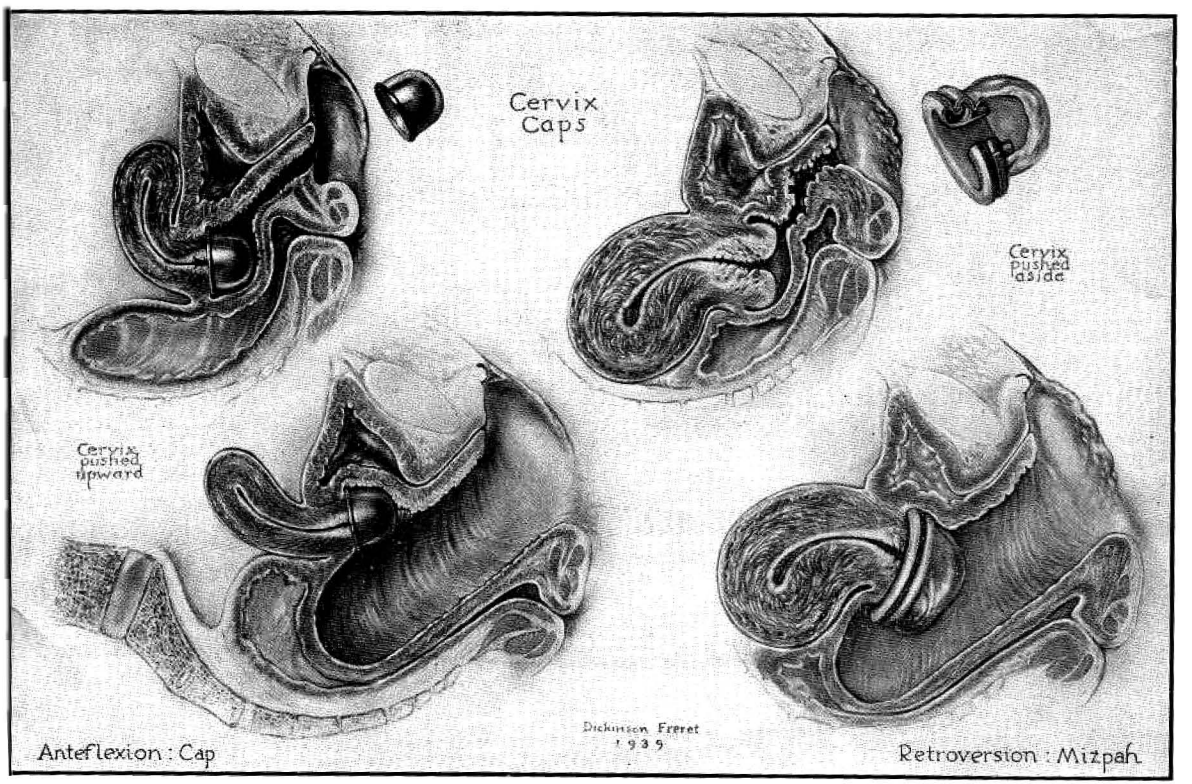


Fig. 35 Fig. 36 Fig. 37 Fig. 38

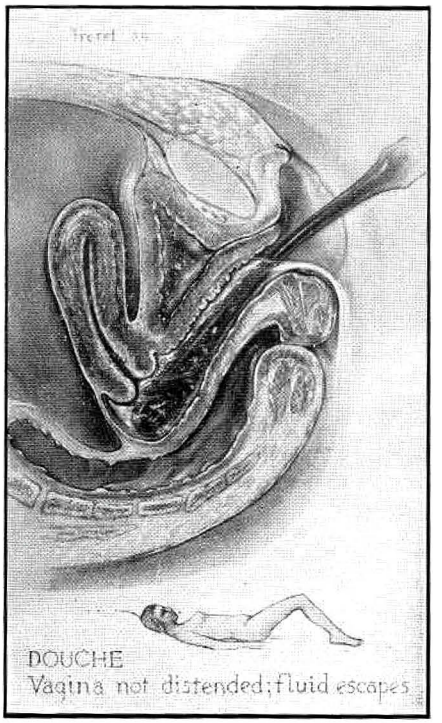


FIG. 39

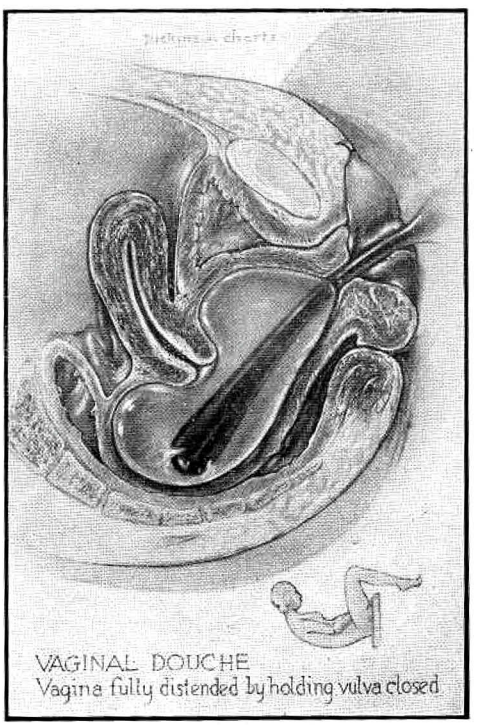


FIG. 40

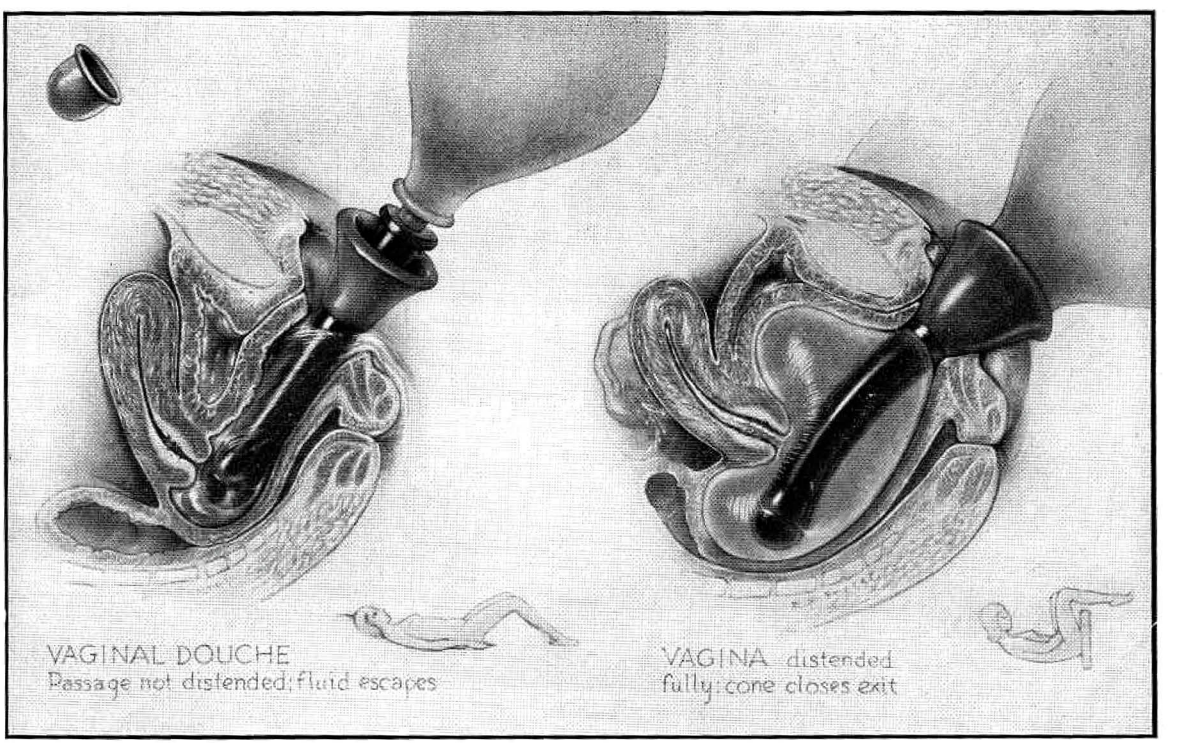


FIG. 41

FIG. 42

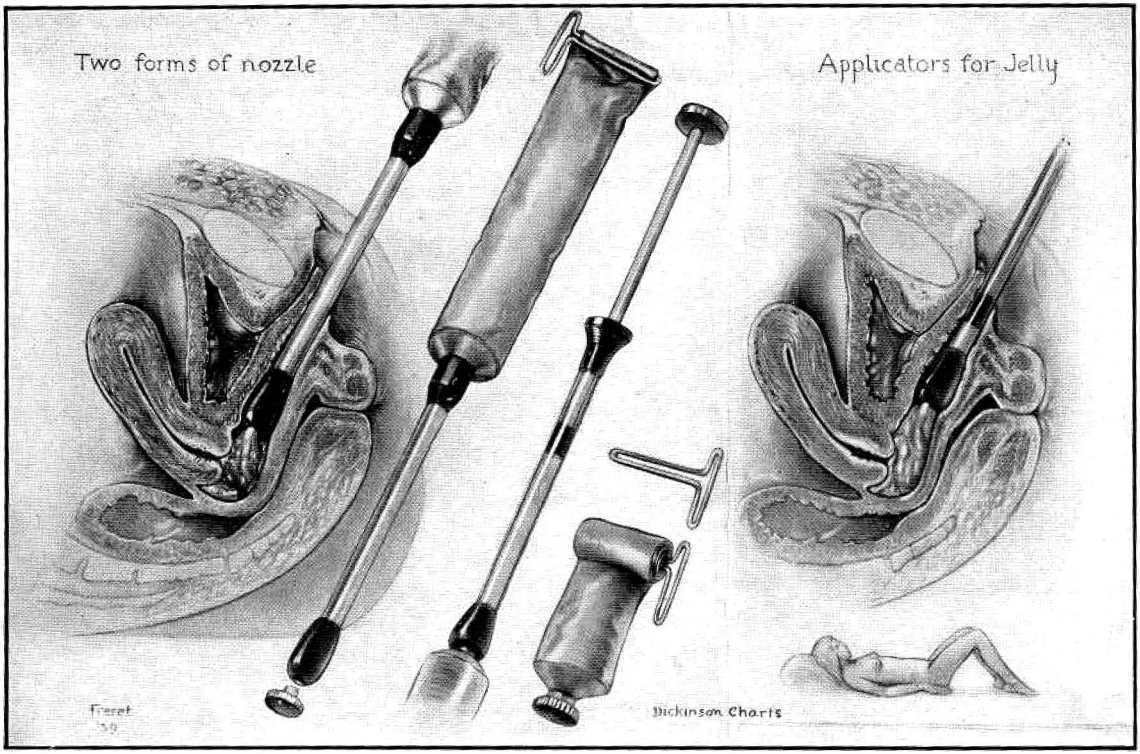


FIG. 43

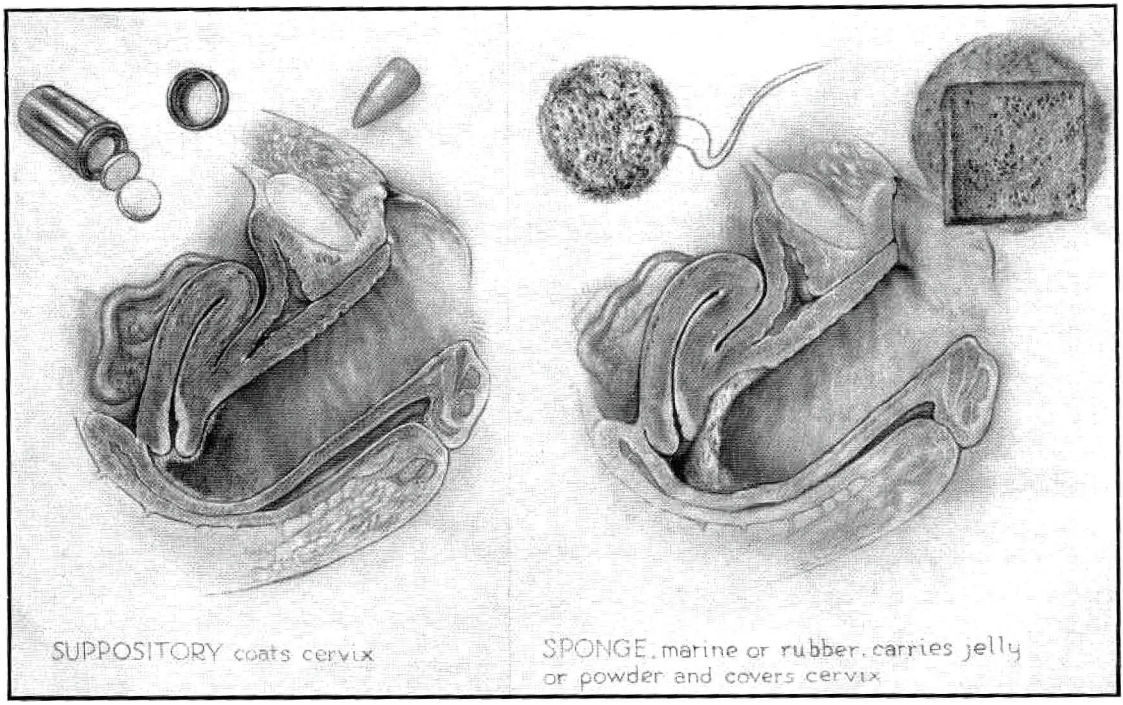


FIG. 44 FIG. 45

As the *rate of travel of spermatozoa* on the glass slide is 3.6 mm. a minute (or one-fourth inch in two minutes), even without accepting the idea of insuck of semen into the cervix during orgasm, hundreds or thousands may enter it. Hence the one essential spermatozoon might be out of reach of the douche stream unless reached within a *couple of minutes* after ejaculation.

But there is uncertainty in reliance on the douche, even if it is used instantly after ejaculation, and is warm and duly medicated and the vagina is adequately distended. The several to-and-fro motions of the glans penis during ejaculation rub sperms into any drop of cervical mucus that may be clinging closely to the external os, or just outside that tiny opening. The douche may not wash this away. At mid-period, the normal mucus is reported *specifically hospitable* to the spermatozoon. Hence this mucus should have been smeared with a spermicide just before coitus, such as jelly or cream. The important place of the douche is as an immediate auxiliary for other methods or as an emergency measure.

Method.

In douching with the woman sitting and even reclining, the fluid may merely flow back along the nozzle (Figs. 39–42), without really clearing the passage. Properly to open up the folds shown in Figures 40 and 42, and to distend the vagina adequately and cleanse all its creases, the outer opening must be held snugly about the nozzle while the fluid is being injected. After the vagina is filled the fluid is allowed to gush out. Closure can be effected by the muscles at the opening if they are active, or by the fingers used to steady the nozzle, or by the cone or shield of rubber sometimes found on nozzles, and usual on vaginal bulb-syringes (Fig. 41). With these precautions the douche can be used effectively to clean the cavity with the woman seated. The reclining posture often recommended for contraceptive douching is not needed. Its field lies in local treatment—as in the prolonged application of heat to inflamed, congested or sensitive areas. The drainage angles are shown in Figure 5.

For use with the fountain syringe there are one-way and two-way douche nozzles with conical shields to close the lower vaginal opening (Figs. 41, 42). A form of thin rubber bag is very portable.

With the bulb-and-nozzle form that carries a sliding soft rubber shoulder, or movable cone on the nozzle, the bulb should be *squeezed by thumb and finger only*, to avoid undue pressure. Forcing fluid into the uterus or beyond, is dangerous. This form has a cap on the tip of the nozzle or on the bulb in order that the bulb can be kept filled and at hand where bathroom conveniences are absent (Fig. 41). A drawback to the device is the difficulty of cleaning the interior of the bulb. An advantage is a pumping action by which mixing or churning together of semen and chemical solution can be effected.

In douching, the water would better not be cold.

Medication.

While complete removal of semen immediately after ejaculation is the main function of the douche, and while plain water as quickly paralyzes spermatozoa as many of the chemicals commonly used, and each minute counts, yet proper medication may increase the effect of irrigation. Strong soap suds are handiest. Vinegar is used, two tablespoonsful to the half pint ($\frac{1}{16}$ kitchen strength) in the bulb. Alum, a level teaspoonful to the quart, is cheap and readily purchased. Citric acid can be employed in the form of lemon juice, one or two tablespoonsful to the quart.

Bichloride of mercury, which is spermicidal in extremely weak solutions (1:10,000, 1:15,000), has been much used, but tablets or concentrated solutions are highly poisonous. Lysol (half teaspoonful to the quart), another favorite in this country, has, like bichloride, caused death when highly concentrated in a douche. Neither need ever be prescribed by a physician.

We lack reports on the effectiveness of the effervescent douche directly from bottles of various acidulated carbonated beverages.

LATHERING

When even douching is not feasible, prompt and gentle scrubbing of the cervix and vagina with soap can be recommended as a far better contraceptive measure than nothing. It has also been shown to have value as protection against infection. This procedure requires no apparatus beyond a glass or basin, and water to which any strong soap suds may be added. Loosened clothing and a complete squatting posture combined with strong downward straining, bring within reach the external os and the far pocket of the vagina back of the cervix. This anatomy is shown in Figure 5, top right, and Figure 1.

The patient should experiment beforehand with sufficient persistence to make sure she can recognize the essential anatomical parts when the critical moment comes. She must be familiar with the feel of the tip of the cervix with its dimple or slit (Fig. 1, top right and Fig. 17) and know she can reach into the recesses of the fornix beyond it.

THE CONDOM

The condom or sheath is the most simple and most *generally available* of any of the more effective birth control measures, mechanical or chemical. Among commercial articles, it is by far the most popular. Practically all have some knowledge of it, if only of its existence. Half of those who come to birth control clinics have used it at one time or another. It is relied upon to furnish about a fifth to a fourth of the desired immunity against pregnancy in the United States. Properly tested, the condom provides protection as efficient as any method, and, skillfully used, *furnishes security*.

The contraceptive clinic has generally questioned or condemned the use of this device. Some form of pessary and jelly is prescribed for over ninety per cent of clinic patients. Barring revolutionary developments in contraceptive research, however, the condom is likely to retain its great hold upon the untutored contraceptor. It ought to enjoy a much more favorable attitude on the part of the clinician. Such an attitude would show, as well, appreciation of the advantage of a variety of methods.

The condom is *suited* to males with good erection; with normal strength of feeling that tolerates a little numbing of sensibility; to the man desirous of taking his share in protection and sure to test before applying—whose wife will act quickly in case there should be a break or slip-off. Indeed, satisfaction can be developed in very many instances where at first the handicap seemed discouraging or not worth the bother of the self-training. Some men with premature ejaculation find the condom increases control and enables them to prolong coitus. In travelling, the factors of simplicity and availability are evident. Where expense is of major importance, ease of cleaning for repeated use brings the cost below that of any other means comparable in security. Whenever there is any suspicion of venereal disease or even a minor genital infection, the condom is in a class by itself for the complete protection it can afford. Some may prefer to use the condom for intercourse during menstruation, although depending on other methods at other times. Some couples elect it because of the assurance given by the evidence immediately after intercourse of the success of the protection. The woman whose previous conditioning renders unpleasant any manipulation of pessary or douche tube may prefer the man to take the responsibility. For the patient who cannot be fitted with a pessary because of local conditions, or for the bride not yet fitted, this is often the most suitable method.

The condom is *not suited* to the selfish man or to the careless one. A husband's inhibition may be due to previous experience, for men do not like to undertake with their wives that which is associated with something they would fain put out of mind, even if it be no more than having heard that the condom is the favored equipment for debauchery and promiscuity. The woman who

says it hurts, and that other methods do not, may not lubricate amply, or else may be putting forward a physical reason to cover a mental inhibition.

The degree of interference with male sensation is a variable of considerable range. In general, skin condoms provide less dampening of feeling than rubber. The modern light weight rubber condom is much less dulling than its heavier predecessors, and proper techniques of application and lubrication minimize interference. Much has been made of the interruption of the love play in order to place the condom, with defect and even defeat of erection. It is possible for this preliminary to be integrated into the love play by having the woman make the placement as a sign of readiness.

It is imperative that the *vulva be lubricated*, either by self-secretion or by a contraceptive jelly or paste. With all condoms lubrication within is also essential. This is preferably by means of a contraceptive jelly. Rubber should not be lubricated with oil or grease-containing substances.

Withdrawal at the conclusion of coitus should precede marked shrinkage of the erection, lest the condom slip off and spill its contents. The man holds the outer end of the condom as he withdraws. Should active coital movement follow his orgasm, there is increased chance of slippage or of leakage of semen from the open end. *Upon removal, a test* is made by squeezing to see that no small hole has developed.

Two Kinds.

As between the two chief materials, rubber and skin, the rubber condom (Fig. 11) is the one that possesses elasticity; it is usually the softer at the very first; is much cheaper; and the ring at its base has some virtue. While strong enough for ordinary service, it is much less strong than the best skin condoms. Rubber clings somewhat as compared with its rival. The skin is more tenuous and forgettable in use than the rubber.

Rubber condoms* have not until recently lasted well particularly in tropical climates. But marked improvements within a decade have given them a life on the shelves of two years and even five. During the past three years, Federal control of quality by the Food and Drug Administration has lifted the standard of the industry to a high point. Skin condoms are higher in price than rubber ones.

The *skin condom* is made from the peritoneal covering of the bowel of animals like the sheep, which have a very long cecal pocket which carries no appendix to constitute a weak spot. These covers are like very thin parchment paper, and are strong and durable, but have no elasticity and cannot readily be rolled up. Except in the perfectly soft and more expensive forms the material may be a little stiff and crackly until lubricated and in use, even after anointing with vaseline or the like, but a jelly lessens the slight stiffness. Wetting has been advocated to soften them before putting on or before entrance, but this may give a degree of clamminess that is distasteful. The tape at the base is not really needed, as a little *care* prevents slipping off. A thin rubber band may replace it.

Selection and Testing by the User.

For maximum security, a condom should be tested after purchase and after cleaning. The simplest test is air-inflation. To inflate the rubber condom, it is suspended so that the body of the condom hangs down and the open ring rests on two fingers which can be brought to the mouth (Fig. 11). It is blown up to a size about 6 x 12 inches and not more. The condom is then held between the observer and a strong light and inspection is made for flaws. Pinholes often appear as white specks, and a suspected portion of any condom may be passed before sensitive areas of the face in order to locate holes.

The *skin condom* may be tested with air, if, upon inflation, the open end is twisted so as to imprison air under slight pressure in the body of the sheath. If in doubt, and it is

* American rubber condoms are almost entirely plain-ended, but the European market often prefers the teat-ended, or catch-pocket (the Fangbeutel), and American producers manufacture them for export

now passed slowly before the face, any hole can be detected. For either type, a water test may be made.

Repeated use. The patient who desires to economize will find that a condom, when given proper care, may be used repeatedly. Either type is adequately cleaned with water or with soap and water, both of which are excellent spermicides, within twenty-four hours after use.

In *washing*, as in *drying* and *powdering*, the condom must be turned inside out. This is accomplished with the wet condom by partial filling with water and then pushing the tip back through the open end. It may be rolled ready for use (Fig. 11) by pulling smooth on two fingers and then rolling out to the tips two or three times. The rubber condom may be left to dry to a point where it may be powdered and rolled, but care should be taken lest it become too dry and its walls adhere tightly together. Such a condition makes a tear very likely, but may often be overcome by soaking again in water.

WITHDRAWAL

COITUS INTERRUPTUS

Withdrawal of the penis just before emission is probably the most primitive method of birth control and the one that is most extensively employed all over the world. Its field and its effects are subjects of much controversy. Its advantages are simplicity and availability at any time or place; the fullest local contacts between the man and woman, untrammelled by any material intervening or interfering; with no need of preparation or equipment and no after care.

As with all birth control methods, withdrawal involves some surrender of gratification for the sake of security. In general it is *suited* to men with complete capacity for holding back until the wife has had full orgasm (or repeated orgasm) yet without undue restriction on activity during coitus and without sequel of nerve strain on either partner. Prolonged coital play without apparatus is preferred by some men to securing maximum exaltation in the final few seconds.

Withdrawal gives *no assurance* of protection (1) with men with quick emission (who constitute at least one in eight); nor (2) with those with any uncertainty as to their staying power; nor (3) with the relatively few unsure of the moment when ejaculation starts; nor (4) with those on whom it imposes considerable conscious strain and tension; nor (5) with the few with whom the mucus of excitement at the meatus contains active spermatozoa. (6) It is not for the couple where the wife cannot reach an orgasm before his exit, (or after his exit); nor (7) for the wife who cannot absolutely trust her husband's control; nor (8) does it suit the few women who believe they are pleasantly aware of the gush of semen in the upper vagina.

Another limitation has to do with the need, in the less expert, to limit action or thrust for fear of emission. Some feel acutely the deprivation due to curtailed stay in the vagina and lessened pleasure in the finish. Thus the disadvantages and somewhat limited utility are evident.

Medical literature shows general, but by no means unanimous, *condemnation* of this method, with reported cases of nervous disorders that ceased on discontinuance, and with wholesale attribution of pelvic congestions and fibroids (and even cancer) to this practice. Urologists are particularly given to censure of it, crediting prostatic enlargement to interrupted coitus (and to the condom), but though challenged, no series of cases, with controls, has been published by them.

A cross-section of European opinion was obtained in 1924–25, by means of a typed questionnaire to which the answers were given at personal interviews. The method is very prevalent in France, particularly among peasants and laborers. Among fifty-nine French medical men of high standing, more than two-thirds considered *coitus interruptus* harmless, or probably harmless.

Two-thirds of the gynecologists so voted, and four-fifths of the fifteen neurologists.

As to *popularity*, all evidence places it first among birth control methods, whether among peasants and laborers or among intellectuals. Mead found it in use in Samoa. Among 837 urban, middle-class patients, Strassmann reports 61 per cent using withdrawal.

The mucus at the male meatus during excitement comes from the urethral glands of Littré, and probably from Cowper's glands also. In a few tests two showed a large number of active spermatozoa, one, a few active. Re-entry after ejaculation outside the vagina may account for some pregnancies, because motile spermatozoa have been found in the urethra one and a half hours after emission. Warning is necessary about re-entry, unless urination has cleared the urethra.

As to successful use among the intelligent, the Davis series shows thirteen per cent of failures. In the Stix series the maximum protection runs as high as 97 per cent. To the clinics, of course, come the individuals who have failed with this and other methods, and in clinics *interruptus* ranks very low as protection.

COITUS RESERVATUS

This means prolonged intercourse accompanied by varied degrees of excitement, with orgasm for the woman but none for the man. He experiences gradual subsidence of feeling. The woman may elect to forego orgasm also. The procedure has been exalted by certain writers as the last word in the art of love under the names of Karessa, Zugassant, Male Continence.

Concerning this practice we possess clinical evidence covering thirty years in a group that grew to three hundred persons. This community was a social-religious experiment, with *reservatus* taught and generally adopted as the standard method of birth control in the presence of plural marriage of every man and every woman, the young being trained in its technique by the older members. Although sex relations averaged two or three hours, every second or third night, yet competent medical and gynecological examination at the end of the experiment revealed no apparent harm among this selected group of people living under favorable circumstances. The fifty-eight children conceived by parents deliberately selected present a level of health and intellect unparalled in any group in eugenic literature. And the group, after return to strict monogamy, is today a distinctly ideal community.

This method has its place for the occasional couple desirous of a studied elaboration of gratification, and may some day develop a wider appeal as a refinement of contraceptive method, but at present most authorities scorn it.

"SAFE PERIOD'

LACTATION

Recent studies of nursing women who are not menstruating suggest a degree of protection far greater than was previously credited, and comparable to that furnished by leading contraceptive methods. Two-thirds of American babies are given partial or complete breast feeding. This fancied safeguard may lead the wife to prolong the nursing to the detriment of the child.

The question whether, after childbirth, return of menstruation is preceded by ovulation, or always accompanies ovulation, lacks adequate answer. We are not able to give positive directions to the woman who wants to depend upon her nursing for protection from conception as long as this is really safe, but who is desirous of starting reliable methods (occlusive-plus-chemical) as soon as needed. For the present, *all who must not run a risk should take due precautions.*

We have learned that in the first three months of lactation, three out of four mothers fail to menstruate; for the whole nursing period, half the mothers will not. In a group of nursing women with fairly reg-

ular cycles, about half the cycles were found through biopsy not to be accompanied by ovulation. While nursing third and later children, the return of menstruation is less early than with first or second children. Exclusive breast feeding provides greater protection than when the baby is fed partly from the bottle. These data yield an approximate estimate of the chance for conception while nursing.

The reliance by certain peoples on lactation for long periods of protection is not evidence, because, with many of these tribes, intercourse during lactation is under religious taboo.

The routine duty of the physician to his patient is therefore clear wherever spacing is an important safeguard of health and strength. Vaginal hyper-involution during lactation may call for an appreciably smaller diaphragm than fits before or after it.

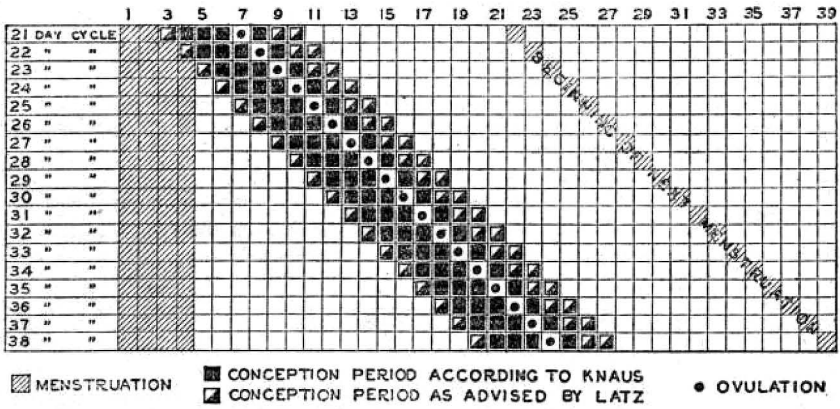


Fig. 46. Conception Periods Ranging from 21 to 38 day Menstrual Cycles (Latz and Reiner, 1935)

THE RHYTHM

By avoidance of intercourse during the very few days in her monthly cycle in which a woman can become pregnant, control of conception is feasible. The difficulty is that there is as yet no convenient calculation or set of symptoms by which those days may be discovered. Conception, judging from long series of histories of isolated coitus, has occurred on every day of the month, *including* during menstruation. In general, the fertile time is the mid-month, and the half-day or so during which the ovum will accept the sperm, falls in the neighborhood of the fourteenth day before the succeeding period, while the spermatozoa may lie in wait two days or less.

There is general agreement that the period of lowest risk of pregnancy is the week preceding the period.

Owing to the *irregularity* of the menstrual cycle, figuring on the fertile time that is to be avoided becomes a complicated calculation, which may prove unreliable without warning at any time in any given case. Four-fifths of all women vary 5 days or more in their cycles, the average range having been found to be 8 or 9 days in a series of studies. Therefore, long and careful observation is imperative before the "safe period" can be estimated for any given woman. According to "The Rhythm," by Leo J. Latz, the simplest form of direction which can be given to a patient is here summarized:

"By keeping . . . records . . . preferably a year . . . of the exact dates and the hour when menstruation began . . . the cycle is determined." "She finds variation from month to month." . . . If she is one woman in five with whom the variation does not exceed 3 to 4 days, 26 to 30, she "is ready to figure when the next period is due. . . . She marks the 30th day on the calendar and then counts back 11 days, then crosses off the 8 days preceding. . . . These 8 days she is fertile. . . . Thus the first 9 days are sterile, the next 8 fertile, the last 11 sterile, . . . Next she figures on a 26 day possibility, counts back 11 days, then 8, and finds another figure by which she is 7 days safe and 12 days fertile, and she avoids

[exposure] those 12 days. She will continue to mark date and hour from month to month" thereafter, and "keep a written record to discover variations." "This is of *very great importance*, [italics his] as cycles may vary." A minor disturbance, like a cold, a passing illness, a journey, fright, an emotional storm, may disturb her cycle, then "if prudent she consults her physician." It is as simple as that, according to Latz (6th ed., 36, 55, 66, 106, 107) who adds, "There is no absolute certainty, of course. . . ."

The several calendars which have been extensively and experimentally marketed may aid some doctors in directing patients (or the individuals themselves), and clinics may try to avail themselves of the method to help those Roman Catholic applicants who insist on conforming to the only birth control method, besides voluntary abstinence, sanctioned for members of this church.

A borrowed diagram is given indicating the variations according to length of cycles (Fig. 46).

ABSTINENCE

In the Davis series of a thousand marriages of intelligent Americans, abstinence was resorted to by eight per cent of the fertile. In another series, 11 per cent abstained for periods longer than a year, largely in illness, or through fear of pregnancy or from ignorance of other means of prevention. Abstinence due to conviction was estimated not to exceed two per cent.

The conflicting claims as to the effect of abstinence, among married people, on nervous system and conjugal happiness and fidelity are matters of opinion, backed as yet by no adequate series of case records. In the close relationships of married life, the effects of continued abstinence may be grave for persons of certain temperaments and sexual endowments.

As a birth control measure for frequent recommendation by the physician, abstinence is *negligible* since it presents a practicable solution only when both husband and wife are in large measure impotent or frigid, or spiritually ascetic.

During enforced abstinence brought about by long illness of one of the partners, avoidance of all erotic stimuli is in order. Exercise and absorbing occupations are called upon at the start of each recurring rhythm of desire.

During pregnancy extensive records show the general practice of coitus up to the latter months, with the wife sometimes particularly stimulated. With gentle men, who will avoid deep thrust and excessive weight on the abdomen, medical direction need forbid entry only in the last month. The physician should determine also whether sex relations in the first three months of pregnancy are likely to cause abortion.

PROLONGED PROTECTION

None of the following is at present recommended to the practising physician:

(A) Intrauterine devices to prevent either access of sperm to ovum, or nidation of fertilized ovum.

(B) Heat to the testicle to arrest spermatogenesis.

(C) Irradiation of ovaries or testes to arrest ovulation or spermatogenesis.

(D) Hormone arrest of ovulation or spermatogenesis.

(E) Parenteral injection of sperm to produce spermatoxins.

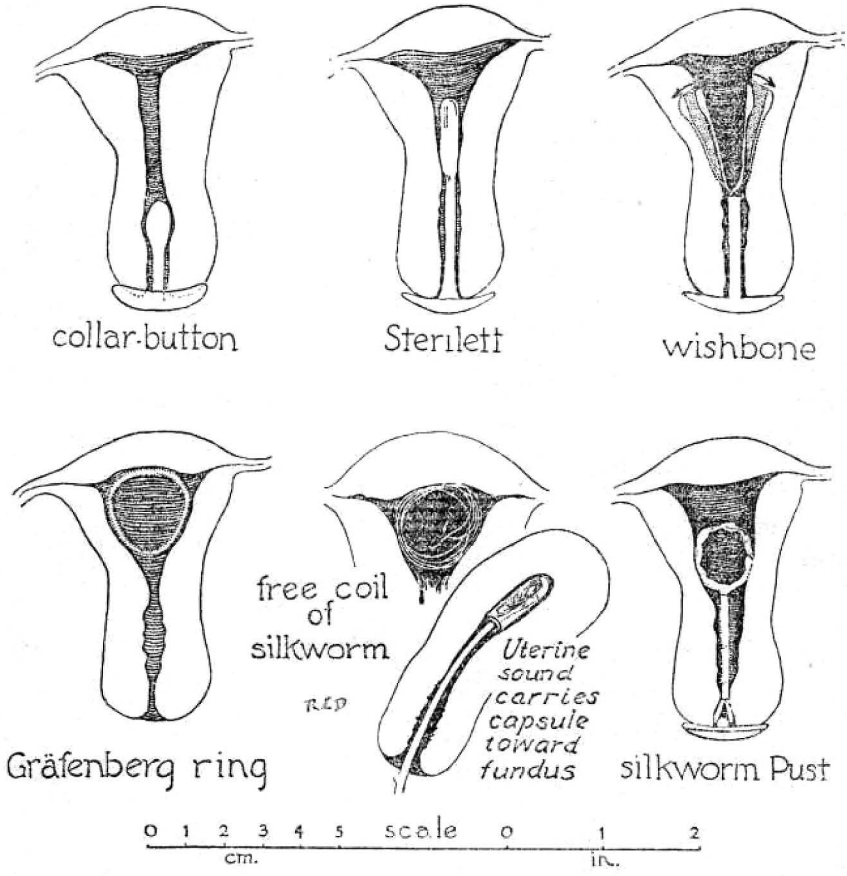
A. INTRAUTERINE STEMS AND RINGS

Stems have been used with a measure of success for over a century, to correct the bend and spasm of anteflexion and for the treatment of sterility. For at least half that time, they have been employed extensively for defeating implantation of the ovum on the uterine wall. The most common type is the Y-shaped device of goldplated wire reaching into the body of the uterus from a disc outside the cervix (Fig. 47). Thus they form a ladder for infection to climb from the vagina past that most effective barrier, the in-

ternal os. Also they stimulate contractions. The hollow and rigid and self-placed forms, and those with sharp edges and strong springs, are mainly responsible for the dozen deaths and over four hundred infections reported in medical literature, sometimes with perforation. The degree of protection appears high, but until serious test and cannot be sanctioned, however desirable a long-continued method of protection may be.

B. HEAT TO THE TESTICLE

Animal experimentation has shown that elevation of temperature by a few degrees arrests manufacture of spermatozoa. With several animals, a half-hour application to



Uterine Stems and Rings

FIG. 47

follow-up are under skilled observers, intrauterine stems merit general condemnation.

The flexible *intrauterine rings* made from a coil of silver wire, or the coil of loose silkworm within the triangular cavity of the body of the uterus, like the spreading stems, fail to shield the very area where nesting of the egg occurs, the middle of the front and rear wall (Fig. 47). Of the silver springs, one in eight escapes, and one in four has to be removed for bleeding or cramp. They

the scrotum of water as hot as the hand can bear interrupts fertility for a considerable period, with full recovery in most instances. The effect is not immediate, as the developed spermatozoa in storage are not injured. Sex responses are not diminished.

If heat to the human testicle can be shown to be harmless and effective, of considerable duration and reasonably consistent in its results, its utility will be very far reaching, because of the sheer simplicity and universal

applicability of such a method. Concerning its use, clinical data are lacking.

C. IRRADIATION

Temporary arrest of ovulation, without loss of sex desire or potency, is feasible in animals by use of X-ray; but extensive experiment must go further to determine whether ova that ripen after return of ovulation develop progeny that show defects. Records of women who have had radium or X-ray treatment at such times as they were *not* pregnant, and who later bore children, show that there is no increase over the average frequency of defects in the children, so far as they have been watched; but irradiation *during* pregnancy damages the fetus so often that in at least a third of the reported cases a grossly deformed or markedly defective child is born. At least with any patient recently exposed to conception, curetting should therefore *precede* every considerable irradiation of the pelvic region or lower abdomen. This does not apply to brief X-ray exposures for taking diagnostic films.

A principal drawback to inducing temporary sterility with X-ray is uncertainty of the duration of amenorrhea and anovulation. In attempting a six or nine months' arrest, one or both may be checked permanently. Moreover, in a fourth of the radium arrests of periods there are troublesome menopause disturbances, particularly in younger women. Sex feeling is rarely diminished.

The effect of X-ray upon the internal secretions of either male or female gonads is, to date, insufficiently understood for this to be recommended as a contraceptive measure. The *special field* of arrest of ovulation by X-ray or radium is with patients with uterine bleeding adapted to this treatment, such as those over 35 years of age, who are poor operative risks (tuberculous, cardiac), or women with chronic metritis or uterine arteriosclerosis, or with small fibroids that are not submucous.

To irradiate the testicle is a dangerous procedure.

D. HORMONES

Can hormones or other extracts induce temporary cessation of ovulation or defeat implantation of the fertilized ovum?

The first ovulation at puberty is brought about by the influence of the maturity-inducing factor of the anterior hypophysis. Succeeding ovulations are presumably due to the full ripening of growing follicles but appear to be likewise influenced by the hormone produced by the anterior pituitary. Too great an action of the anterior pituitary lobe produces an immobile condition, of a static condition, in the ovary, showing itself by excessive luteinization of those follicles which do not rupture, and in the center of which a degenerating ovum can be noted.

It is as yet too early to state whether this anterior lobe action can be dependably utilized to prevent conception or produce sterility. It has been determined that such luteinization brings about a cessation of the menses in the human female, the uterus remaining in a state of premenstrual (pregravid) excitation. It therefore seems unlikely that this action can be utilized therapeutically without causing symptoms and harm. An analogous condition which occurs spontaneously is noted in the cow and is known by breeders as "dumb rut."

A hormone administered with the idea of handicapping implantation might not be open to the above objections, and may be our most promising outlook.

Several hormones are known which may prevent pregnancy, but present knowledge of them does not justify using them for this purpose.

E. SPERM IMMUNITY—SPERMATOXINS

By spermatoxins are meant immune substances (antibodies) which react with spermatozoa to invalidate them, and which have appeared in response to immunization with spermatozoa or their components. Possible influences of injections of endocrine products on fertility are not to be considered under

or at removal of ovarian tumor or fixed distended tube, or of uterine fibroids in myomectomy. The American sterilizations done under statutory codes in 28 states, cover over 35,000 cases with excellent results. They are mostly done by neurologists in state hospitals. Such operations in Germany are vastly more numerous.

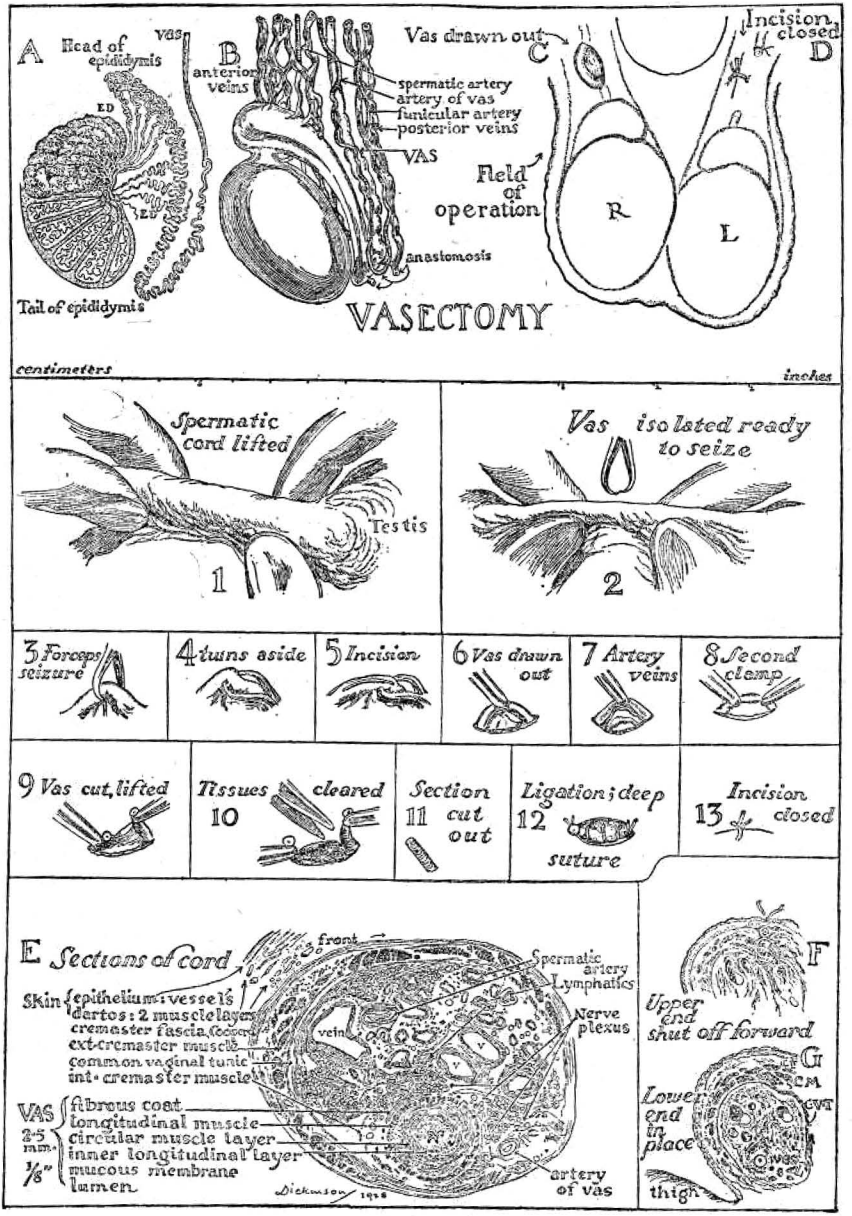


FIG. 48. VASECTOMY, STEP BY STEP

The abdomen is opened by a small incision. This may run transversely through skin and fascia for the sake of the stronger scar, and for the sake of appearance. The pictures (Fig. 49) show processes. The simplest is double ligation and section (Pomeroy) or loop-crushing with ligation (Madelener). The most complicated has been popular here, excision of the wedge at the cornu. Re-establishment of the canal for passage of the

ovum seems to occur only about half as often following wedge excision as in procedures in less vascular areas. An intermediate process is cutting out a section and burying of the broad ligament or in the inguinal canal with the same idea of freeing it later. Tying and crushing of the tube is feasible through a vaginal incision.

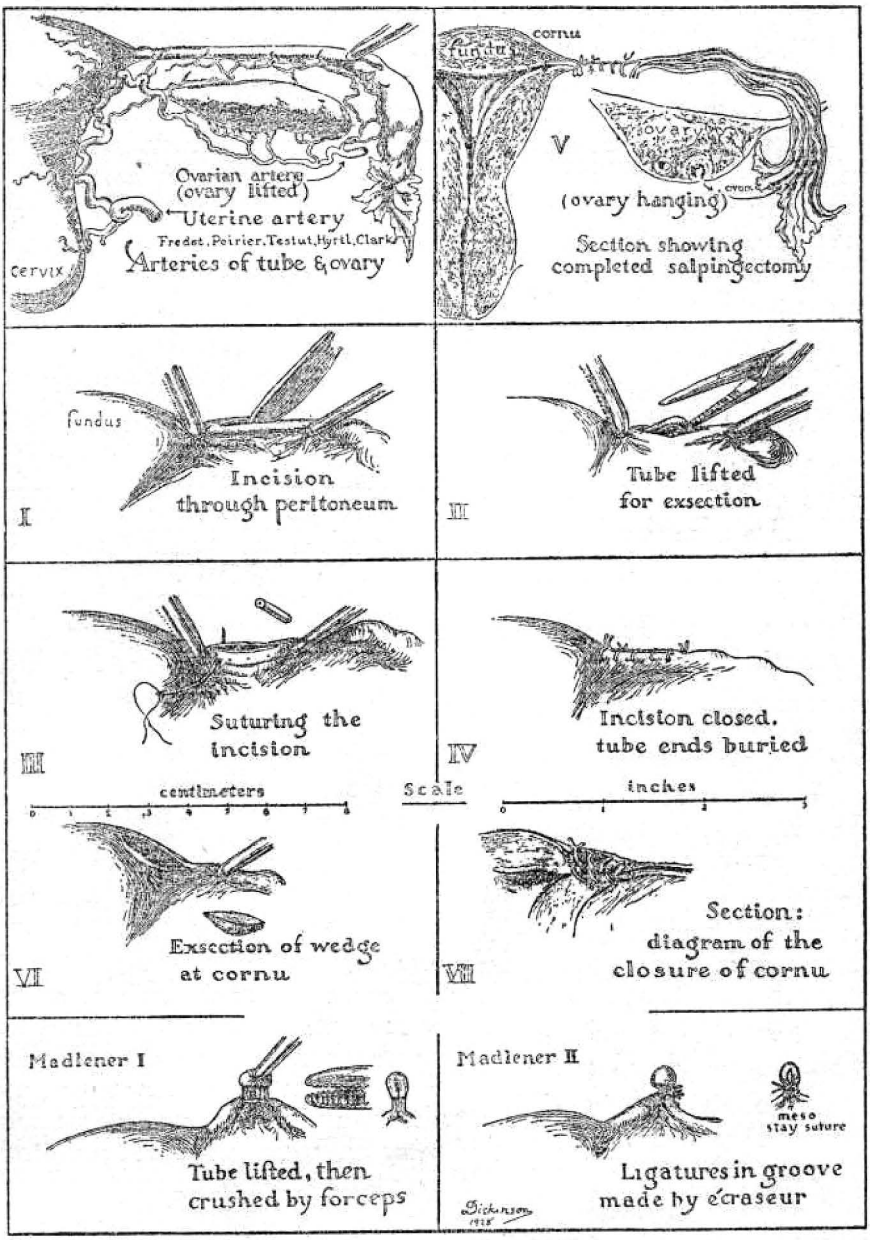


FIG. 49. SALPINGECTOMY, VARIOUS METHODS

the ends in the broad ligament. The severed inner end of the tube has also been buried in the uterine wall with the idea of reimplanting it in the uterus if desired later. The fimbriated end has also been buried in the folds

When pregnancy has to be interrupted, some operators, instead of curretting, open the abdomen, incise and clean out the uterus and resect the tubes. At the third or fourth month of pregnancy, this is swift and clean

surgery, as compared with the attack from below with its difficult dilation of the cervix, and the bloody pulling out of succulent placenta with curette and blunt forceps from a uterus with flabby and sometimes dangerously thin walls. Rarely can the cervix dilation be sufficient to admit the finger, unless abortion is well under way.

CAUTERY STRICTURE

Stricture at the uterine opening of the tube, effected through cervico-vaginal approach, is an office procedure simpler than vasectomy. Local anesthesia suffices, and there is no lay-off from activity. A sufficient burn applied at the tip of the minute funnel where the tube starts (Fig. 1) results in a slough that ends in a circular scar that ultimately contracts firmly to shut off the opening (Fig. 6, Top, right). A probe tipped with corroding chemical must remain in place long enough to produce damage (a time not yet determined); or the stricture is produced by a burn done with a platinum-tipped sound heated by electric current; or the same result is brought about by fulguration or electrocoagulation at the cornu. Subsequent test of the tube by air or gas makes sure that the closure has been complete and remains effective. This procedure has met almost no acceptance. Its unpopularity may be due chiefly to difficulty in visualizing the area by hysteroscope or fluoroscope.

To *reopen tubes* has heretofore involved abdominal operation as troublesome as closure, or more complex. Even freeing ovaries or outer tube-ends buried at the first operation calls for a new abdominal section. On the other hand, in most tubal ligation or resections the wall is so thin that insufflation should be able to reopen it. If this is fully confirmed, it would make a stronger case for the Pomeroy or Madelener procedure.

INDICATIONS FOR CONTRACEPTION

The reasons calling for instruction in contraception can be stated in outline as follows:

I. Marriage
II. Spacing of children
III. Health and well-being of mother
IV. Health and well-rearing of children
V. Prevention of illness or invalidism
VI. Hereditable disorder of certain degrees
VII. Active stages of certain diseases
VIII. Chronic disorders

Economic and Social Factors.

Contributing factors in the general health picture are age, numbers of living children, the physical and mental condition of the husband, housing, occupation and other social and economic features indissolubly bound up with the purely medical consideration. Indeed, *economic indications are medical indications*. Infant mortality and later deaths, not to mention morbidity rates, are significantly higher where income is low. Items entered in clinical records show that on the average at birth control clinics the applicants have had 2.64 pregnancies. Incomes are low, many patients being on the border line of dependency, and recruited from the ranks of unskilled labor. A large proportion of the mothers are gainfully employed outside the home.

The parents who cannot expect to give a child its birthright of physical and mental well-being, and wholesome rearing, cannot contemplate a pregnancy without suffering. The anxiety thus induced is among the most real of ailments, bringing in its train not only mental disorders, but often physical as well, through the upsetting of the nervous balance. Anxiety may bring about functional heart conditions, digestive upsets, which if continued long enough, may pave the way for organic changes.

Spacing.

When the interval between births is too short to allow a complete recovery of the mother and a complete lactation period for the child, the infant death rates tell the

story. Thus three babies die who are born a year after the previous child, for every two who die when the interval is two years.

When babies come too close together, the first as well as the second suffers. Thus when a new baby is started before the first baby is a year old, three times as many die as would be expected from the effect of all the other factors applying to that particular baby. This is in part due to the interrupted nursing, but also appears to be due to the loss of care suffered because of the mother's energy being drained by a new pregnancy.

Prematurity is twice as frequent when the interval is under two years, and premature infants die far more frequently than those born at term. The neonatal mortality rate from this cause in 1940 was 13.7 per thousand live births.

Except for stillbirths, which are highest at the first pregnancy, all prenatal deaths increase steadily with the number of pregnancies.

The greatest hazard to the life of a child is the loss of the mother. Anything that saves the mother's life affects favorably the health of her children, not only the baby just born but all still needing the mother's care. Four to five times as many babies die when the mother does not survive their first year, and this risk is increased to seven times when she dies in the first few days after childbirth. Deaths among older children, especially up to five years, are higher if the mother dies. After the second pregnancy there are six times as many failures to carry through to term as in the first pregnancy and four times as many failures as in the second.

This points to an optimum, under present living conditions of average American parents, of not more than three or four children. These they will plan to have at intervals of never less than two years apart, for the sake of mother and children; but not at intervals much longer than three years, lest the children lack companions near their own ages, and the mother be worn out with long attachment to a nursery life.

CONTROL OF STERILITY

Relief of sterility is a service increasingly offered by birth control centers. About ten per cent of marriages are unfruitful. Meaker lists nine major classifications of causes, with female local factors most important, female and male constitutional factors next, and male local factors least. He points out that in apparent sterility, multiple factors are nearly always present, their summation rather than single factors constituting the cause. For instance, infertility tends to increase with age-increases from the "late twenties." Hence physicians should study and treat the sterile mating.

Investigation and treatment are to be guarded by a general medical plan. The *first step* is semen examination with the newer technique. Urological and gynecological study will follow, and possibly investigation of endocrines. Female hypoplasia, closure of tubes, cervical pathology and possible low metabolic rate are always to be kept in mind.

For successful treatment in most cases, all abnormal factors do not have to be removed. But for a maximum of successes, all should be attacked. Common sense based on findings will determine the order of attack. For instance, the diagnostic transuterine insufflation of gas is followed by conception in about ten per cent of unselected infertile couples; other steps may therefore often be postponed for two months.

In sterility, as in other fields, *prevention* is to date inadequately emphasized by the medical practitioner. Delay in child-bearing, and delay in undertaking treatment for infertility, appear to head the preventable factors. Others are early recognition of genital hypoplasia, faulty sex hygiene, venereal disease, and improper therapeutic measures (especially curettage).

HOSPITAL.

The first thing needed in a hospital contraceptive service is to have the general medical staff fully informed and convinced of the importance of giving it their full cooperation, should check up references from various de partments and call attention to particula cases that have been missed. For example in one large gynecological department, the clinic chief makes a point of protesting to the

TABLE 3.—SET-UP FOR BIRTH CONTROL CLINIC

MINIMUM	MEDIUM	MAXIMUM
1. Waiting space hallway or general waiting room	1. Waiting room	1. Waiting room with creche access to toilet
2. History room and examining room in one	2. History room	2. Two history rooms, sound proof
3. Chair behind curtain for dressing	3. Screen or curtain for dressing	3. Two dressing booths close to each examining room
4. Access to toilet	4. Examining room	4. Two or more examinin rooms
	5. Running water	5. Toilet
	6. Toilet	6. All walls sound proof
Wash basin	Same as minimum; pelvic model for teaching	Wash basin
Examining table		Examining table
Instrument table		Instrument cabinet or table
Sterilizer		Sterilizer
Floor lamp		Floor lamp and
Gloves		Headlight
Fitting rings		Gloves
Sample pessaries and jellies		Assorted pessaries and jellie
Medicaments, etc.		Medicaments, etc.
Specula		Specula
		Printed slip of instructions
		Teaching charts and models
One doctor who takes all history and sterilizes gloves and instruments		Director (Clinic Executive) Social workers to do complete follow-up
		Nurse or nurses
		Doctors
		Consultants

both in referring patients and in following up those referred from it. This can be brought about by having a special meeting or series of staff meetings at the outset, and by thoroughly circularizing the staff. Then from time to time, as at the monthly staff meeting, the chief of the contraceptive clinic medical, tuberculosis or cardiac-renal departments whenever a case under regular care which might have been saved from operation by an early reference for contraception is referred for therapeutic abortion.

The cost of carrying incidental contraceptive service is practically only that of the

supplies, which are not expensive per case handled, but do require systematic renewal. Rooms, tables, instruments are those of the regular gynecological clinic and all that is needed is time assigned.

The Unattached Clinic.

But even in localities where "medical indications" are necessary for admission to the contraceptive clinic, many women, unless actually what *they* call sick, will not be willing to attend hospitals which they associate with serious illness and incapacity—especially as this particular health service cannot be advertised like those for tuberculosis, child guidance, diphtheria antitoxin, or venereal disease. Thus for some time to come special places will be needed where women can, with a minimum of delay and red tape, secure the necessary examination and care.

The difficulties of the unattached clinic are, first, that the initial cost is greater. Whereas the hospital usually provides overhead, as well as medical and nursing service, and in some cases even social service and clerical assistance, here the whole outfit must be set up new. Then too, the unattached clinic suffers from inability to route clients found to need other medical care to clinics under the same roof. The maintenance of a high standard of medical care is especially necessary. This can be assured by the provision of regular inspection and supervision by senior clinicians.

CLINIC PLANS AND OUTFIT

Birth control service requires quarters and outfit very like those of out-patient departments or dispensaries which treat diseases of women or obstetric patients. In this special work, confidential communications are particularly in question, intimate beyond those in any other field, and these must be shielded from overhearing by other patients or nurses and doctors.

All this makes desirable a desk out of earshot of others or calls for reasonably sound proof walls, and not the mere curtains or screens or low partitions found in many clinics. It is to be remembered that each woman, after instruction, needs to teach herself the mechanism of protection. For this she can claim the consideration of a closed door. These are primary decencies.

A social worker who takes the social history and does follow-up can cover two to six patients per hour depending on how much history has to be taken. Patients referred with preliminary reports from other agencies may take less time. The patient not so referred will take from twenty to thirty minutes of the social worker's time at the first visit.

In any clinic service, the selection of cases for diaphragm and jelly mostly runs a rather smooth course. Where only diaphragm-fitting month in and month out is the doctor's duty, the narrow repetition palls. Occasional difficult cases, and the hunt for conditions calling for nice adaptations, together with research, will prevent monotony. Study of sterility, inclusion of premarital examinations, and consideration of phases of marital adjustment in general, give variety and breadth to the service. When fitting and advice become an integral part of all gynecological and obstetrical services, such broadened activity will keep doctors from boredom with a restricted round of duty, and lessen the staff turn-over. The greatest advantage of frequent change of staff is multiple training of medical men and women.

INSTRUCTION TALK

The following sample instruction talk given by the birth control clinic nurse to the patient includes the main points to be covered in talking with patients about the method. While some clinics have found it advantageous to instruct a group of patients, others prefer to discuss these points with patients individually. Although this talk is one which the nurse gives prior to the medical

For example, previous methods of control or attempted control, and success or failure with such methods, must be matters of inquiry. Abortions are to be recorded, whether spontaneous, self-induced or operative, and the reasons therefor. Successful orgasm for the wife with one method and failure with some other method needs to be determined, if possible. The degree of considerateness of the husband must be ascertained, in order to decide the choice of method. So must the conveniences in the home for taking a douche.

examination and fitting, it is the practice of many centers to give instruction after the prescription so that more stress may be put on the particular method prescribed. Some centers give patients a printed direction slip to read over before they receive oral instruction.

Introduction.

You have come to the clinic to learn how you can plan your family and have children when you want them and are ready for them. We are here to help you to learn a safe method of birth control suited to you. When you see the doctor, he (or she) will select the method which is best for you to use. If you follow directions carefully and use the method every time you are going to have relations with your husband, you will be protected; if you are careless or don't use it, the method cannot help you.

Before you see the doctor, we want to teach you something about your body and the various methods which may be prescribed. The methods are not difficult but if you do not understand, please come back and let us explain again. I do not know whether you are familiar with your anatomy, but I will show you on this model how we are built. This is the entrance to a woman's birth canal. (Show front view of model). So you can see how you look on the inside, I am going to open this model. This is the birth canal which you see slopes downward and ends here, so that nothing you place in it can get lost or go beyond that point. The bladder is above (here) and the rectum beneath it (here) and they have separate openings entirely, so that anything placed in the canal does not prevent your going to the toilet. The womb, shaped like a pear, lies in about this position in the body and the mouth of it dips into the birth canal, or vagina, in this way. It has an opening in it here. During marriage relations the male cells (or sperm) are deposited in the birth canal—millions of them each time. They are very tiny, but they travel very rapidly. If one of these male cells enters the mouth of the womb and unites with a female cell up here in the tube, conception takes place and a baby starts to grow.

Methods of Contraception.

On this table are some of the "caps" and jellies which are used by the woman to protect herself. (Have on hand Mensinga, Matrisalus, Duraflex, Dumas, Mizpah, foam powder, sponge, and douche bag.)*

We need to have these different types because women are built differently and all cannot use the same type or size, just as all women cannot wear the same type or size shoes. The doctor may decide that you can best use this type. (Mizpah) It fits (demonstrate) as a thimble on your finger whereas this type (Mensinga) fits like this on the model. The important part is that the mouth of the womb is covered so that no male cells can enter. If it is uncovered like this (show incorrect placing) the male cells can easily enter. Because you need to find the mouth of the womb, you will have to insert the finger the full length along the floor of the canal where you will find a small knob that feels as firm as the tip of your nose and smooth as your chin. You will not have difficulty if you insert your finger that way (downward) and go the full length of the finger. When you yourself put the "cap" in, put your finger in *every* time afterward to make sure that you have covered the mouth of the womb and then to push the rim of the "cap" up behind the bone in front.

With the "cap," the doctor orders a contraceptive jelly or cream. The jelly acts on the male cells and aids in blocking them from entering the mouth of the womb. This is a very important part of the method and gives you double protection. Both "cap" and jelly are absolutely necessary for success.

Use of Diaphragm-Jelly Method.

The doctor will teach you while you are lying down but at home you may stoop or sit on the edge of the toilet seat. When you are ready to put the "cap" in, take your jelly. I want to say again that it is very necessary to use the jelly. The jelly you get here is the best we know of. You need about one teaspoonful. Drop it on the inside, and rub it around the rim and the inside of the "cap." To put it in, squeeze the rim together and hold it together at the middle. Hold it with the hollow side of the "cap" facing you, this way, the palm of your hand and the hollow side of the "cap" facing you, with your fingers pointing downwards.* I will let you hold one so that when the doctor gives you a "cap," you will know how to take it from (him) (her). (Nurse places diaphragm on model.) Now if you will feel on this model, you will be able to feel that the mouth of the womb is covered with the rubber of the "cap." (Guide patient to feel cervix.) When you place the "cap" on yourself, feel to be sure that this mouth of the womb is covered and the rim is pushed back of this bone.

Your husband should be unable to feel the "cap" during relations. The "cap" should not annoy or be uncomfortable for you or your husband; if it bothers you in any way, come back and let the doctor see why. It cannot be pushed out of place during marriage relations during any position. It cannot chafe you or cause inflammation or disease; it merely prevents the male cells from entering the womb as in the use of withdrawal or the condom. You can urinate with the "cap" in place, but if you have a bowel movement after the "cap" is in place, it is wise to make sure that it still covers the mouth of the womb. If it is out of place after you have been with your husband, it is important to take a douche

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* Clinics differ regarding this practice; some prefer to exhibit only the type already prescribed by the doctor.

* Some clinics prefer the dome up technique rather than dome down, here illustrated. Various ways of holding the pessary or of using the thumb to push it deep into place or of using a director are recommended by some doctors and clinics.

immediately. Use half the bag of water before removing the "cap" and half the bag after removal.

The diaphragm should be left in place until morning or for six or eight hours. You can walk around and change position and it will not be disturbed.

Douching.

You do not need to take a douche if you leave the diaphragm in six or eight hours. If you want to take a douche for cleanliness, you may do so. Fill your douche bag with warm tap water. You may sit on the toilet seat for this type of douche and hang the bag about the height of your head—no higher. Put the douche nozzle in like this and let half the bag of water run in, holding the outside parts together around the nozzle so that the inside passage is filled and the water escapes in gushes. Remove the "cap" by hooking the finger around the front rim like this (use model) and lift it out, and then douche with the rest of the bag of water. Half a bag before and the rest after removal.

If the doctor tells you to remove the "cap" immediately after marriage relations or if you have a bowel movement and the "cap" is not in place, then be careful to douche immediately.

Care of Materials.

You will be protected and safe if you use the "cap" and jelly every time you are going to have marriage relations. Even one omission may result in pregnancy.

It is important for you to take care of the "cap." Don't use oil, cold cream or vaseline on it as these rot the rubber. Wash it with slightly soapy water and rinse it in clear water. Pat it dry, especially the rim. Powder it with cornstarch or plain, unperfumed talcum and place it in a dry container. With good care the "cap" should last about a year. To test the "cap" and see if it is still good—the tiniest hole would make it useless—hold it up in front of a strong light (like this) and while stretching the rubber with the fingers, look for holes or weak places.

Check-up Visits.

When you have a baby (or if you have a miscarriage), come to see the doctor six weeks after your pregnancy is over as the size of the "cap" may have to be changed. If you have any kind of abdominal or pelvic operation, return to the clinic for a check-up. Otherwise a check-up on the fit is advisable once a year.

Even under normal circumstances, menstrual periods are frequently irregular. Delayed periods do not necessarily mean pregnancy. If your period is delayed more than usual, make an appointment to consult the clinic physician for diagnosis.

The direction slip which you have repeats what I have said. Now I would like (each of) you to hold the "cap" and show me how you would insert it. (Patient demonstrates) Are there any questions?

Question: How can I get more jelly?

Answer: Come back or send to the clinic for more *before* your tube is empty.

Question: How early can I put the "cap" in before relations?

Answer: If you put the "cap" in more than 4 hours before relations or if you are going to have relations a second time during the night, add more jelly to the outside of the "cap" with the finger tips or a jelly nozzle.

Now I will show you where the bathroom is. Please take off your girdle and bloomers; urinate and wash your hands so that you will be comfortable when the doctor examines you.

P.S. At her departure the nurse or social worker impresses on each patient that she may feel perfectly free to come back or write to ask questions about anything not entirely clear to her.

MATERIALS AND STANDARDS OF MANUFACTURE

To safeguard against or minimize defective material and to curtail substitutions, both of which are large elements in failures of contraceptives, five things are needed:

1. Agreement on standards of quality.
2. Cooperation among manufacturers and dealers to maintain quality.
3. Inspection and reports.
4. Lists of trustworthy makes and makers and dealers, regularly issued.
5. Provision for wholesale or reduced rates to clinics and to the poor.

Specific Makes.

The doctor wants to know what he may best advise. He looks to unbiased research groups to study constituents and effectiveness of remedies and safeguards of all kinds, and to issue reports of findings accompanied by lists of those preparations that seem better than others. An organization is very loath to give a dictum on any preparation or device in that there is no small danger that a carefully guarded statement will be quoted without the specified limitations and appear as complete approval. This hesitancy is especially comprehensible when the remedy or device in question has to do with the control of conception, where failure to protect may often involve serious risk to health or grievous hardship and a sequel of therapeutic abortion at times.

The clinician and the private physician interested in contraception face no problem more acute than that of the selection of the actual commercial materials to advise. The pros and cons of the issuance of a list of satisfactory contraceptives have been discussed at length, but the only action taken heretofore has been to answer requests from responsible physicians and clinic executives on this matter. The author, however, personally took the stand that all information, whatever its limitations, should be at the disposition of the medical public and that a clearly defined statement of the imperfect character of the information should free anyone from criticism.

On that basis the first edition of this manual listed materials and the names of manufacturers of diaphragms, contraceptive jellies and creams, foaming agents and condoms, about which certain minimum data were at hand anent manufacture or formula, or laboratory or clinical tests. The fact that the name of a product did not appear in the list did not necessarily mean that the product was unsuitable as a contraceptive.

It was understood that at any time alteration in conditions might cause the standing of any designated contraceptive to change and that many basic elements were lacking for adequate assessment of the various qualities of the product. The partial list of commercial materials were those that had appeared to be reasonably effective within the limitations of type and which were obtainable on the market at that time. Several items that were listed then are now no longer manufactured, and new materials have been developed. Accepted criteria for the evaluation of contraceptive materials are incomplete, and the best materials leave something to be desired. Familiarity with contraceptive jellies or information concerning them extends to a list of more than forty common brands out of several hundreds. Mechanical tests of condom and diaphragm are available to manufacturers.

Because of this it is evident that what scientific bodies do for new discoveries and authoritative medical organizations do for drugs, should reasonably be done for contraceptives. This fact has been accepted by the American Medical Association and certain scientific institutions, now engaged in the investigation of problems relating to reproduction. Reports on the studies of contraceptive devices and materials and related problems of reproduction will be printed in "Human Fertility," published for the Planned Parenthood Federation of America. Pending the publication of reports on products, the Federation will undertake to furnish such information as may be available to physicians upon their request.

DIAPHRAGMS (See pg.10).

There seems very little to choose among the various diaphragms of the reputable clinic supply houses. Differences are matters of spring tension, minor details in design, appearance, price, and the like.

CONTRACEPTIVE JELLY AND CREAM (See pg. 23)

There are a number of jellies and creams which in clinical use have been found satisfactory. The chief factors in evaluation of any product are chemical formula, consistency—viscosity and lubrication—keeping quality, as well as spermicidal effectiveness.

FOAMING AGENTS (See pg. 22).

Clinical reports indicate these materials have a considerable degree of effectiveness. Occasional irritation is reported by some users.

CONDOMS (See pg. 35)

Those manufactured to conform with Government specifications should be employed.

Contraceptive materials should take their place among the drugs and instruments concerning which investigation is made and reports are published by various Federal departments and by the Councils of the Ameri-

can Medical Association. Some beginning has already been made by the Federal Trade Commission and the Department of Justice, while the Department of Agriculture has indirectly taken an important forward step through its control of condoms as venereal disease prophylactics. The latter, through the Food and Drug Administration, now under the Federal Security Agency, may exercise a wider control under new legislation. It is to be hoped that Federal agencies will eliminate fraudulent practices and defective materials now common.

For positive guidance, certain of the state governments, and notably the state of Oregon through its Board of Pharmacy, may rightfully claim leadership for having undertaken to select those materials which may be sold legally within the confines of the state. Illustrating the need is the recent report of a consumers' organization, Consumers' Union, on contraceptive materials. The medical profession has reason to expect a fulfillment of commitments by the Council on Pharmacy and Chemistry of the American Medical Association with its able (1942) Advisory Committee on Contraceptives, to face the practical difficulties involved.

ANATOMY AND INSTRUCTION

All mechanical protection against pregnancy is closely concerned with anatomical forms and exact measurements. To make clear these practical issues, we are presenting organs (Figs. 1 and 2) the upper is of the parous, the lower of the nulliparous uterus, the latter with its cervix close to the coccyx owing to upright posture. Of the provision

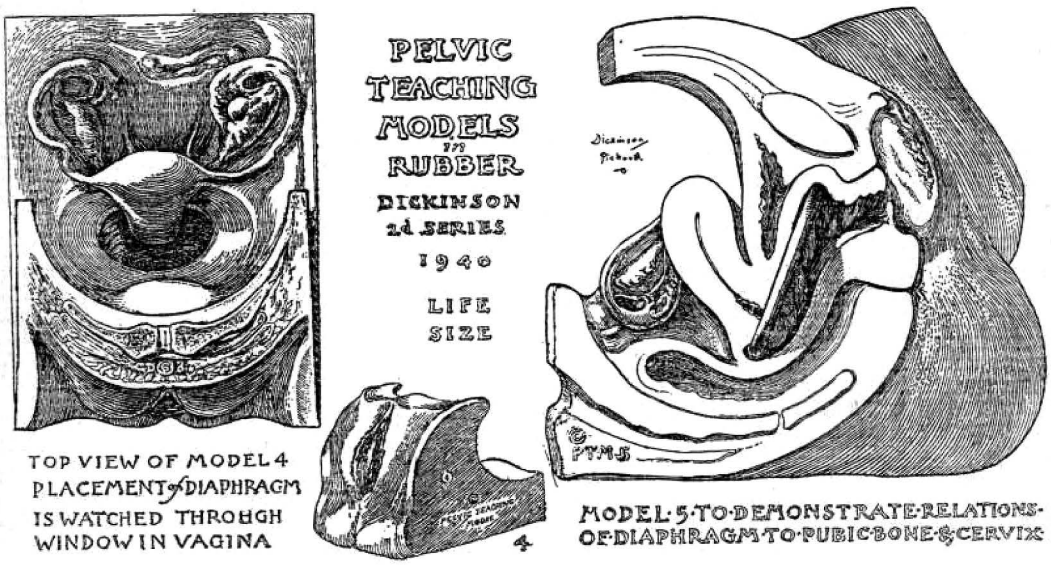

Fig. 50. Sketches of Models for Instruction.

a very considerable number of illustrations of the structures and organs and of the procedures and devices, carefully grouped together and all original. To be comparable these are on the same scale, with two exceptions, and with the side views drawn from the same direction.

In the outlines of the woman's pelvic for lubrication during coitus, that for the vulva by means of the vulvo-vaginal gland with its duct opening just outside a hymen of virgin type is shown for one side only, while lubrication for the vagina is recalled as furnished by the glands of the cervical canal. Figures 3 and 4 are transverse sections with the organs laid out in one plane to show

the shelf by which the pessary is held up in place. In this aspect the pelvic floor has a *funnel shape*, and is here depicted by the dotted lines as closed, and by the heavy lines as drawn open. The more roomy space in the right lateral fornix may be noted. Also shown is the readier distensibility of the vaginal canal above the slope formed by the fascia and the levator sling hung from the lateral pelvic walls.

Variety in form and diameter of the *cervix* shown in Figure 1 bears on the fit of the cervix cap. On the left, the small uterus of the infantile and anteflexed form and the large organ of retroversion-flexion and partial prolapse are to be viewed in their relation to the normal position and dimensions as indicated in the diagram nearby. Pointing of the cervix toward the vulva is shown thus but not the shortened vaginal wall under both circumstances, as given in Figures 33, 35, 37.

Size and distensibility of the *hymen* has a relation to the use of the pessary. The virgin opening usually admits one finger fully and cares for the nozzle of the douche tube attached to the bag reservoir, but not that of the bulb syringe. The degree of elasticity of the intact-edged hymen varies greatly, but it does not suffice for admission of the average diameter of the penis without nicking except as a result of gradual dilation.

If indicated, *self stretching* that prevents pain the first night should be taught to the woman before marriage (see below "Instruction Concerning the Vagina"), and may be mentioned beforehand to the fiance. Office dilation by the doctor need rarely be necessary, nor use of any dilator, if patients would consult physicians sufficiently in advance of the marriage date. Only with the very thick hymen* is a touch of the scissors in two places called for after numbing with a local anesthetic on the doctor's office table. This is rather rare. Massage can usually do the work, and is the only method for those athletic women with whom horseback or tennis has brought the sling of the levator group to the thickness of the ulnar side of the hand.

The crowded diagram, Figure 5, is appended for explanation of three matters. One is exit of semen after coitus as effected by gravity and through extrusion by that pressure of the abdominal muscles which is said to be a main contraceptive reliance of some primitive peoples. The second is retention of the pool of semen against the cervix in cases of apparent sterility. The third is retention of the maximum volume of hot water in the distended upper vagina for the treatment of inflammations through prolonged heat.

Lacerations and relaxations of the pelvic floor, and prolapse in any degree, as of the bladder in cystocele, have an important bearing on size and form of the pessary to be prescribed, or on the rejection of it as not indicated. Also there may be grades of gaping or flabbiness wherein jelly may overlubricate to the extent of defeat of pleasurable sensation on the part of either or both partners. It is here that muscle training may be needed, and the question of operation be weighed—whether or not to defer it until all desired children have been born, for fear that a new delivery renew the injury or the over-stretching.

INSTRUCTION CONCERNING THE VAGINA

There are few parts of the body more difficult for the woman to understand than her vaginal canal—its depth, shape and direction. In the beginning of self-examination, any degree of involuntary spasm or resistance is to be gauged and overcome under the doctor's supervision. Reassurance is often needed because of a prevalent fear of self-infection. The confusion of mind may be cleared by demonstration with a model or with pictures, preferably life-size.

Pointing things out as he goes, the physician may say:

"It is much easier to use a pessary or a douche if you know certain important things about this vaginal

* The numerous variations in thickness and size of hymen which bear on premarital stretching and on the minor incisions needed for very dense tissue, are fully pictured and described in the senior author's atlas, "Human Sex Anatomy."

passage. One must not have an idea that the finger ordinarily clean can carry anything into the passage that can do any harm. And nothing can get into the womb at the far end of the passage. The vagina ends in a blind pocket, usually a little further in than the fingers can reach—unless when squatting down and bending over (Fig. 5). The upper end spreads, so that it holds the ring of the diaphragm crosswise as it expands after being pushed up. The walls are very elastic and the depth is about six inches from the very outside parts. This outside portion of the passage is rather a funnel-shaped slit that spreads apart. Thus the distance that a douche tube goes in takes care of itself and the tip of it can't get into the womb. The diaphragm, once its inner rim is past the mouth of the womb, snuggles into the place where it belongs.

"The shape of this full length passage made up of outer and inner parts is something like an hour-glass. A little way in,—that is, more than one finger joint from the outside skin surface—is the hymen, with its thin edge or its tabs, and just beyond is the rear ridge or loop made by the encircling sling of muscles. The outer lips of the vulva are perfectly easy to draw apart, but the opening into the vagina beyond the hymen, if one holds the parts tight or winces, unconsciously becomes resistant, and the loop of muscles stop the finger—or the douche tube—or the pessary—or the male organ. All this—even though it may not happen at all—explains why you are advised to teach your finger the shape of the passage, and teach the passage not to object. In addition to this, one has to learn to recognise the shape and feel of the mouth of the womb, the cervix, in order to be sure the rubber dome of the diaphragm is covering it.

"Now as to the direction of the passage: It runs toward the hollow of the back, that is, neither in the line of the whole body nor at right angles to it, but in between. The passage curves on the way in. The nozzle of the douche tube, the nozzle of the applicator for jelly, the pessary, the examining finger, all go over the loop of those muscles which hold the opening shut.

"The average virgin hymen admits a woman's forefinger with little discomfort or none, using gentleness and a lubricant. The opening lets pass the nozzle of the fountain syringe but may not admit that of the bulb syringe. Repeated hot douching renders the neighborhood less sensitive. So does a process of gradual stretching for a series of days preceding intercourse. This stretch is done by you a couple of times a day, until two whole fingers enter readily; it is stopped just short of pain."

This leaves the hymen still "virgin" because it is still too narrow for the penis to enter easily. Doing it in a hot bath works well. Thus the sharp edge and the resistance and tenderness go, but no nick of the edges occurs. Such nicks an eighth or a quarter of an inch deep produced by quick entrance of the man in the unstretched hymen, are what is called usually (in objectionable exaggerated terms) "rupture," "breaking," "destroying," or of old, "defloration." Such entry brings blood, either a few drops or rather free oozing, which may sometimes last days. With a few thick tissues or spasm or apprehensive conditions, trouble may persist until a doctor is consulted.

SUMMARY AND CONCLUSION

The Methods Are Reasonably Effective

Clinically approved methods show 85 to 95 per cent protection.

Women do Not Shirk Motherhood

They come to clinics after an average of 2.6 pregnancies, with over 2 living children; nearly half have 4 or more living.

Recommended Methods are Harmless

Histories and follow-up disprove the common accusations against birth control.

Sterility is Not Induced

Evidence is lacking, in our 16-year hunt, for case records of sterility from methods other than intrauterine devices.

Three of the great strides of medicine are toward:

Control of pain in labor and operation

Control of infection in obstetrics and surgery

Control of communicable disease

These three advances, made in the face of opposition and indifference on the part of the organized profession, are now its common pride and glory. A fourth control, control of conception, needed to safeguard life and health and happiness, will take its place of honor with these others.

Courage and wisdom have ever been re-

quired to restrain the forces of disease and death. A greater courage and a higher wisdom are called for within our profession to undertake a guiding part in the control of life.

Requirements for ideals in *progress* run along lines like this:

Birth control being in demand by the public, that public is entitled to the best of methods, and to several choices among adequate means.

Birth control, not having conquered medical shynesses and fears of failures, shall, however good, not longer suffer from lack of being good enough—simple, and safe enough—because any failure stalks.

Birth control shall become safe and simple by dint of extensive study, no longer tolerating feeble attacks on problems of extreme complexity, or research piecemeal with puny funds.

Control of fertility and sterility, looking to wise parenthood and success in mating as major measures of public health, as essential maternal care, as routine marriage instruction, as basic eugenics for quality versus mere quantity—all this calls for ideal leadership, opening up an unrestricted science of human reproduction—a science of human reproduction, active, organized, accredited.

Full courage faces actuality. The great blockade behind and beneath opposition is really fright. It is panic lest sex activity become immune to and free from fear of conception, infection and disgrace. The church and the law, the parent and the teacher dare not confront tolerance and immunity. They dare not depend on character, on education, on life, on training in self control, on anything but the Three Terrors, held over youth and adult—conception, infection, detection. *Let* marriage be long deferred; *let* limits on reasonable motherhood live under the shadow of apprehension, month by month, for twenty years of conjugal life; *let* passionate love be penalized and marital maladjustments multiply and divorce and abortion spread, and prostitution debauch and feeblemindedness breed—let all this carry on so long as the sex taboos are kept intact. Can we call this true morality? Can we uphold it as sense, wisdom, kindness?

What then, may be the goal of a broadened science and art of human reproduction? It can be this: every parent sex-educated to educate children; every young person taught fatherhood and motherhood; every couple examined and instructed well in advance of marriage; every woman guarded against preventable danger in maternity and overmaternity; every family and community producing all but no more progeny than can be decently reared; all possible means at work to discover and apply intelligent reproduction for well-being and character. This is the ideal and goal of control of conception. This is our charter.

FINAL NOTE

Official Medicine is stressing the legality of the advice; the need for investigation; instruction as part of medical education; and the dissemination of information by the physician. For skill in contraceptive diagnosis and treatment, doctors need training.

For patients, success with any contraceptive requires exact observance of directions on every occasion. For each couple there is a best method.

Intelligent lay efforts under medical leadership can organize public support for adequate provision of clinical service.

The World War intensifies the transcendent importance of all aspects of moral, mental and physical health as essential to maintain wellbeing and liberty for future generations.