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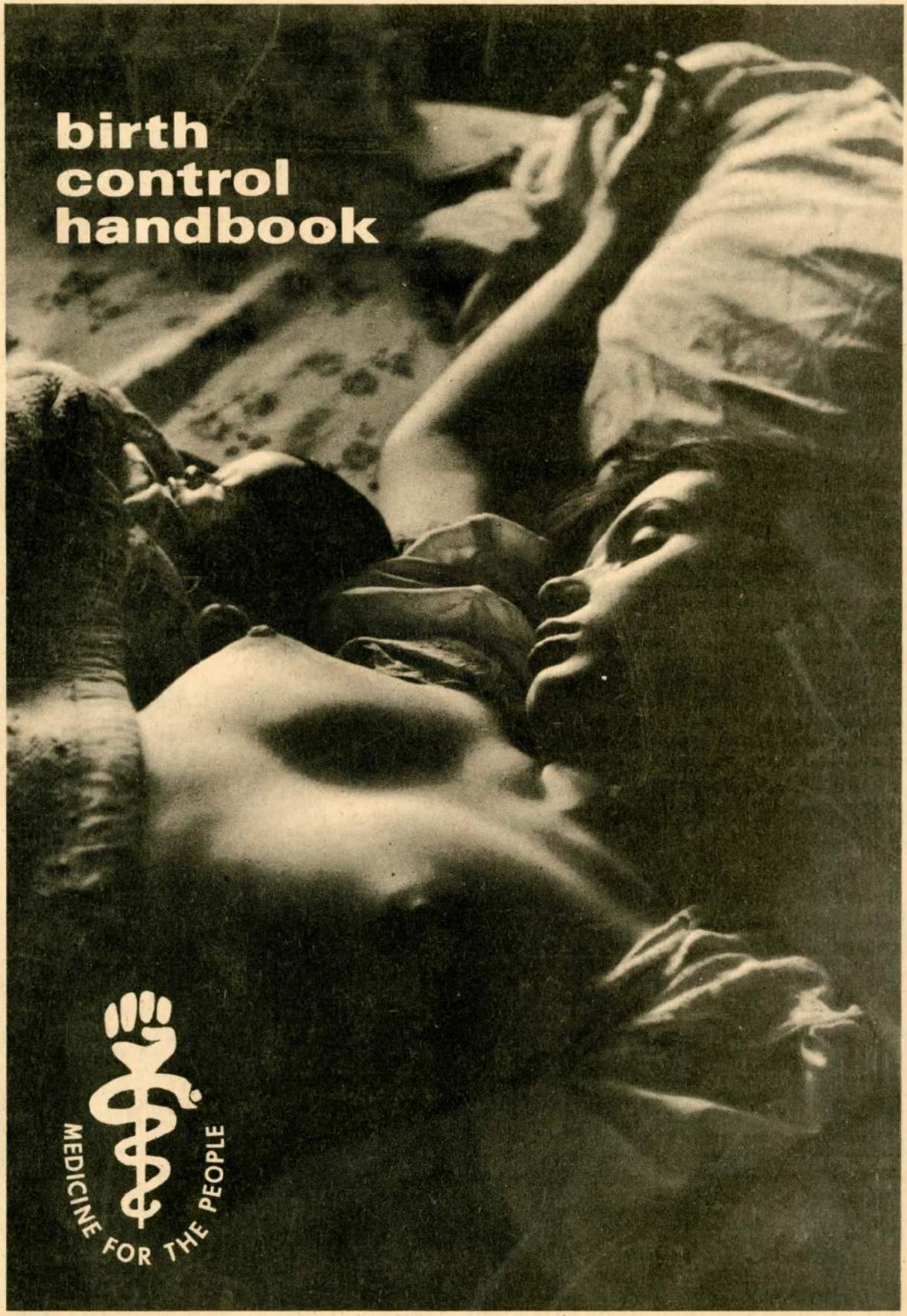

MEDICINE FOR THE PEOPLE

Birth Control Handbook

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introduction

For the past three years we have been working to provide men and women with the information they need to control their own bodies. The right to this control, to use our own bodies as we desire, is a most basic, essential human right, a right that has long been denied to us. Until recently, the right to have sexual intercourse without the burden of unwanted pregnancy was legally denied to all women. Even today, birth control is more easily obtained by married women of the middle and upper classes, and abortion is only available to those who can pay the cruelly high prices of entrepreneurial doctors. Those who cannot pay find themselves in "charity" hospitals, where they are butchered, experimented on, and frequently sexually molested.

At this time we are concerned by the rising of a new movement which seeks to destroy and take away what control many men and women have finally obtained. The population control movement presents a new danger to basic human rights, both in North America and in the Third World.

In the U.S., the modern population control movement began as the "eugenics movement", which strove to "purify" the American population by advocating the forced sterilization of people defined as "feeble-minded, insane, epileptic, criminalistic" and "orphans, ne'er-do-wells, the homeless, tramps and paupers". By 1917 sixteen American states passed compulsary sterilization laws applicable to a total of 34 different categories of people. At the time, the only means of male sterilization was castration, and the equivalent operation on the female involved grave risks in the pre-antibiotic era. Between 1907 and 1963, 63,678 unfortunate men and women were sterilized by court order. In the past fifteen years, the states of Delaware, Georgia, Illinois, Maryland, Mississippi, North Carolina and Tennessee have considered implementing new laws to punish "unwed mothers" by various means including sterilization. Judges in many U.S. cities "offer" sterilization to unmarried mothers, threatening to cut them off welfare if they do not accept. With the prospect of starving in a giant city, these women have no choice but to submit to the surgeon's scalpel.

The Zero Population Growth movement, known as ZPG, does not like to admit its heritage of the eugenics movement and forced sterilization laws. Paul Ehrlich, author of **The Population Bomb,** insists that at the moment, governments should only convince or cajole people to maintain a small family size. On the other hand, if people are not willing to voluntarily control their reproduction, eventually, "the Government will have to step in and employ sanctions of some sort." In **The Population Bomb,** Ehrlich speaks of putting chemical sterilants in drinking water, but he admits that this would pose technical problems. For countries other than white America, Ehrlich is less restrained. Discussing a proposed Indian government plan to forcibly sterilize all Indian men who have fathered three or more children, Ehrlich stated, "We (the U.S. Government) should have applied pressure on the Indian government to go ahead with the plan. We should have volunteered logistic support in the form of helicopters, vehicles and surgical instruments. We should have sent doctors to aid in the program by setting up centers for training para-medical personnel to do vasectomies. Coercion? Perhaps, but coercion in a good cause. I am sometimes astonished at the attitudes of Americans who are horified at the prospect of our government insisting on population control as the price of food aid." The world has already seen the results of U.S. coercion "in a good cause" coming in the form of helicopters, vehicles and instruments more deadly than the scalpel.

We are horrified by the possibility that the U.S. would demand sterilization or birth control programs in countries to which it gives food aid, especially given the current American attitude towards food production and distribution. In 1968 the U.S. government paid the huge companies that today control American farming ("agribusiness") $4 billion to take 35 million acres out of production. In 1970 the Canadian government ordered Canadian farmers to grow no wheat at all. Untold millions of tons of grain have rotted in the holds of retired U.S. ships, which have been converted into floating storage bins. Big business actually destroys food, by burning grain, pouring milk into the ground, and shooting pigs. U.S. agribusiness has reason behind this madness. Food production in America has become fairly advanced, and food surpluses are constantly produced. With a surplus of food, prices go down. Since the U.S. population can only consume a certain amount of food, and since companies are not willing to give away the food to starving nations, surpluses must be destroyed to maintain the high prices that make them so much money.

An advertisement for the Committee to Check the Population Explosion tells us that every day about 10,000 people die of starvation in "underdeveloped" countries. The ad says little of the U.S., where in 1968 the Citizens' Board of Inquiry into Hunger and Malnutrition estimated that 30 million Americans are hungry, and 10 million of them are actually starving. The Committee's ad suggests that the horrible world-wide starvation exists "because world population growth has already out-run world food supply." How can these people dare to suggest that world food supply is insufficient when U.S. companies destroy any existing food surplus, and the U.S. and Canadian governments prevent surplus from appearing in the first place?

Such contradictions are even more obvious in countries of the Third World, nations of Asia, Africa and South America. In Brazil, for example, a high proportion of the population is hungry, and many starve. Brazil has a population of 90 million people, but within the borders of Brazil, which is more than 90% as large as the U.S., there exists as much arable, potentially food-producing land as exists in all of Europe. Brazil cannot feed its 90 million people, but Europe can adequately feed its hundreds of millions. Why? Because of coffee and the coffee's owners. Most of Brazil's cultivated land is used to grow coffee, a cash crop with no food value. American companies "own" most of the cultivated land, and they "own" the coffee. The U.S. companies pay slave wages to plantation workers, and pay hardly any taxes to the Brazilian government. Coffee is shipped out of Brazil, and huge profits go to the companies' vaults in the U.S.

In 1952 the U.S. President's Materials Policy Commission reported on whether or not America has the raw materials necessary to "sustain its civilization". Members of the government commission included men such as Laurence Rockefeller; William S. Paley of CBS; George P. Brown of the First National Bank of Boston and the New England Telephone and Telegraph; Frank Pace of Time-Life, Continental Oil etc. As long ago as 1952, when Paul Ehrlich was still an unknown biologist studying butterflies, the financial rulers of America concluded that population growth in Asia, Africa and South America "presses hard on available natural resources". They meant that rising populations of young, hungry, jobless people might refuse to give up their national riches to foreign American companies. In a speech given at the University of Notre Dame on May 1, 1969, Robert McNamara, president of the World Bank and former secretary of defence, warned that, "The threat of violence is intertwined with the threat of undue population growth. It is clear that population pressures in the underdeveloped societies can lead to economic tensions, and political turbulence... which in the end can bring on conflicts among nations." McNamara was not speaking of wars such as the Second World War; he meant wars of national liberation, such as the one he had so much experience with in Vietnam. Vietnam was once the "rice-basin of the East", but the Vietnamese finally decided to throw out their foreign exploiters and take control of their own resources. In response, America bombed and defoliated Vietnam to the point of ecological disaster. Vietnam has huge resources of tin, which American industry wants and is prepared to do almost anything to get.

Dr. Binay R. Sen, former director-general of the UN Food and Agriculture Organization, has stated: "The ever-mounting tidal wave of humanity now challenges us to control it, or be submerged along with all our civilized values." For the population control movement, this implies that civilized values belong to **us,** white North Americans and Europeans; the tidal wave of humanity is **them,** the black, brown, yellow and the few surviving red people who also populate the earth. Within the population control movement is a high degree of simple racism, a throw-back to the eugenics movement that wanted to "purify" the American population. The fact that ZPG claims to direct its propaganda primarily at white, middle class Americans does nothing to eliminate the factor of racism which is an inevitable, historical aspect of the U.S. population control movement, financed and directed by America's white ruling class.

The population control movement also blames us, individual men and women, for the pollution of our air, water, and earth. Ehrlich has stated that: "Our large polluting population is responsible for air pollution." Newsweek Magazine's environment issue claims that the pollution-causing "villain... is not some profit-hungry industrialist, nor some lax public official who can be replaced. The villains are the consumers who demand (or at least allow themselves be cajoled into demanding) new, faster, bigger, cheaper playthings without counting the cost in a dirtier, smellier, sicklier world." We are the villains because we individually submit to the billion dollar psychological warfare waged against us by Madison Avenue. We are the villains because we drive to work in the only transportation system made available by GM, Ford and Chrysler. We are

the villains because America's biggest industry is the war industry, that bleeds taxpayers dry and exists only for death, destruction and ecological tragedy.

Ninety-four people signed the Committee to Control the Population Explosion ads. Included were people such as George Champion of the Chase Manhattan Bank (Rockefeller's bank); Frank W. Abrams of Standard Oil of New Jersey; Lammot du P. Copeland, of DuPont, David E. Lilienthal of TVA; and Mrs. Cordelia Scaife May of the super-rich Mellon Family. Hugh Moore, founder of Dixie Cup, paid for the ads, just as he paid to advertise Paul Ehrlich's **Population Bomb.** The people who signed the ads are, as James Ridgeway states in **Hard Times,** representatives of coal, chemicals and paper, "the industries which have fouled the continent from one end to the other. Their representatives now ask that the masses control the size of their families so that the plunder can continue."

Ehrlich and ZPG say that the American middle class consumes and pollutes more than any other people in the world. The solution they propose is not the elimination of unnecessary, wasteful production, exemplified by Detroit's manufacture of dangerous, polluting automobiles that fall apart after three years; nor do they suggest stopping pollution at its major source - the irresponsible, greedy companies which pour filth into our atmosphere in the process of making their huge profits. ZPG suggests that the solution lies in a zero population growth, a stabilization of our numbers. But in America, the annual population growth is already not more than 1%, a rate a few hundred times closer to zero than it is to our potential biological maximum. How can a slight further reduction solve all our domestic problems? And if such low birth rates have accomplished nothing here, how can we expect zero population growth to solve the problems of Third World nations? We cannot. For solutions, we have to turn to new methods of governing ourselves, to new methods of distributing and conserving the riches of the world which in fact belong to all human beings, not only to the Rockefellers, Fords, DuPonts, Mellons, Rothchilds and their like.

One of the few countries in the world where there exists no starvation is China, a country where a short 25 years ago human misery reached incredible levels. E.L. Wheelright, who travelled 5,000 miles in China in 1966 found: "wherever I went, there was no evidence of malnutrition, let alone starvation; food is plentiful and cheap; even in the poorer areas I never saw anyone who looked as though he could do with a square meal". The 700 million Chinese accomplished this by overthrowing their foreign exploiters, by taking control of their own natural riches, by granting equality to women, by providing voluntary birth control, sterilization and abortion programs, by determining their own priorities, such as education and food for all. Nothing short of equally basic social change in America and in the countries it exploits is going to bring solutions for our terrible problems of hunger, pollution, crime in the streets, racism and war.

anatomy

Male sexual organs

The arrangement of the male reproductive structures is not easy to describe in words. In the female all the reproductive structures are within the pelvis, that is, within the area surrounded by the hip bones on either side, the pubic bone in front and the lower end of the spine in back. However, in the male, the testicles are not in the pelvis but hang within the scrotum between the upper thighs. The tubes which transport sperm leave the testicles to enter the pelvis in front, pass towards the back where they unite into one tube which exits again in front through the penis. It is important to keep in mind that from the testicles to the ejaculatory duct, all the internal structures are doubled, that is, there is one on the left and one on the right.

Scrotum: The scrotum is a two-chambered sac which contains the two testicles. This sac lies behind the penis and between the upper thighs. The skin of the scrotum is wrinkled and covered with pubic hair. In cold weather, muscles in the scrotal wall contract to bring the testicles closer to the warmth of the body. The scrotum is also sensitive to sexual stimulation.

Testicle: The testicle is an oval-shaped structure about 1½ inches long and 1 inch thick. It is divided into about 250 compartments, each containing several seminiferous tubules. From puberty onward, sperm are produced in these tubules. Cells lying between the tubules secrete male hormones. The seminiferous tubules join together into about a dozen ducts which form the first part of the epididymis on the top of the testicle.

Epididymis: The ducts of the epididymis join together to form one tightly coiled duct running down the back of the testicle. The cells lining the duct secrete a substance which stimulates the development of sperm.

Vas deferens: The coiled duct of the epididymis leads into a straight tube called the vas deferens which is about 18 inches long and runs from the scrotum into the pelvis. For this distance it is accompanied by nerves, blood vessels and muscle fibres and together these structures form the spermatic cord. The spermatic cord can contract to pull the testicle into the safety of the body. Within the pelvis, the vas deferens continues towards the bladder. Just before the prostate, the vas enlarges to form the ampulla or "seed reservoir". Muscular contractions of the vas push sperm from the epididymis along this long route to the ampulla.

Seminal vesicle: To the side of each ampulla is a gland about 2 inches long called the seminal vesicle. The duct of this gland joins the ampulla at the ejaculatory duct within the prostate. The seminal vesicles produce substances important for the survival of sperm; they release these substances just before ejaculation. The ejaculatory duct from both the left and the right side join the single urethra, still within the prostate.

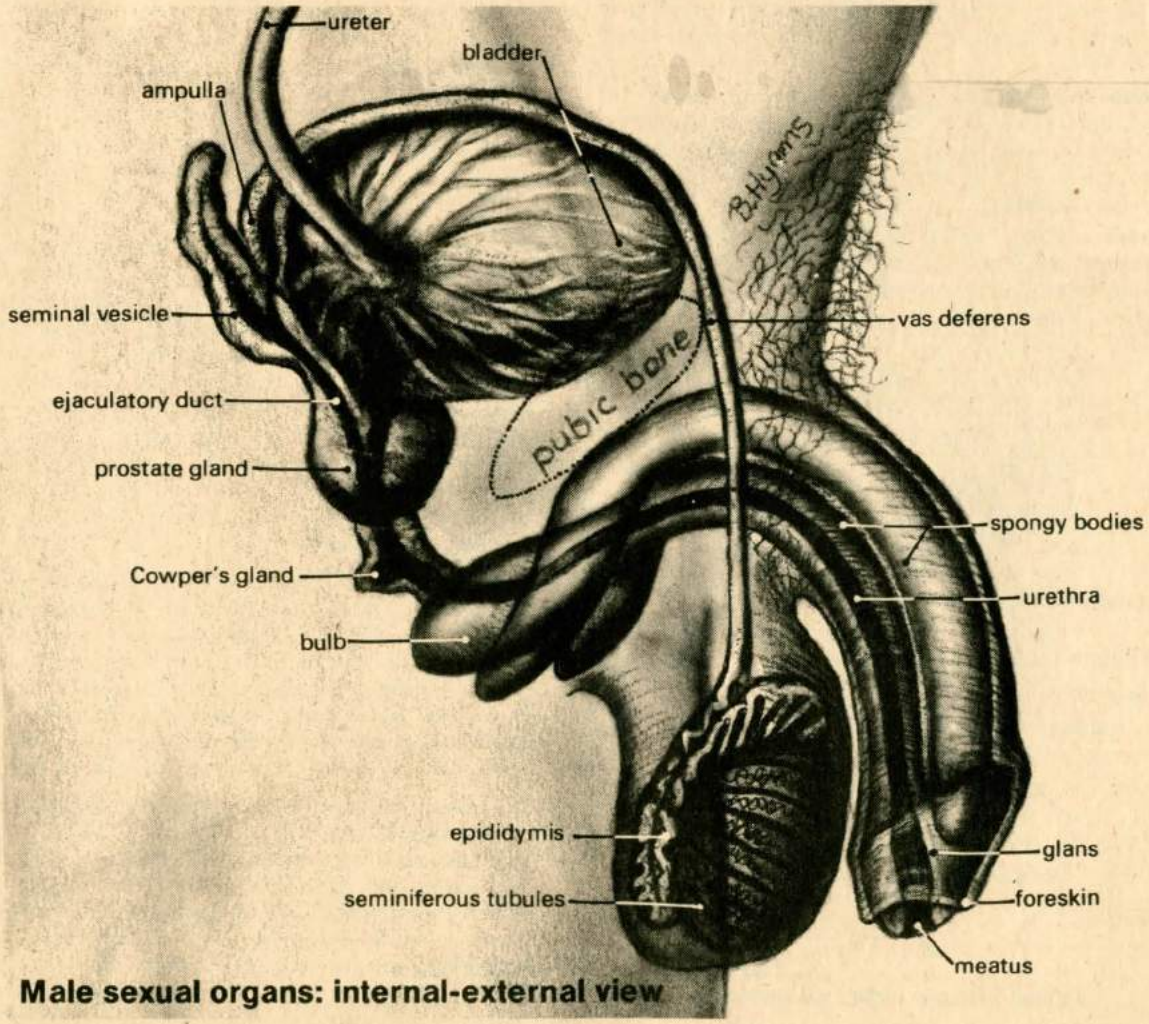
Prostate: The prostate is a small, chestnut-shaped organ made up of gland and muscle tissue. It is located beneath the bladder and it is penetrated from top to bottom by the urethra. The glands of the prostate secrete an alkaline fluid which helps the sperm to move by themselves. This fluid is released into the urethra only a few seconds before ejaculation. Secretions from the prostate make up most of the seminal fluid (semen). The prostate can be felt with the finger during a rectal examination.

Bladder: The bladder is a muscular sac lying behind the pubic bone and in front of the rectum. Below it is the prostate. The bladder collects urine which flows into it from the kidneys in two tubes called ureters. Urine is excreted from the bladder through the urethra.

Cowper's glands: These two small glands join the urethra as it leaves the prostate. They secrete a few drops of lubricating fluid during sexual excitement.

Urethra: The urethra is an 8 inch tube which travels from the bladder, through the prostate, beneath the pubic bone and through the penis. The external opening at the tip of the penis is called the urethral or urinary meatus. During urination, urine from the bladder flows through the urethra. During ejaculation, a sphincter muscle at the opening of the bladder closes, so that seminal fluid from the prostate and ejaculatory ducts can pass through the urethra without contamination by urine. That is, it is impossible to urinate while ejaculating.

Penis: The penis is made up of three bodies of spongy erectile tissue which becomes hard and swollen with blood during sexual excitement. Two of the spongy bodies make up the bulk of the shaft of the penis. The third spongy body runs beneath the other two, carrying the urethra. At the root, the two large spongy bodies separate and are attached to the bones of the pelvis, while the third body enlarges to form the bulb of the penis. At the tip of the penis, the third body enlarges to form the glans which is highly sensitive to sexual stimulation. The skin of the penis is thin and loosely attached. A free fold of skin called the foreskin covers the glans. In most North American hospitals the foreskin is surgically removed within the first week after birth. Removal of the foreskin, known as circumcision, prevents the accumulation of smegma, a waxy secretion which is secreted by glands beneath the foreskin. Uncircumcised men must pull back the foreskin and wash away accumulated smegma regularly.



Male sexual organs: internal-external view

Female sexual organs

Vulva: external genital parts

Mons veneris: This latin term describes the cushion of fat over the pubic bone which, from puberty on, is covered with pubic hair.

Labia majora: The folds of fat tissue on either side of the vaginal opening are called the labia majora or "major lips". In children, the labia majora completely cover and protect the genital organs; in mature women, the lips remain apart. The skin, covered with pubic hair, becomes moist and delicate closer to the vaginal opening.

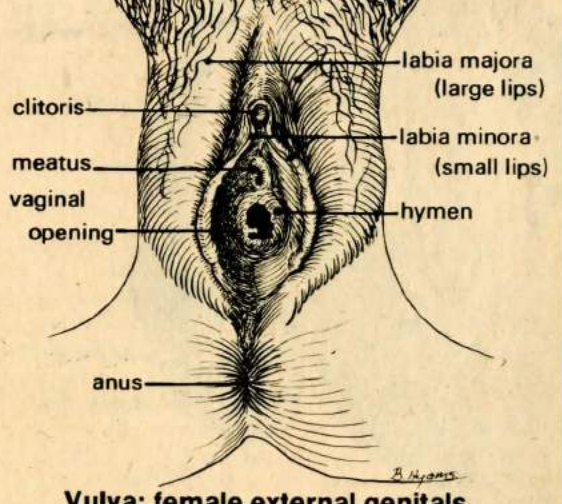
Labia minora: The "small lips" or labia minora are folds of sensitive, reddish tissue between the labia majora. When a woman is sexually excited, these small lips become slightly erect. They join in front forming the **prepuce** which covers the clitoris.

Clitoris: The clitoris, the most sexually sensitive of the female genitals, is located in front of (above) the urethral opening, and is partially covered by the labia minora. The clitoris responds to sexual stimulation by becoming slightly enlarged and erect.

Urinary meatus: The meatus, found between the clitoris and the vaginal opening, is the opening of the urethra through which urine is released from the bladder.

Bartholin's glands: The purpose of these two small glands, situated beneath the labia majora, is not clearly understood. They release a drop or two of mucus onto the labia minora when a woman is sexually excited.

Hymen: This elastic membrane, also called the "maidenhead", is found at the vaginal entrance projecting from the vaginal wall. In most women, the hymen does not block the vaginal opening completely, allowing the menstrual flow to pass through. Rupturing of the hymen (loss of virginity) can be painless or quite difficult, and slight bleeding often occurs. Many women stretch the hymen themselves before the first act of intercourse. In cases where the tissue is very tough, the hymen can be broken medically.



Vulva: female external genitals

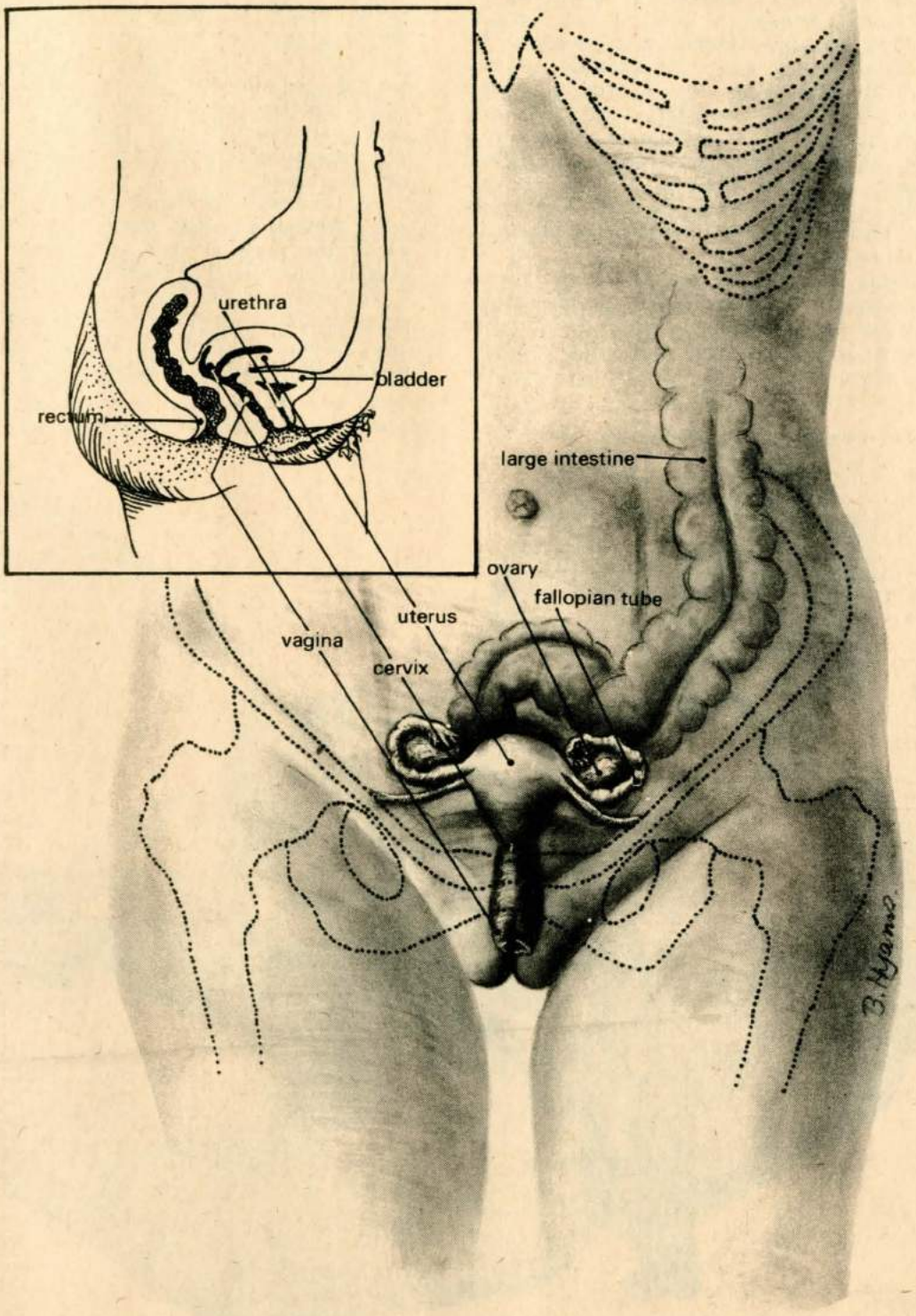
Internal reproductive organs

Vagina: The vagina, located between the bladder and the rectum, is about 4 or 5 inches long. Normally its elastic walls touch each other but they stretch considerably during intercourse and even more during childbirth. When a woman is excited, lubricating mucous secretions pass directly from blood vessels in the vaginal wall into the vagina. Although externally the vagina is highly sensitive, the internal end has little sensitivity. The vagina ends in pockets about the cervix: those in front and back of the cervix are called the **anterior fornix** and **posterior fornix** respectively; those to the sides are called **lateral fornices**.

Uterus: The womb or uterus lies between the bladder and the lower intestine. Before the first pregnancy, it is about 3 inches long and 2 inches across at the widest point, and its thick muscular walls practically touch each other. After each pregnancy, the uterus remains slightly enlarged as does the cavity within it. Normally the top triangular portion bends slightly forward, and the lower portion points down and back toward the spine. When the top bends too far forward or backward, the condition is known as **anteflexion** or **retroversion** respectively. This can cause problems during pregnancy, abortion and with certain birth control methods. Internally the uterus is lined with a thick spongy tissue called the **endometrium** which is cast off as the menstrual flow once every 28 days if pregnancy does not occur. The lower part of the uterus which extends into the vagina is called the **cervix.** The muscular cervix contains the cervical canal which serves as a passage between the uterus and vagina. The opening of the cervical canal into the vagina, the **external os,** is round before the first pregnancy, and slit-shaped afterwards. The opening into the uterus is called the **internal os.**

Fallopian tubes: The two Fallopian tubes (oviducts) are attached high on either side of the uterus, and extend about 4 inches toward an ovary. At ovulation, a suction-like mechanism draws the egg toward the tube's fringed end; then rhythmic tubal contractions move the egg toward the uterus. Union of egg and sperm (**conception, fertilization**) occurs within the tube, which is less than half an inch in diameter.

Ovaries: The two ovaries (female **gonads**) lie on either side of the uterus. At birth, 100,000 to 600,000 immature egg cells (**ova**) each within a follicle are embedded deep within the body of the ovary. After puberty, the follicles move toward the ovarian surface; each cycle, several follicles develop but only one releases an egg ready for fertilization. The oval-shaped ovaries also release hormones which affect ovulation and development of the endometrium.



Female pelvic organs

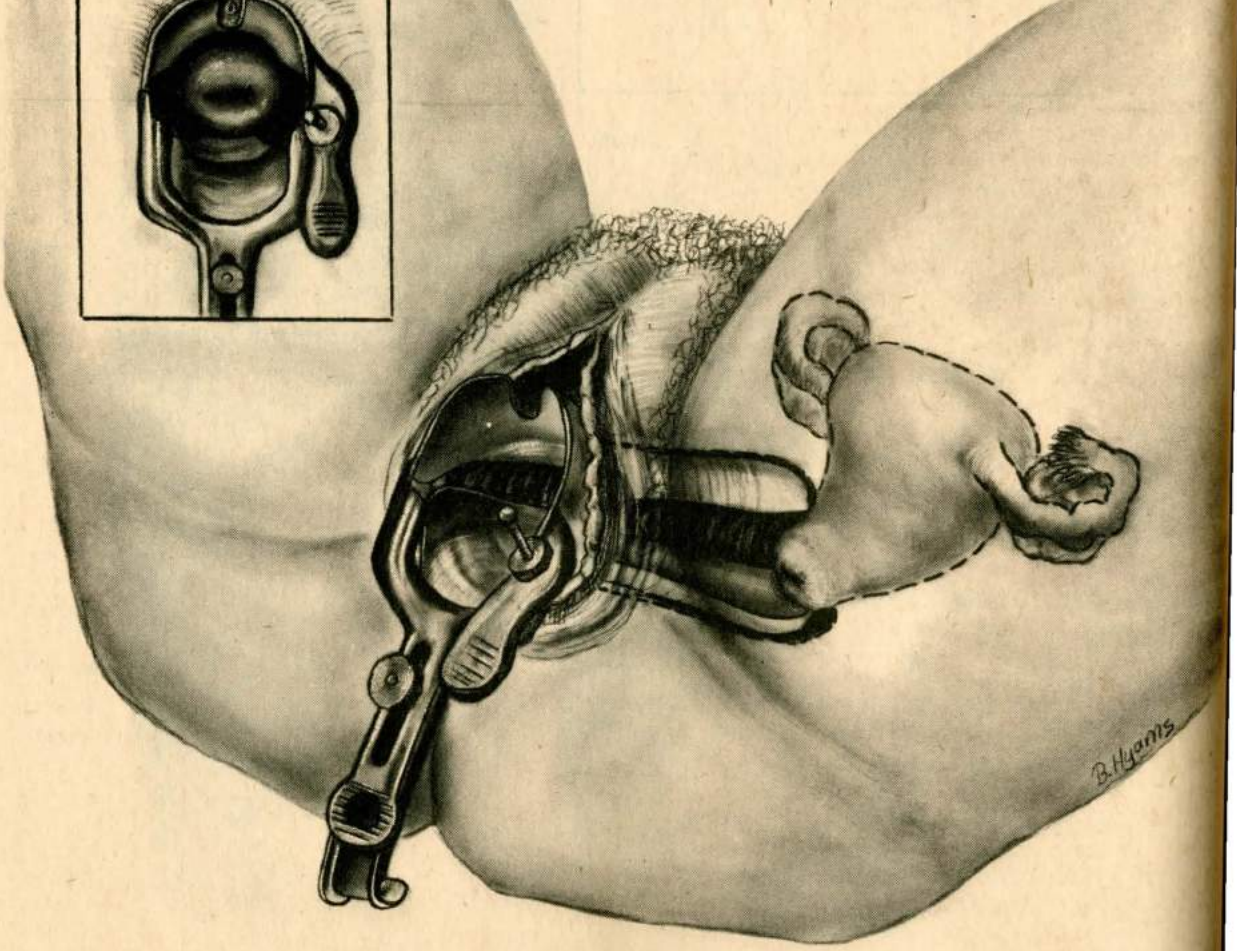
The Gynecological Examination

After puberty, a woman should have an annual gynecological examination. On her first visit, a general medical history is taken, including: past illnesses or operations; allergies or sensitivity to drugs; present medication; and general state of health. This general information is essential for proper gynecological care: for example, women treated with antibiotics often develop a vaginal infection called candida vaginitis; a tired feeling may be due to anemia influenced by a heavy menstrual flow: etc. As well, gynecological symptoms can lead to discovery of general problems: for example vaginitis can be a sign of latent diabetes. Any family tendency toward particular disorders, such as breast cancer, are recorded.

The doctor questions the woman on her gynecological history. At what age did she begin menstruating? Are her cycles regular? What is the duration and amount of her menstrual flow? Does she have cramps before, during, or after her period? Does she use external pads or internal tampons? If the woma has been pregnant the doctor should ask for a com plete obstetrical report: number of pregnancies miscarriages; induced abortions; type of deliver (vaginal or ceserean); premature or full term de livery; weight of newborn; complications before during or after delivery; breastfed or formula; plan for future pregnancies. What method of birth contro has she used and with what success? What gynecol ogical problems has she had previously? How lon ago? How was it treated? The woman should offe any information she feels will be useful, whether o not she is asked.

Such thorough questioning is not necessary at eac visit. Women attending clinics where the doctor i rarely the same at each visit should ask if he complete chart has been read prior to examination.

The woman is left alone in the examining room t undress, and is given a disposable robe or sheet t wear. A nurse records the woman's height, weight and blood pressure. A blood sample is taken fo



Use of the speculum

An internal-external view of the speculum in place in the vagina. The blades of the speculum are opened ho ing the vaginal walls apart. Inset: the cervix as the doctor sees it with the speculum in place.

analysis of the woman's blood type, haemaglobin count and white blood cell count. The blood sample can also be used to test for syphilis. If the woman complains of burning or pain on urination, a urine sample is taken also.

While the woman sits on the examining table, the doctor examines her head, neck, breasts, lungs, heart and abdomen. With the woman lying on her back, a further check is made of the breasts, abdominal organs (e.g. liver), and groins. The doctor is looking for swelling, unusual growths, or other signs of disease. All women should learn how to examine their own breasts, and should do so at least once each cycle.

For examination of the genitals, the woman lies on her back with her legs apart in stirrup-like supports. The doctor examines the vulva for inflammation, sores, color changes, or growths.

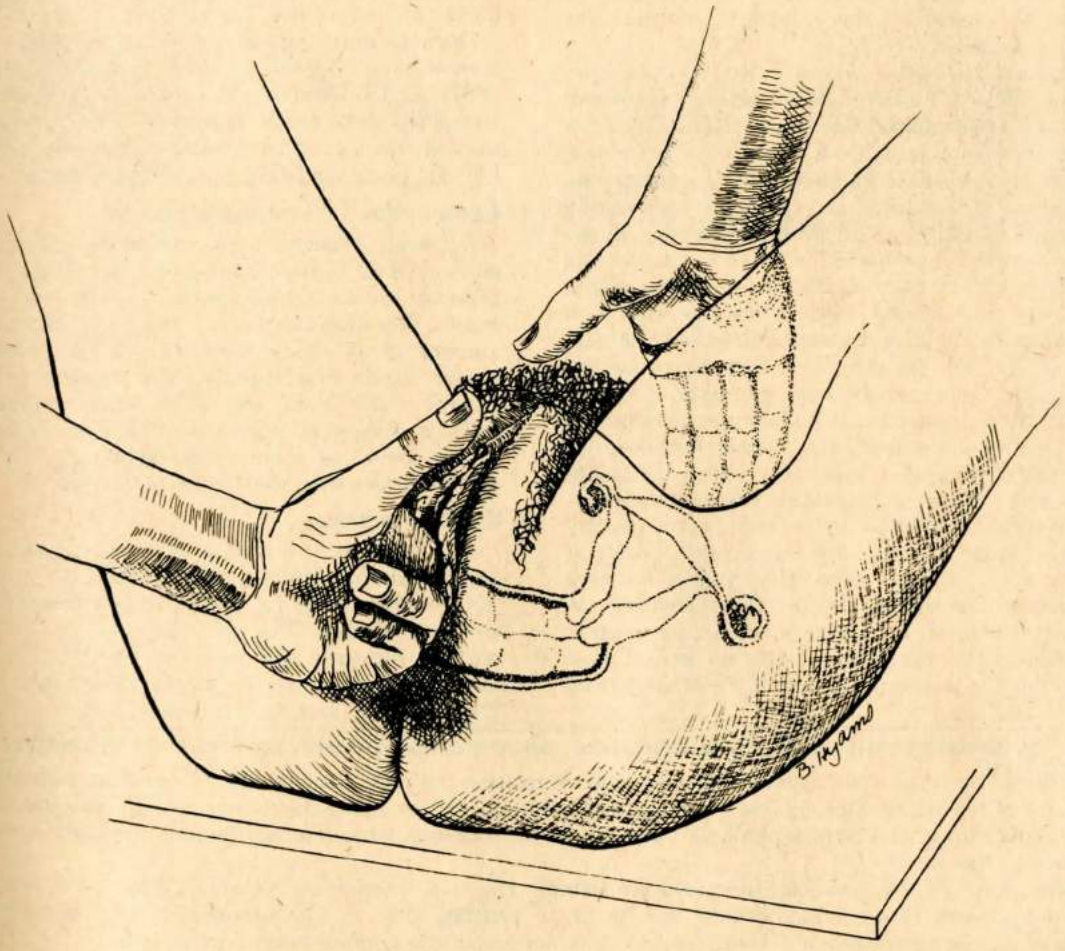
To inspect the vagina and cervix, the vaginal walls must be held apart. The speculum, a metal or plastic instrument with rounded blades, should be warmed and lubricated with warm water before it is inserted into the vagina. The blades are opened and the vaginal walls gently separated. In most cases the speculum can be used, even if the hymen is intact.

The Pap test for cervical cancer is done with the speculum in place. With a flat stick or glass tube, cells are gently scraped from the surface of the cervix and placed on a glass slide which is sent to a laboratory for microscopic examination.

If the woman thinks that she may have gonorrhea, the doctor should take a sample of cervical secretions for lab testing. These secretions are easily obtained by inserting a cotton tipped swab into the cervix.

If the woman complains of itchiness or vaginal discharge, the doctor should examine a sample of the discharge microscopically to determine the cause of the irritation.

The doctor removes the speculum and performs an "internal" or pelvic examination. Two fingers of a surgically gloved hand are inserted deep into the vagina. With the other hand on the lower abdomen, the doctor examines the uterus, checking its size, shape, and mobility. Unless there is swelling or abnormal growth, the ovaries and Fallopian tubes usually can not be felt.



Pelvic examination ("internal")

An internal-external view. The doctor puts two fingers in the vagina and presses down on the lower abdomen with the other hand. The pelvic organs can be felt between the two hands.

hormones and the menstrual cycle

Hormones are chemical "messengers" which "instruct" the organs of the body to perform certain functions. Since hormones can be carried in the bloodstream, the gland which releases the hormone does not have to be located near the organ which the hormone affects. Some of the hormone-secreting glands are: the pancreas, the thyroid gland, the testicles, and the ovaries. The pituitary gland, located at the base of the brain, is perhaps the most important hormone-secreting gland. The hormones which it secretes control the secretion of hormones by the other glands. The secretions of the pituitary itself are controlled by the amount of the other hormones in the bloodstream. When there is little of a certain hormone present, the pituitary instructs the gland responsible to produce more; when there is a lot of the hormone available, the pituitary instructs the gland to produce less.

The menstrual cycle is controlled by pituitary hormones called **Follicle Stimulating Hormone (FSH)** and **Luteinizing Hormone (LH)**. Together these two hormones stimulate the ovaries to release the female sex hormones, **estrogen** and **progesterone.** The amount of estrogen and progesterone in the bloodstream determines the particular phase of the menstrual cycle. In young girls, these hormones are not made in sufficient quantities to have any effect, but at some time during adolescence, the affects of these hormones begin to appear. Puberty is the general term for all the physical and psychological changes a girl undergoes between the ages of 11 and 17, due to these hormones. It includes: appearance of pubic hair and underarm hair, breast development, distribution of fat tissue, especially about the thighs and hips, and the first menstruation (the menarche).

The average menstrual cycle lasts approximately 28 days. Some women have consistently longer or shorter cycles; others, especially young women, have cycles which vary in length. The menstrual cycle can be influenced by a change in climate or emotional stress. The first day of the menstrual flow is considered the beginning or day 1 of the menstrual cycle.

Day 1 - day 5: menstrual phase

The cycle begins with the shedding of the developed endometrium as the menstrual flow. Total blood loss during menstruation is about 2 to 4 ounces; most of the flow is fluid but occasional blood clots appear when the flow is heavy. The "period" lasts 3 to 7 days, usually heavy at first and tapering off at the end.

Women use either external sanitary napkins or internal tampons to absorb the flow. A napkin (pad) is attached to a belt which holds it in place against the vulva. Napkins should be changed regularly since blood gives off an unpleasant odor when exposed to air. Internal tampons are held in the vagina by muscles at the vaginal opening. When inserted correctly, tampons cannot be felt. Tampons should be changed as often as the flow necessitates. Women with the hymen intact (virgins) can use tampons without difficulty. When the flow is extremely heavy, two tampons can be used at once. The second is inserted beside the first, and the strings should be tied together. Some women prefer to use a tampon and sanitary napkin to absorb a very heavy flow.

There is no reason to avoid sexual intercourse during menstruation.

During menstruation, the pituitary gland releases a small amount of both Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH). FSH and LH stimulate the growth of several follicles, each containing one egg, on the surface of the ovary. FSH and LH also cause the follicles to secrete estrogen.

Day 6 — day 13: proliferatory phase

Estrogen released by the follicles stimulates the endometrium to proliferate and causes changes in the cervical mucus which permit easier movement of sperm into the uterus. At about the 12th day, the amount of pituitary hormones in the bloodstream begins to increase rapidly. The amount of LH increases more than the FSH since production of FSH is somewhat suppressed by the estrogen. One follicle develops more extensively than the others, and protrudes from the surface of the ovary.

Day 14: ovulation

Ovulation is the release of one egg (ovum) from the protruding follicle. As FSH and LH reach their highest point, the tip of the follicle becomes transparent and thin. The thinnest area on the follicle's surface ruptures and releases the egg. The fringed end of the fallopian tube draws the egg into the tube. Once the egg has been released, LH stimulates the

Aspects of female menstrual cycle: ovulation, endometrial growth, and hormonal balance

A. Ovulation: The box at the upper left shows several ovarian follicles, each containing an egg, pushing toward the surface of the ovary. One follicle develops and ruptures (upper right), releasing an egg near the open end of the fallopian tube. The ruptured follicle develops into the corpus luteum which degenerates and is eventually reabsorbed by the ovary.

B. Growth cycle of the endometrium (uterine lining): Day 1-5: menstrual bleeding. Day 6-14: proliferatory phase; new growth of the endometrium and its blood vessels. Day 15-28: secretory phase; endometrium is prepared to accept a fertilized egg. If fertilization does not occur, the endometrium breaks down.

C. Pituitary hormones: The amount of Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH) in the blood at different stages of the menstrual cycle.

D. Female sex hormones: The amount of estrogen and progesterone in the blood at different stages of the menstrual cycle. Estrogen is produced by the ovary; after ovulation, progesterone is produced by the corpus luteum.

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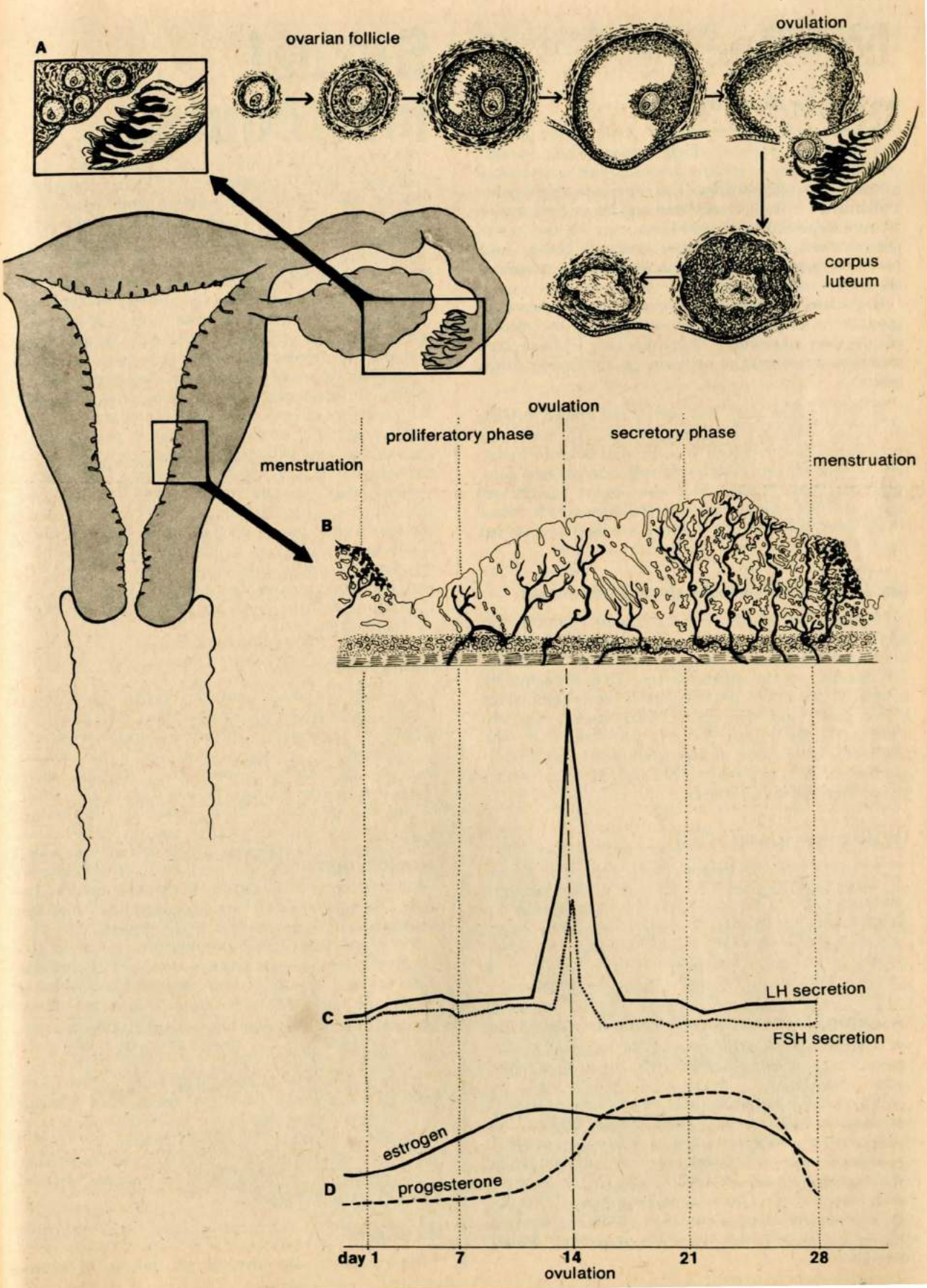
A
ovarian follicle
ovulation
corpus luteum
ovulation
proliferatory phase
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menstruation
menstruation
B
C
LH secretion
FSH secretion
D
estrogen
progesterone
day 1
7
14
21
28
ovulation

ruptured follicle to become a hormone-secreting gland called the **corpus luteum** (latin for "yellow body").

Day 15 — day 25: secretory phase

Immediately after ovulation, the corpus luteum secretes progesterone which, along with estrogen released by the ovaries, stimulates further development of the endometrium. The endometrium becomes a rich bed of blood vessels and tissues in preparation for implantation of a fertilized egg. Estrogen and progesterone also affect the pituitary gland: both hormones block its production of FSH, and progesterone alone blocks the production of LH.

If the egg is fertilized, the placenta takes over the production of progesterone, and blocks the release of pituitary hormones, FSH and LH. This in turn prevents the release of another egg throughout pregnancy.

If fertilization does not occur, the corpus luteum starts to degenerate about day 25. Its cells are reabsorbed and replaced with normal ovarian tissue. As a woman gets older, reabsorption is not complete and scar tissue from the corpus luteum remains on the ovarian surface. Follicles which began to develop but did not rupture are also reabsorbed by the ovary.

Day 26 — day 28: secretory phase (premenstrual)

Degeneration of the corpus luteum reduces the secretion of estrogen and progesterone. This low hormonal level causes contraction of the blood vessels leading to the endometrium, thus reducing its supply of blood. The outer layers of the endometrium break down and the small blood vessels rupture. This marks the beginning of the menstrual flow. The low levels of estrogen and progresterone also stimulate the pituitary to produce FSH and LH, thus causing the whole cycle to begin again.

The climacteric (change of life)

The cycle described above continues, except during pregnancy and breastfeeding until the climacteric when the ovaries begin to fail. **Menopause** or the end of menstruation, the most noticeable event of the "change of life", occurs between the ages of 45 and 50. The process is gradual as ovulation becomes more irregular and infrequent. Once ovulation stops, progesterone is no longer released. Estrogen production is greatly reduced. Women under the care of a gynecologist usually receive hormonal "replacement therapy" for the rest of their lives.

Many women suffer from minor to severe depression and irritability during the change of life. Because western women are forced to compete as sexual objects, and are allowed no meaningful function within society, such problems take on an exaggerated importance. There is no reason why the climacteric should affect a woman's ability to function fully both mentally and physically or to enjoy sexual intercourse.

Sexual intercourse

The ability to enjoy sexual intercourse (coitus, "making love", copulation, "having relations", "having sex", etc.) develops with knowledge of the human body and with experience in social and sexual relations with others. The pleasure of sex without fear of pregnancy or moral sinfulness continues to be denied, especially to women, because of the repression of such knowledge and experience.

Most couples engage in some form of sexual foreplay - kissing, caressing, teasing, - before beginning sexual intercourse. Almost any part of the body is sensitive to sexual stimulation, but especially the thighs, buttocks, breasts, nipples, neck and ears. Both partners can enjoy oral-genital contact.

When sexually aroused, the man's penis and the woman's clitoris become hard and erect, due to the engorgement of the tissue with blood. The woman's vaginal walls separate, expand, and become moist with mucus. To begin coitus, either partner guides the man's erect penis into the vaginal opening. Saliva is always available as a lubricant if the vagina is too dry for comfortable intromission. Together, the man and woman move their bodies in such a way that the clitoris and the penis are stimulated, not necessarily simultaneously.

Female orgasm

Whether a woman comes to orgasm (the climax) through masturbation, manipulation, or coitus, the physiologic response is the same. Sexual sensitivity is centered in the vulva, specifically the clitoris, and not the vaginal barrel which contains many times fewer nerve endings. Stimulation of the clitoris causes engorgement of blood vessels in the genitals, and a general neuro-muscular tension. Other body changes in this **excitement phase** include: increased rate of breathing and of heart beat, breast enlargement, erection of nipples, upward movement of the uterus, and expansion of the vaginal walls. Sometimes a sexual flush (temporary skin rash) appears.

At the **plateau phase** of excitement, these changes are accelerated, and, without distraction, the woman soon reaches orgasm - the pleasurable release of tension in the genitals and throughout the entire body. The vaginal walls especially near the opening, contract rhythmically. The uterus contracts pushing the cervix further into the vagina.

As the tension is released, the body begins to return to its normal condition **(resolution phase)**; but, if stimulation continues before sexual tension drops below the plateau level, the woman can "come" again almost indefinitely. Women can experience long orgasms or a rapid series of orgasms without a return to the plateau phase.

Male orgasm

Male orgasm also involves the release of neuro-

muscular tension throughout the body. In the plateau phase when orgasm seems inevitable, the contents of the ampulla, seminal vesicles, and prostate gland combine to form the final seminal fluid. Muscles surrounding the urethra as it leaves the bladder contract so that urine cannot be released.

During orgasm, the semen is forced out the tip of the penis through the urethra. The first muscular contractions are strong and their rhythm is the same as the woman's vaginal contractions. The amount of ejaculate released influences the strength (but not necessarily the pleasure) of the orgasm. Other body changes are similar to those in women including muscles spasms, sexual flush, and a light film of perspiration.

During the resolution phase after orgasm, the body changes disappear, at first suddenly, and then slowly taking up to several hours. The penis loses much of its erection, and a short time span (the **refractory period**) must pass before a man can have another orgasm.

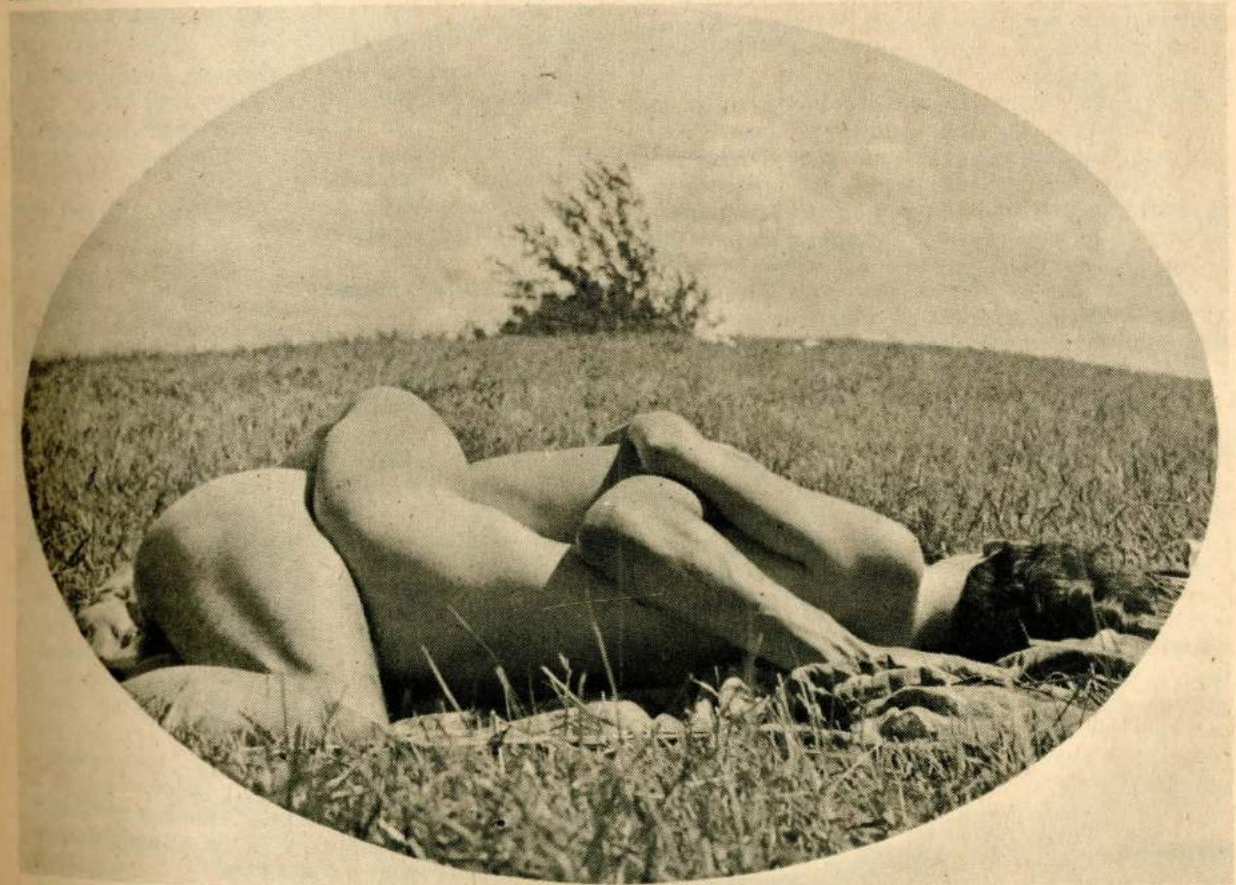
Positions

The many imaginative positions for making love fall into one of two classifications: face to face, and intromission from behind. In face to face positions (to mention only a few), either partner can lie on top of the other, both can lie on their sides, one can sit over the other who is lying down, or both can stand or sit. When intromission occurs from behind, the man can lie on top of the woman, the woman can sit back on the man's lap, the woman can crouch while the man kneels behind her, etc. Each position has its advantages and disadvantages such as: freedom of movement, depth of penetration of the penis, and stimulation of the clitoris.

Rupturing the hymen (loss of virginity) should be done in a position in which both partners can easily control their movements. The hymen should be stretched gradually with gentle but constant penetration of the penis. Slight bleeding and some pain is common; however, some women feel no discomfort at all. Many women prefer to stretch the hymen gradually themselves before attempting sexual intercourse. Over a period of several days, the woman inserts one finger into the vagina, then two, and then three, until the tissue is stretched sufficiently.

There is no reason for prohibiting sexual intercourse during menstruation. The erect penis blocks the flow during intercourse, and a disposable cloth placed on the sheets can prevent possible staining when the man withdraws his penis. Some women have a slightly heavier flow after intercourse due to contractions of the uterus during orgasm.

*In keeping with the **Handbook's** emphasis on contraception, those means of human sexual expression, such as homosexuality, masturbation, oral-genital intercourse, and anal intercourse, which do not lead to conception have been omitted. A comprehensive discussion of human sexuality is beyond the scope of the **Birth Control Handbook.***



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conception

Sperm

Sperm cells, produced in the seminiferous tubules of the testes, are moved by muscular contractions through the vas deferens for about three weeks until the mature cells reach the ampulla. Secretions from the prostate gland and seminal vesicles add both bulk and energy to the sperm cells, creating the final seminal fluid.

Each sperm cell consists of a head, mid-piece, and tail. The head contains 23 chromosomes responsible for the hereditary characteristics from the father. The mid-piece and tail are made up of coiled fibers which contract and expand to move the sperm cell along.

An average of 350 million microscopic sperm cells are released in one ejaculation. The life span of sperm within the female genital tract is approximately 48 hours.

The egg

Follicle Stimulating Hormone (FSH) released by the pituitary gland at the beginning of a woman's cycle, stimulates several ovarian follicles to grow. About the 12th day, the pituitary begins to release Luteinizing Hormone (LH) as well. When FSH and LH are in proper balance, one of the follicles ruptures, releasing an egg which is soon picked up by the fringed end of the Fallopian tube.

The nucleus of the egg cell contains 23 pairs of chromosomes; as the egg matures, 1 chromosome from each pair is retained, and the other is discarded in a cluster called the polar body. The nucleus and the nourishing cytoplasm are surrounded by a thicker membrane, the zona pellicuda. Smaller cells from the ruptured follicle cling to its surface. Some of these cells are brushed off by hair-like cilia within the Fallopian tube as muscular contractions move the egg toward the uterus. If the egg is not fertilized within 24 hours of ovulation, it degenerates and passes out the body unnoticed.

Changes of the uterus

As the ovarian follicles develop, estrogen is released by the ovaries. After ovulation, progesterone is released by the corpus luteum, the scar tissue on one ruptured follicle. Both hormones stimulate the endometrium (uterine lining) to "proliferate", preparing the lining to nourish a fertilized egg after implantation. If implantation does not occur the lining is shed as the menstrual flow.

At the time of ovulation, mucus in the cervical canal becomes more plentiful, thinner, and richer in nutrients, so that sperm cells can pass easily into the uterus.

Fertilization

During sexual intercourse, millions of sperm cells are ejaculated high into the woman's vagina, near the alkaline environment of the cervix. Many sperm "swim" in the wrong direction; others are killed by the acid condition of the vagina, and still others are trapped in the folds of the vaginal walls. Those that pass through the cervical canal are moved toward the Fallopian tubes primarily by muscular activity of the uterus. Some sperm enter each Fallopian tube, only one of which holds an egg.

Fertilization occurs in the Fallopian tube. The first sperm cells to reach the egg release a chemical which dissolves cells adhering to the zona pellicuda. Once the egg is exposed, one sperm cell bores through the cell membrane to the center of the cell. A second chemical reaction prevents any other sperm from entering the egg.

As the fertilized egg (gamete) is moved down the Fallopian tube, the nuclei of the sperm and egg fuse together to form one nucleus with 46 chromosomes. These chromosomes reproduce themselves and the cell divides in two. This division process continues until the gamete is a cluster of tiny cells, each with 46 chromosomes. Fats and other substances of the egg cell provide it with nourishment for 3 days as it travels down the tube to the uterus.

Nidation

For several days the egg cluster or **blastocyst** floats freely in the uterine cavity. About six days after fertilization, the blastocyst attaches itself to the endometrium, and buries itself by chemically dissolving a bit of endometrial tissue. Blood surrounds the cluster and nourishes it. Nidation **(implantation)** is complete by the 12th day after fertilization. One mass of cells from the blastocyst soon develops as the growing embryo; others become nutritive structures such as the placenta.

Implantation often does not occur at all, and the fertilized egg degenerates.

Determination of pregnancy

Usually, a woman first suspects that she is pregnant when her menstrual period is overdue. The length of pregnancy is always calculated from the first day of her **last** menstrual flow; thus, if a woman is ten days late, and normally has her period every 28 days, she is considered 38 days or 5½ weeks pregnant.

A woman whose period is late but who does not wish to be pregnant should continue to use some kind of contraception until pregnancy has been confirmed by a doctor.

Pregnancy tests work by detecting the presence, within urine, of a hormone called Human Chorionic Gonadotropin (HCG). The placenta releases increasing amounts of HCG so that, by the 6th week of pregnancy, some HCG appears in the pregnant woman's urine.

In the "biological test", some of the woman's urine is injected into a laboratory animal such as a rat or toad. If HCG is present, it causes a particular reaction (such as ovulation) in the animal. Such a reaction is defined as a positive result, meaning that the woman is pregnant. This test takes at least six

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hours.

"Chemical tests" take from 2 minutes to several hours. When a chemical is added to a sample of urine, the presence or absence of a chemical reaction determines if the test is negative or positive.

Although both tests are highly accurate, false reports do occur. Pregnancy tests are not accurate for pre-menopausal women. Hospital laboratory tests are often more accurate and less expensive than drugstore tests.

For a positive confirmation of pregnancy, a woman should see a gynecologist for an internal examination. Private doctors are expensive, but family planning centers, university health services, and hospital gynecological clinics are more reasonable. Women under 18 can often get cooperation at the adolescent clinic of a children's hospital.

Several signs of early pregnancy which a doctor or paramedical specialist can detect during an internal examination are: darker color of the vulva and vagina, softness of the uterine isthmus (area between the cervix and uterine body), softness of the cervix, and size of the uterus.

If the doctor is not positive of the diagnosis or suspects that the woman is not pregnant, the woman can be given synthetic progesterone, either orally or by injection, which raises the hormone level in the woman's blood stream. If the woman is not pregnant, the following drop in the hormonal level causes withdrawal bleeding. **Such pills cannot abort a fetus:** they can only bring on a late period. These pills cost approximately $3 at reputable pharmacies.

oral contraceptives

Few scientific achievements have had greater social impact than the development of the oral contraceptive. The Pill is presently used by approximately 18.5 million women, about 8.5 million of whom live in North America. The Pill is the closest thing to the "ideal contraceptive" available, and its popularity reflects a changing social and political mood of a whole generation of women.

The oral contraceptive is 100% effective when taken as instructed, relatively "safe", easily reversible, and in the control of the woman; however, use of the Pill does present certain difficulties. Taking one pill every day is a nuisance, appreciated by few not taking oral contraceptives. Minor annoying side effects are common, although transient, in the first three months of use. Most importantly, the oral contraceptive constitutes an endocrinological insult to the female body which in rare instances can lead to serious disease and even death. Nevertheless, on the basis of available scientific findings, the editors of this publication are convinced that the benefits of oral contraception outweigh its dangers. Accepted human activities such as pregnancy and childbirth, or even travel in automobiles carry much greater risks to health and life. Many drugs used more commonly than oral contraceptives, such as aspirin or penicillin, are potentially more dangerous than the Pill; however, relief of pain and combatting infection are accepted as important in our society. Until recently, contraception, with its gifts of sexual freedom and physical health for women, has not been appreciated as an important medical achievement.

Margaret Sanger, renowned anarchist and fighter for the liberation of women, was probably the first to write : "No woman can consider herself free until she can determine the number of children she will have". In the winter of 1950 Margaret Sanger convinced Dr. Gregory Pincus to accept a grant of $2,100 from the fledgling Planned Parenthood Federation which she had founded. Millions of dollars of corporation money soon followed the original Federation grant, but credit for initiating the first research project which eventually produced the Pill goes to one of the most noble women of this century, Margaret Sanger.

With support from a major U.S. pharmaceutical corporation, G.D. Searle Co., Pincus and two colleagues, Drs. John Rock and Celso Garcia, experimented with various combinations of synthetic estrogens and progesterones. In 1956, 265 Puerto Rican women "from the low income population living in a housing development project in a slum clearance area" were selected for the first significant human tests. These women received 10 mg. of a synthetic progesterone called norethynodrel and as much as .22 mg. of a synthetic estrogen called ethinyl estradiol. Officially, Puerto Rican women were chosen because of their high pregnancy rate; in fact, these poor, non-white women were used as guinea pigs since scientists hesitate to test such potent medication on white American women.

The Puerto Rican tests revealed that women do not drop dead after ingesting norethynodrel and ethinyl estradiol and that they do not become pregnant. The G.D. Searle Co. quickly developed Enovid, which originally contained 10 mg. of norethynodrel and .15 mg. ethinyl estradiol. In 1960, on the basis of scanty scientific information, the United States Food and Drug Administration (FDA) authorized the marketing of Searle's Enovid.

Description

There are two kinds of oral contraceptives: the **combination pill** and the **sequential pill**. A series of the combination oral contraceptive consists of 21 (20 in some brands) identical pills each containing synthetic estrogen and progesterone. A sequential oral contraceptive series is made up of two different kinds of pills. The first 11, 14, 15 or 16 pills (depending on the brand) contain only synthetic estrogen, and the next 10, 6, 5, or 4 pills contain a combination of estrogen and progesterone.

Synthetic hormones stimulate the same body reactions as do natural hormones. There are 2 kinds of synthetic estrogen and 9 different synthetic pro-

gesterones. The two estrogens, **mestranol** and **ethinyl estradiol,** have almost identical properties; however the effects of ethinyl estradiol are more highly localized at the reproductive system. For example, ethinyl estradiol has less effect on glucose tolerance than does mestranol. Although ethinyl estradiol is probably the better estrogen, mestranol is used more commonly. Mestranol is used in: Enovid, Ortho Novum, Norinyl (including Norquen and Noriday), C-Quens, and Ovulen. Ethinyl estradiol is used in: Norlestrin, Provest, Oracon, Ovral, and Demulen.

The quantity of estrogen in each pill is more important than the kind. Several years ago it was discovered that not more than .05 mg. of estrogen in each pill is necessary to ensure 100% contraceptive effectiveness. Also, when such "low dose estrogen pills" are used, risks of serious complications are significantly reduced. In December 1969 the British Committee on Safety of Drugs officially recommended that brands of oral contraceptives containing more than .05 mg. of estrogen should not be used. In the words of the British Medical Journal, British pharmaceutical companies "were quick to take the hint", and withdrew from the market all combination pills containing more than .05 mg. of estrogen. American pharmaceutical companies have produced low dose brands, but have refused to withdraw high dose pills from the market.

Most synthetic progesterones are produced by chemically changing the synthetic male sexual hormone, testosterone. Depending on the chemical process used, the resulting progesterone is either **estrogenic** or **anti-estrogenic**. With estrogenic progesterones, at least some of the hormone is changed by the body into estrogen. Norethynodrel, the progesterone component of Enovid, is the only commonly used estrogenic progesterone. Estrogenic progesterones should not be used since they introduce unnecessary estrogen. On the other hand, anti-estrogenic synthetic progesterones, like natural progesterones, counter the effects of estrogen. The anti-estrogenic qualities of synthetic progesterones add to the contraceptive effectiveness of the Pill.

Depending on the kind and quantity of synthetic hormones used, a particular brand of combination pills can be estrogenic or anti-estrogenic. All low dose combination pills are distinctly anti-estrogenic, which counteracts side effects and complications related to estrogen (most side effects are estrogen-related). In contrast, sequential pills are distinctly estrogenic; because the sequential series does not provide progesterone for most of the 21 pill cycle, more than .05 mg of estrogen must be delivered by the sequential pill to ensure contraceptive effectiveness, and even so, sequentials are not 100% effective, with annual failure rates of 1% to 2%. Not only do sequentials deliver more estrogen per day, but the lack of progesterone's anti-estrogenic effect further extends the effects of estrogen. Since sequential pills provide excessive estrogen, they should be ordered off the market. (The Eli Lilly Co recently discontinued production of C-Quens, but pharmacists still have large supplies). **Women taking sequential pills such as : C-Quens, Estalor, Lyndiol SQ, Miniquen, Norquen, Ortho-Novum SQ, Oracon SQ, Ovex SQ and Secrovin SQ should see a gynecologist and ask for a change of prescription.**

How the Pill works

A healthy woman who is not pregnant or breast feeding menstruates approximately once every 28 days. Soon after menstruation begins, the hypothalamus (part of the brain) stimulates the pituitary gland to secrete a hormone called Follicle Stimulating Hormone (FSH) into the blood stream. FSH stimulates the growth of several ovarian follicles, and the secretion of estrogen by these follicles. A few days after the first release of FSH, the pituitary also begins secretion of Luteinizing Hormone (LH). Around the 14th day of the menstrual cycle, a sudden increase of LH secretion causes one follicle to rupture and release an egg. After ovulation, the ruptured follicle changes into a gland called the corpus luteum which begins to secrete progesterone. As the quantity of estrogen and progesterone increases in the blood stream, the pituitary secretes less FSH and LH.

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If the egg is fertilized, the corpus luteum as well as the placenta secrete large quantities of progesterone throughout pregnancy. Estrogen and progesterone block the pituitary's secretion of FSH and LH, and ovulation cannot occur during the nine months of pregnancy. Overlapping pregnancies are thus prevented.

The oral contraceptive mimics the body's defences against pregnancy by creating a hormonal "pseudo-pregnancy" within a woman's body. Each pill of a series contains enough estrogen and progesterone to block secretion of FSH and LH, thus preventing ovulation.

In addition, progesterone causes secondary changes which make pregnancy unlikely even if the pituitary "escapes" the effects of the synthetic hormones. Progesterone causes the cervical mucus to become thick and impenetrable, preventing sperm cells from entering the uterus. Progesterone also disrupts the cyclic growth of the uterine lining, making it unreceptive to a fertilized egg. Since sequential oral contraceptives are primarily estrogenic, secondary progesterone-dependent effects are not produced, resulting in the 1% to 2% failure rate of sequential pills.

Medical examination and prescription

Oral contraceptives, like all potent medication, must not be used by certain women. Proper medical screening can spot women for whom oral contraception would pose unacceptable risks.

A complete medical history must be taken before prescribing an oral contraceptive. Questions which must be asked include:

1. Does the woman have, or has she ever had: a blood clotting disease such as thromboembolism, thrombophlebitis, pulmonary embolism, "stroke", retinal thrombosis; migraine headaches; heart disease or defect; endocrinological disease or disorder such as thyroid dysfunction or diabetes; liver disease such as jaundice; kidney disease; asthma; epilepsy; or any significant psychiatric problem such as severe depression?

2. Is there any inheritable disease in the woman's family? Has the woman's mother ever had any form of cancer, migraine headaches, high blood pressure, or varicose veins? If the woman has any sisters, similar information about their medical histories can be relevant.

3. Has the woman ever been pregnant? How many times? How many live babies, abortions or miscarriages has she had? Has the woman had complications during pregnancy, such as toxemia, varicose veins, or liver disease?

4. At what age did the woman have her first menstrual flow? What is the average length of her menstrual cycle and of the flow itself? Does she experience cramps, fluid retention, breast swelling and tenderness, or mood changes before, during and/or after menstruation?

Women who have or who have had: thromboembolism, thrombophlebitis, pulmonary embolism, a "stroke", retinal thrombosis, heart disease or defect, severe endocrine disorder, recurrent jaundice of pregnancy, or any form of cancer must not take oral contraceptives. The synthetic estrogen delivered by the Pill can worsen existing conditions of these diseases or increase a woman's susceptability to a relapse.

Women who have had: mild endocrine disorder, liver disease such as jaundice, or kidney disease can take the oral contraceptive if: (a) an endocrine disorder is well under control, (b) kidney or liver disease is completely cured.

Women who have or who have had: migraine headaches, high blood pressure, varicose veins, asthma, epilepsy, any significant psychiatric problem, or diabetes can take an oral contraceptive, provided that they are closely supervised medically, and that periodic tests are taken to ensure that the Pill's estrogen is not worsening their condition. If the Pill causes migraine headaches to become more severe or more frequent, the woman must stop taking the medication. If high blood pressure or varicose veins are adversely affected by oral contraception, the woman must stop taking the medication. If fluid retention occurs as a side effect to the Pill, asthma or epilepsy can be adversely affected. For women with asthma or epilepsy, diuretics can be prescribed, and only anti-estrogenic pills should be used. Women with existing psychiatric problems must be followed by a psychiatrist while taking oral contraception. Women with minor depression before menstruation often find their symptoms relieved while taking the Pill. Pre-diabetic women, or women with active diabetes should have an annual or semi-annual glucose tolerance test, and should use an oral contraceptive containing ethinyl estradiol as its estrogenic component.

Once the medical history is taken, the doctor performs a general and a gynecological physical examination. The woman's blood pressure and weight must be recorded, samples of blood and urine must be taken, and a careful breast examination and a Pap test (for cervical cancer) must be performed.

A doctor has a variety of brands to choose from when prescribing oral contraceptives. Only "low dose" brands which contain not more than .05 mg of estrogen per pill should be used. **The low dose brands are : Demulen 1, Demulen .5, Norlestrin 1, Norlestrin 2.5, Norinyl 1, Ortho-Novum 1/50** (Norinyl 1 and O-N 1/50 are exactly the same), and **Ovral.** The use of Norlestrin 2.5 should be reserved for women who require a larger quantity of progesterone to counter extreme estrogen-excess symptoms (such as nausea, vomiting, fluid retention and breast tenderness).

All women taking the Pill should have an annual gynecological examination, including breast examination and a Pap test.

Personal use of the Pill

Most oral contraceptives are taken in a series of 21 pills. This produces a convenient "three weeks on, one week off" cycle of medication.

To begin taking the Pill, a woman must wait for a menstrual flow. Counting the first day of her flow as day 1, the woman takes the first pill

of a series on day 5. One pill is taken at about the same time daily for 21 days. The woman counts 7 days after taking the last pill. On the 8th day, she takes the first pill of her next series. Thus, if a woman takes the first pill of her first series on a Tuesday, she takes her last pill of that series on a Monday, and takes the first pill of the next series on the Tuesday of the following week. The "starting day" (i.e. the day that the first pill is taken) is the same day of the week for every series.

Some oral contraceptives come in 28 day series. The first 21 pills contain the synthetic hormones. The last 7 pills are placebos - pills that contain nothing other than sugar. A woman taking a 28 pill series takes one pill every day, beginning a new package the day after taking the last (28th) pill.

Most brands of the Pill are now available in a 28 day series in which the placebos contain iron. It is argued that since all women lose some blood due to withdrawal bleeding, they should receive "replacement iron" (iron is necessary in the formation of new red blood cells). However most women are not anemic and do not require replacement iron; those women who do need iron added to their diet usually require more than is provided by the iron placebos.

In general, combining different drugs into the same pill or pill series is bad medicine, which serves only to maintain high drug prices and increase drug sales.

If one pill is forgotten it should be taken as soon as it is remembered, even if this means taking two pills on the same day. If taking the pill is incorporated into routine daily activities (e.g. "waking up", "supper", "going to bed") a woman is less likely to forget a pill. If a combination pill is forgotten for not more than 24 hours, the chances of pregnancy are close to zero. If more than one combination pill is forgotten, or if one sequential pill is forgotten, the forgotten pills should be taken when remembered and another contraceptive method should be used for the rest of the cycle.

The combination Pill provides 100% contraceptive protection from the first pill of the first series. **If a woman is changing her brand of pill from a higher dose of estrogen to a lower dose, another birth control method should be used for the first 2 weeks of the first low dose series.**

Reversibility of contraceptive action

The oral contraceptive is easily reversible. When pregnancy is desired, the woman finishes a pill-series, and does not start another series. Sixty to 75% of women who stop taking the Pill to become pregnant achieve their aim within three cycles of the last pill, and 90% become pregnant within one year. The pregnancy rate is the same in women who have never taken oral contraceptives and who are attempting to become pregnant.

Babies born to women who have used oral contraceptives are not affected by the medication.

In a small, undetermined percentage of women who stop taking the Pill, ovulation and menstruation are delayed for a month or two, and in some reported cases, for as long as a year. This condition of post-Pill amenorrhea (lack of menstruation) has been named the "oversuppression syndrome". Amenorrhea following discontinuation of the Pill is more likely to occur in women who have irregular menstrual cycles before using oral contraception. The probable cause of post-Pill amenorrhea is a lingering, oversuppression of the hypothalamus by the Pill's synthetic progesterone. Almost all cases of oversuppression disappear by themselves without medication. If amenorrhea continues for more than 6 months, cortisone acetate or clomiphene citrate (brand name: Clomid) is used to bring on ovulation and menstruation. Clomid is highly effective if there is enough natural estrogen in the bloodstream. If the level of estrogen is low, skull X-rays are taken to make sure that a coincidental tumor does not exist, and supplementary human gonadotropins are then given to induce ovulation.

Prolonged post-Pill amenorrhea responds quickly and easily to treatment with Clomid, or, if necessary, human gonadotropins. It is unlikely that the incidence of oversuppression increases in women taking oral contraceptives for prolonged periods. The practice of discontinuing oral contraception every 2 years to determine if ovulation occurs spontaneously is medically useless and often results in unwanted pregnancy.

Side effects

Oral contraceptives are potent medication and induce many body changes other than the suppression of ovulation.

Nuisance effects

Most nuisance effects induced by oral contraception are related to estrogen. Such effects are common during the first 3 cycles of medication while the body is adjusting to the new hormonal levels, and they usually disappear by the 4th cycle. If any side effect persists for longer than 3 cycles, or becomes severe, the prescribing doctor should be consulted.

The majority of women taking low-dose oral contraceptives do not experience any side effects, or are bothered only by minor, transient effects. Psychological factors play a large part in the incidence of minor effects. If a side effect is expected, it may very well occur.

Nausea sometimes accompanied by vomiting or stomach cramps is the Pill's most common side effect. If it occurs, nausea appears within a day or two of the first pill taken, and recurs at the beginning of the following cycle. Such side effects can be avoided by: a. taking the daily pill after a full meal; b. taking the pill just before going to sleep; or c. taking the pill with a glass of milk or a mild antacid.

Fluid retention can occur as a result of estrogen's effects on the body's retention of salts. A general "bloated feeling", cramping or swelling of the legs, breast discomfort, rapid weight gain,

Estimates of risk of death to women in England 1966

	AGE 20-34	AGE 35-44
Annual death rate per 100,000 healthy, married, non-pregnant women from pulmonary cerebral thromboembolism:		
Users of oral contraceptives	1.5	3.9
Non-users of oral contraceptives	0.2	0.5
Annual death rate per 100,000 total female population from:		
Cancer	13.7	70.1
Motor accidents	4.9	3.9
All causes	60.1	170.5
Death rate per 100,000 maternities from:		
Complications of pregnancy	7.5	13.8
Abortion	5.6	10.4
Complications of delivery	7.1	26.5
Complications of the post-birth period from:		
Thromboembolic disease	1.3	4.6
Other complications	1.3	4.6
All risks of pregnancy, and post-birth period	22.8	57.6

and generalized itching are minor symptoms of fluid retention. Fluid retention can adversely affect migraine headaches. If a woman experiences severe headache, dizziness, and blurry or double vision shortly after starting the Pill, she should immediately consult the prescribing doctor, and stop taking the medication.

Fluid retention is harmless except to women with migraine headaches, epilepsy, high blood pressure, vascular disease, or heart defect or disease. Fluid retention can be alleviated by a low salt diet, restricted water intake and, if necessary, a diuretic.

Chloasma is the rarest of estrogen-related nuisance effects. Chloasma, also called the "mask of pregnancy" appears as "giant freckles" on the face. Pill related chloasma is more common in women who experience chloasma during pregnancy, and in women frequently exposed to strong sunlight.

Leukorrhea is an estrogen-related, harmless, white or clear, excessive vaginal discharge. If vaginal discharge becomes bothersome, a gynecologist should be consulted.

Estrogen deficiency and progesterone excess side effects occur if a Pill is too highly anti-estrogenic for a particular woman. Such side effects include: mood changes, including depression and changes in sexual desire; increased appetite and weight gain; fatigue; decrease in amount and duration of menstrual flow; oily scalp and skin (sometimes leading to acne); changes in facial or body hair distribution; and breast enlargement. Progesterone related side effects, although usually minor, either remain constant or become worse with each successive cycle. A doctor should therefore be consulted. Breast enlargement is the most common progesterone-related side effect. After an initial size increase, breast size remains constant until the Pill is discontinued, at which point the breasts return to normal size.

If a woman is taking a Pill that delivers more than 1 mg. of progesterone daily, progesterone-related side effects can usually be eliminated by switching to an oral contraceptive with less progesterone (not to a Pill with more estrogen).

Breakthrough bleeding and spotting (bleeding between periods) are the only common progesterone-deficiency side effects. If they occur, such bleeding episodes usually disappear by the fourth cycle. In persistent cases a pill with a higher dose of progesterone can be prescribed.

Vaginitis: Estrogen affects glycogen content of vaginal walls, making the vagina more susceptible to infestation by microscopic yeast or fungus organisms (a common problem for all women). Discharge, itchiness and general vaginal discomfort are symptoms of vaginitis. Vaginitis is not serious, but can be extremely uncomfortable, and deserves immediate medical treatment. Treatment is usually simple (topical creams etc.).

Metabolic effects

The biochemical activities which keep organisms alive are collectively called metabolism. The Pill causes more than 50 undesirable biochemical changes in the female body, most of which are induced by estrogen. It is reasonable to suspect and has been proven in some cases, that reducing the quantity of estrogen reduces the extent of the metabolic changes.

Pregnancy induces similar metabolic changes but pregnancy-related changes are more extensive and in some cases more dangerous. Much more estrogen and progesterone are present in the blood of a pregnant woman than in one who is taking oral contraceptives.

Oral contraceptives containing .1 mg of estrogen per pill cause an increase in the amount of **cortisol** in the bloodstream, but low dose pills (.05 mg estrogen) do not cause a similar observable cortisol excess. Cortisol is produced by the adrenal glands and is an extremely important hormone.

Excessive cortisol slows **insulin production** and reduces its effectiveness. Insulin, a hormone produced by special cells of the pancreas, is essential to the body's use of sugars. A low level of insulin in the bloodstream leads to a disease called diabetes mellitus, characterized by "low glucose tolerance" - the body's inability to transport and use sugars. The Pill does not cause diabetes, but even low dose pills reduce glucose tolerance in most women. Glucose tolerance usually returns to normal when the woman stops using oral contraception; however, long-maintained reduction of glucose tolerance may have permanent effects, especially in women susceptible to diabetes because of heredity or obesity. Women whose blood relatives have diabetes should have a glucose tolerance test before starting the Pill, and an annual test while taking the medication.

Like pregnancy, the Pill increases the amount of

circulating fats and fatty proteins. This may also be the result of cortisol excess. An increase in circulating fats heightens a woman's susceptibility to atherosclerosis, a vascular disease in which arteries are clogged with fat, and it makes particles in the blood, the **platelets,** "stickier". Greater platelet stickiness increases coagulability of the Pill-user's blood, and contributes to the development of thrombosis in some women.

Cortisol may also affect the **liver** which is highly sensitive to circulating hormones. If the liver's excretion of certain wastes into the bile is impaired, jaundice develops. Pregnancy affects liver excretion and some women become jaundiced late in each pregnancy. This disorder is called "recurrent jaundice of pregnancy" and usually disappears promptly after the pregnancy. About 1 women in 10,000 Pill-users develops a similar jaundice. Symptoms include loss of appetite, nausea, general itchiness, dark urine and yellow discoloration of skin, fingernails and eyes. Pill-related jaundice usually begins within 4 weeks of starting oral contraception. The jaundice usually disappears once the woman stops taking the Pill.

Most women taking the Pill excrete higher than normal levels of an amino acid called **tryptophan.** The Pill's estrogen seems to cause a deficiency of vitamin B6 (pyridoxine), which is necessary for the body's use of tryptophan. Such a situation also exists in depressive illness, and pyridoxine deficiency may be the cause of mild to severe depression experienced by some women taking the Pill. Twenty-five to 30 mg of pyridoxine daily significantly improves certain cases of Pill-related depression. Pyridoxine in these quantities is a harmless, water-soluble vitamin.

Since the quantity and nutritive value of breast milk is reduced by the Pill, women who intend to **breast-feed** should not use oral contraception immediately after child-birth.

About 10% of black Americans have a hemaglobin abnormality called **"sickle cell trait (HbSA)".** Hemaglobin is the oxygen transporting protein in red blood cells. Sickle trait is normally harmless but the related disorder **"sickle cell anemia (HbSS)",** which occurs in only 0.25% of black Americans, causes serious illness. Sickle cell anemia is normally diagnosed soon after birth. The Pill does not affect hemaglobin and women with sickle trait (HbSA) can use the Pill; however, women with sickle cell anemia (HbSS) should not use oral contraception.

Serious complications

Thromboembolism : The various kinds of thromboembolism are diseases in which an unnecessary clot forms within a blood vessel, obstructing the flow of blood and starving body tissues. Thromboembolism can have serious and even fatal consequences. During pregnancy, estrogen causes an increased level of blood clotting chemicals (called "factors") within the blood serum, creating a condition of hypercoagulability. Blood loss during and after childbirth is greatly reduced by the blood's increased capacity to coagulate.

Hypercoagulability also increases a woman's susceptibility to thromboembolism during and immediately after pregnancy. Estrogen delivered by the Pill causes increased susceptibility of approximately the same degree.

In 1968 three British scientists, M.P. Vessey, R. Doll and H.W.H. Inman presented carefully collected statistics evaluating risks of fatal and non-fatal thromboembolism to women taking oral contraceptives. The excess death rate from thromboembolism was estimated to be 1.3 per 100,000 users aged 20 to 34 and 3.4 per 100,000 users aged 35 to 44. It was also estimated that 47 women in 100,000 users are admitted to hospital every year for non-fatal thromboembolic disease. Among non-users of the Pill, only 5 in 100,000 are admitted every year. When corrected for error, this reveals a nine times greater risk of non-fatal thromboembolism for Pill-users.

A more recent paper presented by the same scientists reveals that the excess death rate is reduced in women using pills containing not more than .05 mg of estrogen, and another recent study revealed the unexplainable finding that the risk of thromboembolism for Pill-users with blood type O is only about one-third as great as the risk to Pill-using women of other blood types.

An American study organized by Philip Sartwell for the U.S. Food and Drug Administration and presented in the 1969 FDA report on the Pill, reveals findings which are approximately the same as the British ones. The Sartwell study also indicates that high dose and sequential pills provide additional risk.

RISK OF DEATH WITH VARIOUS CONTRACEPTIVE METHODS

		Women age 20-34 years (1,000,000 users/year)			Women age 35-44 years (1,000,000 users/year)		
Method	Pregnancies	Deaths due to pregnancy	Deaths due to method	Total	Deaths due to pregnancy	Deaths due to method	Total
IUD	30,000	7	unknown		17	unknown	
Oral contraceptives	5,000	1	13	14	3	34	37
Diaphragm	120,000	27	0	27	69	0	69
Safe period	240,000	55	0	55	135	0	135
Pregnancy	1,000,000	228		228	576		576

The Pill and cancer: Massive doses of estrogen have been used in gynecology for more than 30 years. No increase in any form of cancer as a result of this medication has been observed.

Estrogen of pregnancy produces cellular changes in the cervix, which look very much like cellular changes of early cervical cancer. After pregnancy, the cervical cells regain their normal appearance. The Pill induces similar cellular changes, and some scientists believe that the oral contraceptive increases the risk of cervical cancer. On the other hand, the Pill might provide a protective effect against uterine and breast cancer.

On the basis of presently existing information, no definite conclusions can be reached as to the effects of oral contraception on the incidence of cancer.

The Pill and vascular disease: Estrogen causes blood pressure increase in susceptible women.

There are several recorded cases of "stroke" in women taking the Pill. A stroke is the rupture of a blood vessel leading to or from the brain. High blood pressure increases the chance of stroke. Severe, debilitating headache is a stroke symptom. If severe headache is experienced while taking the Pill, a doctor should be consulted to rule out the possibility of stroke.

Although a significant relationship has not yet been demonstrated, it is believed that risk of stroke is increased, probably only slightly, in women taking the Pill.

The real risks of oral contraception, proven and suspected, must be compared to other health hazards. In Britain, of one million young, pregnant women, 228 die because of pregnancy and post-delivery complications. Maternal mortality is higher in the U.S., especially among non-white, poor people who are butchered in "charity" hospitals. Among one million young Pill-users, 15 die of thromboembolism each year, meaning that the Pill involves an annual risk about 1/15th the risk of one pregnancy. Since there are other birth control methods, not all women become pregnant once a year, but no other method is as effective or as widely acceptable. The diaphragm, for example, carries a 10% to 12% annual failure rate, which means that of one million diaphragm-users, 100,000 to 120,000 become pregnant annually, leading to 23-27 deaths. Contrary to what manufacturers and their paid-off scientists tell us, the IUD has a failure rate of at least 3% per year, and young, never-pregnant women may experience higher rates. Infection and death are not unknown complications of IUD use, although exact statistics have not been determined. Risks of illness or death associated with IUD use or IUD failure (i.e. pregnancy) are probably the same or greater than risks of the Pill.

The dangers of other widely used drugs rarely stimulate as much attention. Everybody uses aspirin, but aspirin is harmful, and should only be used when absolutely necessary. Penicillin is a life-saving antibiotic, but it is also deadly poison for sensitized people. Millions smoke cigarettes, the most advertised, most dangerous and most widely used drug available. Food consumed in North America is contaminated with cancer-producing pesticides and with at least one of the hundred of dangerous food additives, which, by law, need not appear on package labels.

The fact that the Pill is far from the most dangerous of U.S. industry's products reflects no credit on the pharmaceutical corporations. The drug industry, the most profitable business in America, spends on advertisement three times what it spends on research. Research means finding new drugs to patent and make money on, and to get them "past" the FDA. Even though Searle did little research on the Pill before getting FDA approval, oral contraception did not turn out to be the killer it might have been.

All of the long range, and even the short range dangers of oral contraception have not yet been determined; however, deaths from Pill-use will never begin to compare to deaths resulting from inadequate health care, poisonous industrial pollution, dangerous transportation and hundreds of unnecessary, harmful food additives. Use of the Pill should be considered in the light of existing health realities.

Photocell - Clara Gutsche

intrauterine devices

The effectiveness of an intrauterine (within the uterus) device to prevent conception has been known for over 2000 years. Hippocrates, the ancient Greek doctor described a device which was inserted into a woman's uterus through a hollow lead tube passed through the cervix (entrance to the womb). For centuries Arabian and Turkish camel drivers inserted small round pebbles into the uteri of their camels before going into the desert to prevent the camels from becoming pregnant during the long journey.

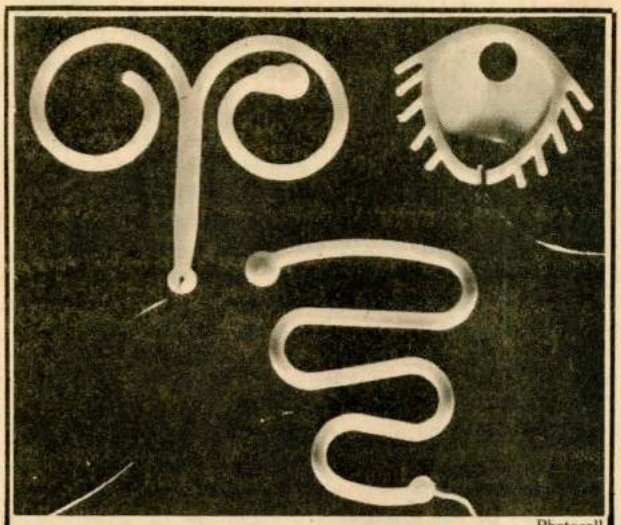
In this century, Grafenberg, a German doctor, reported in 1930 of his use of an intrauterine contraceptive device made of silkworm gut, wound into a ring and inserted into the uterus. Grafenberg's major contribution was the development of a device with a structure such that it remained only in the uterus and was not continuous with the cervical canal or vagina. Similar devices used in the beginning of the 20th century had structures which led into the uterus from the cervical canal. Grafenberg claimed that such structures served as ladders for the upward movement of bacteria from the vagina into the uterus. Devices with such "bacterial ladders" caused a great deal of infection and discomfort for many women.

Because of complications with devices other than the Grafenberg ring, intrauterine contraception was neglected, until in 1959, two doctors working independently reported considerable success with modifications of the original Grafenberg device. Only recently have doctors begun to devote serious attention to IUD's (or IUCD's). It took many years for the medical profession to forget its prejudice against anything lying within the uterus even though reports on the Grafenberg ring made it clear that infection was not a common complication.

Description

Today there are three basic kinds of IUDs: closed devices such as the Hall-Stone ring, the Ota ring, the Zipper ring, the Birnberg bow, and other modifications of Grafenberg's original design; more recently developed open devices such as the Lippes loop, the Margulies coil and the Saf-t-coil; and closed-plane devices such as the Dalkon shield. The open devices and the closed-plane IUDs are safer and easier to insert. Closed IUDs should no longer be used.

Most of the modern, safer devices are made of flexible plastic. The new synthetic plastics are being used for various kinds of human surgery and repair as well as for IUDs since the body does not react to their presence. The malleability of plastics provides an additional advantage - IUDs made of such materials can be straightened out and threaded into very thin **introducers** (inserters)



Photocell

Left: Saf-t-coil; right: Dalkon Shield; bottom: Lippes loop

which can then be inserted into the uterus through the cervix with little or no pain. The malleability of plastic also allows for great latitude in design and may prove very useful in evolving the "ideal design". The plastic tube molded into the IUD design usually has a core of metal salts so that if the position of the device must be determined exactly, an X-ray will reveal the IUD (X-rays only show the presence of dense structures such as bone, metal, or metal salts, but not plastic itself).

The Dalkon shield also contains copper embedded in the plastic for pliability. Whether or not any of the copper escapes into the blood stream is unknown. This question assumes greater significance with the recent announcement of a new IUD, the "copper T" or "copper 7", which has 200 square mm of copper wire wound around the outside of the device. Copper itself has an anti-fertility effect but large quantities in the bloodstream can be harmful. Although G.D. Searle announced the coming of its new IUD with much fanfare and publicity, its public relations department has had little to say since the copper 7 was reclassified by the FDA from a "device" to a "drug" (due to its release of copper). The FDA's reasonable insistence on further study will delay the marketing of this IUD for some time.

Although there is much disagreement as to which is the best IUD available, the Lippes loop (size D, a little more than 1 inch across) is the most widely used. The Lippes loop is preferred because of low expulsion, pregnancy and side effect rates associated with its use. The more recently developed Saf-T-coil is about as safe and as effective as the loop. It was hoped that the Dalkon shield would be the best IUD, especially for women who have never had children, but recent work suggests that its pregnancy rate may be even higher than the pregnancy rate with the Lippes loop. Calcium deposits and endometrial inflammation related to use of the Majzlin spring have caused many family

planning clinics to stop using the device. Women using the Majzlin spring should have it removed, and a different IUD should be inserted in its place.

Insertion of the device

The insertion of an IUD is usually a simple, rapid, and more or less painless procedure. Before insertion, the woman should be given a complete general and gynecological examination to ensure that no infection is present and that any anatomical abnormalities will not hinder insertion. With a speculum in place, a sterile uterine probe is carefully passed into the uterus to ensure that the cervical canal is not obstructed and to recheck the uterine position. As the diagram shows, the IUD is threaded into a sterile plastic introducer (if it has not already been "loaded"). The loaded introducer is inserted through the cervical canal and is advanced to the lowermost portion of the uterus, just beyond the entrance of the triangular slit-like cavity. Sometimes it is necessary to grasp the cervix with an instrument to steady it before inserting either the probe or introducer. As the cervix is grasped the woman feels a pin-prick sensation, however pain is rarely experienced. Pressure is put on the plunger of the introducer and the IUD is pushed into the uterine cavity where it regains its original shape. The introducer is withdrawn leaving two nylon threads which are connected to the device, protruding into the upper vagina. The threads are trimmed so that only an inch or two remains beyond the cervix.

An IUD can be inserted at any time during the menstrual cycle, but it is best introduced on the first day of a menstrual period. This has several advantages: the most important is that insertion at that time can not interfere with an early or unsuspected pregnancy since if the woman is still menstruating, she has not yet ovulated that month and cannot be pregnant. Also insertion of the IUD may cause a slight amount of bleeding from the uterus, and this spotting is not an additional problem during menstruation. In addition the cervical canal is open wider during menstruation than during other parts of the woman's cycle.

As soon as the IUD is inserted, it begins to prevent conception. If a woman is changing from birth control pills to an IUD, she may be advised to take the pills for one month longer, since most accidental pregnancies which occur with the IUD, begin during the first month of use. Also, continued use of oral contraceptives reduces the amount of menstrual bleeding or spotting which may be increased during the first month of IUD use.

If the nylon appendage connected to the IUD is properly trimmed, neither the male nor the female is at all aware of the device during coitus.

Insertion of IUDs for women who have not had children

After a woman has a child, miscarriage or abortion, her uterus remains slightly enlarged and her cervix slightly dilated permanently. Many doctors refuse to insert an IUD into the smaller, tighter uterus of a **nulliparous woman** (never been pregnant) because of severe pain which often occurs during and immediately after insertion. Some research is presently being done with various drugs meant to reduce the pain of insertion for nulliparous women. Many if not most women who have never been pregnant also experience some pain from cramps for the first few days after IUD insertion. This pain is sometimes not more severe than that experienced from normal menstrual cramps; in some other cases it can be accompanied by fainting or be so severe that removal of the device is necessary. All nulliparous women have a greater tendency to expel the device spontaneously from their uterus. Failure rates of the IUD are also significantly higher for nulliparous women.

Removal

Removal of devices with nylon "tails" is simple. The doctor pulls gently on the threads extending into the vagina, and the device usually slips out easily. Women should not attempt to do this themselves since occasionally the cervical canal is obstructed or the IUD is lodged in the uterine wall, and an unskilled tug could cause injury. For devices without an appendage, the doctor inserts a small blunt hook into the uterus, catches the IUD, and pulls it out.

Expulsion and required removal of IUDs

The muscles of the uterus run in two different ways (diagonally and transversely) and when the uterus contracts it does so in a rhythmical way. These contractions cause the IUD to be pushed out of the uterus of certain women. At present there is no sure way of knowing which women are likely to expel the device.

Between 10 and 12 percent of all women who receive IUDs spontaneously expel the device in the first year of use. Most expulsions occur in the first 3 months that the device is in the uterus. Expulsions of the IUD usually occur, if at all, during menstrual bleeding. Women using IUDs should check the surface of their menstrual tampons or pads to ensure that the device has not been passed out with menstrual blood. If the IUD has a nylon appendage, the woman should check for its presence after each period and at least once a week. If the nylon thread or beads cannot be felt, the doctor should be consulted and another method of contraception should be used until a new device can be inserted.

If a woman expels an IUD from her uterus she can have another one inserted. The chances that this same woman will expel the device again are very high - 50% of women who receive a second IUD expel it from their uterus.

The Lippes loop, because of its design compresses easily and is least likely to be pushed out of the uterus by a single muscular contraction.

Beyond the 10%-12% of women who spontaneously expel the IUD, another 8% to 10% of women have the device removed because of troublesome side effects which are described below.

Side effects

Minor side effects to the IUD are common but not serious. Usually, these side effects disappear after the first month or two of use, however all side effects

should be reported to the doctor who inserted the IUD.

Side effects include: minor or severe pain similar to pain from menstrual cramps; irregular bleeding during the month (spotting); and very heavy menstrual bleeding for the first few cycles after insertion. The extra heavy bleeding for the first few menstrual cycles following insertion seems to be a common experience. It should be reported to the doctor but it is not serious. Sometimes drugs are prescribed to lessen the bleeding. Pelvic pain and irregular or extra-heavy bleeding account for most of the 8% to 10% of IUDs which are removed either as a result of the doctor's decision or the insistence of the patient. Severe cramps and heavy irregular bleeding seem to be more common in women who do heavy physical work. Should this factor be significant, the widespread "encouragement" of the IUD in Third World countries where women commonly do heavy work may be called into question from the perspective of personal acceptability besides its racist implications.

Serious complications

Pelvic Inflammatory Disease PID - (any infection of the pelvic organs) occurs as a complication to the IUD in 2% to 4% of women wearing a device. Usually, an incident of IUD - related PID is a relapse of some previously existing infection, such as gonorrhea. In such cases, the insertion of an IUD is enough to weaken the natural defences of the uterus, and bacteria which had been kept in check multiply and cause clinical signs of infection. Commonly used IUDs are sterilized before distribution, and sterile techniques are maintained by most doctors during insertion, to reduce the risk of PID. If PID occurs in a woman wearing an IUD, it can usually be treated without removing the device. Women who have had a pelvic infection previous to IUD insertion can safely use a device but must make sure that the infection has been totally eliminated.

Once in approximately 2,500 IUD insertions, the device does not remain in the uterus, but goes through the uterine wall into the abdominal cavity. Such **uterine perforation** is usually the result of error on the part of the inserting doctor or technician; however, some IUDs are pushed through the uterine wall by contractions of the uterine muscles themselves. Whatever the cause, complete perforation of an open device, with the IUD itself floating freely in the abdominal cavity, is not dangerous. Since the body does not react to the IUD, it is usually left where it is. If however, a closed device perforates, there is a risk that it will catch a loop of one of the intestines and obstruct the passage of food or waste material. (This is why closed devices are no longer used). Surgery is always performed to retrieve a closed IUD, should it perforate. Similar surgery must be performed if an open device perforates only half-way, leaving a dangerous, rigid "hook" protruding through the uterine wall.

There have not been any cases reported of cervical or uterine cancer occuring as a result of IUD use. On the basis of presently available information, it can be said that IUDs do not cause cancer.

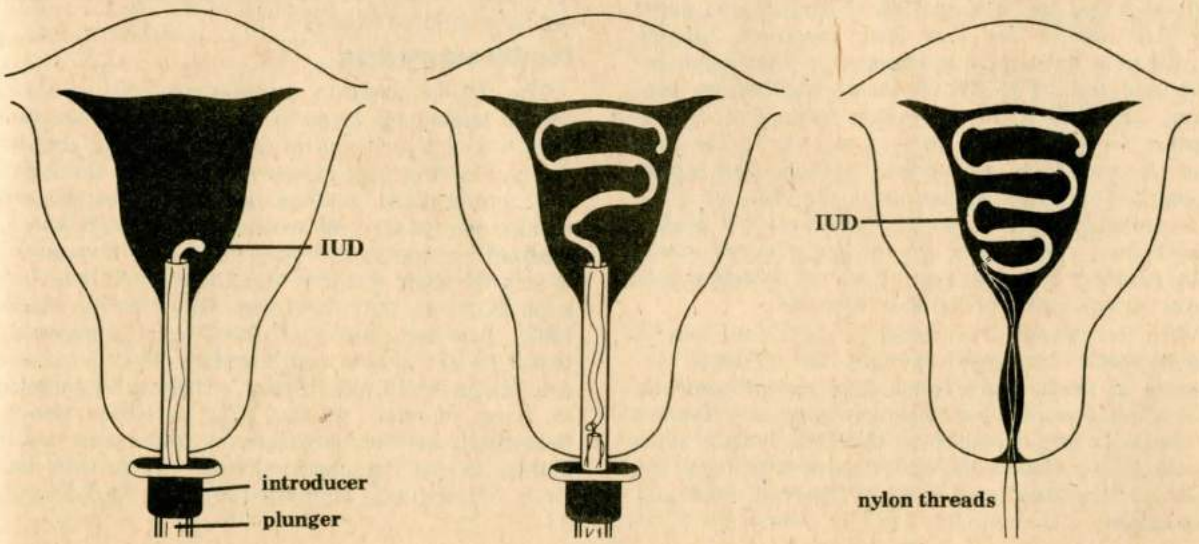
Should an IUD fail and a woman become pregnant with a device still in place, there is no danger to the baby. Usually the device is left in the uterus and is only removed when the baby is delivered. There are no reports of abnormalities in babies born to women with IUDs in place.

How the IUD works

Many conflicting theories have been suggested in attempts to explain the contraceptive action of the IUD. The exact mode of action is still not understood.

One widely accepted theory suggests that the IUD interferes with the dynamic muscular balance of the cervix, uterus and Fallopian tubes. It is suggested that sperm transport up into the tubes and ovum transport down toward the uterus are disrupted by the IUD's effects on uterine and tubal muscles.

Another group of explanatory theories concentrates on cellular changes in the uterine lining, the endometrium. If the cyclic development of endometrial cells is disrupted, implantation of a fertilized egg



is impossible.

One group of theories is primarily biochemical, and suggests that when an IUD is present, the uterine environment is chemically hostile to a fertilized egg.

A recently presented theory suggests that abnormally high concentrations of **macrophages** develop within the uterus when an IUD is present. Macrophages are normal body cells which attack "invading" cells such as bacteria, by **phagocytosis.** (A phagocyte is a cell, such as a white blood cell, that can "swallow" another cell, and thus destroy it). Macrophages normally do not exist within the uterine cavity, and their presence might destroy a fertilized egg.

IUDs do not cause early abortion nor do they prevent pregnancy by creating a low-grade infection in the uterus.

Effectiveness

The efficiency of the IUD is considerably less than the oral contraceptive pill. At best, only 1.5 to 3 women out of 100 become pregnant during the first year after insertion of the IUD. Failure rates tend to decline with further years of use. Many doctors report a contraceptive failure rate of much higher than 3.0. With some devices, up to 8 or 9 women out of 100 become pregnant during the first year after the IUD is inserted.

IUDs are most effective for women who have had several children, and are older than 30 years of age. Age is the more important factor. For example, in one study on the Lippes loop, 5.7% of women 15-24 years old at time of insertion became pregnant within the first year. In the same study, only 4.7% of the women 25-29 years old, and 2.9% of women 30-34 years old became pregnant in the same time period.

Women who must not become pregnant should not rely on the IUD unless abortion is an acceptable and available option.

Acceptability

Considering the 10% to 12% of women who expel the IUD within one year after insertion, the 8% to 10% who must have it removed in that same period, and the 2% to 3% (at least) who become pregnant, the IUD is an acceptable method of contraception for only about 75% of women in the first year. Acceptability goes down to about 50% within 5 years. For those women who can use the IUD, it is probably the best method available - it is safe, easy to use, cheap, does not require repeated action (like taking a pill daily) and does not interfere with the act or enjoyment of sexual intercourse.

With the advent of statistically significant reports linking oral contraceptives with an increased incidence of death and disease from thromboembolic illness, some women have strongly advocated the use of the IUD in preference to the Pill. Failure rates for the IUD of 1% to 2%, and a naive belief that the IUD is "harmless" have been repeated over and over again.

It is absurd to believe that the pharmaceutical and plastic corporations producing IUDs have any more concern for the lives of individual women, than do the pharmaceutical corporations producing the Pill. The IUD is neither harmless nor as effective as the manufacturing companies claim. It is not possible at this point to determine exactly how many women die as a direct result of IUD use (possibly from perforation); it is known however, that many women die during or after normal pregnancy (about 300 per million pregnancies), and that some women using an IUD become pregnant. As a result of contraceptive failure, 30,000 to 80,000 pregnancies occur every year in 1,000,000 IUD users. Thus, in 1,000,000 women using the IUD for one year, 9 to 24 women die as a result of pregnancy, and beyond these deaths, an undetermined number of women die as a result of criminal abortion.

Reversibility

The contraceptive effect of an IUD is completely reversible. When the device is removed the woman can have children again.

The IUD and genocide

The IUD is cheap to manufacture, easy to insert, and in large scale terms is very effective. Not more than 8 to 9 women out of 100 will become pregnant during the first year of use. Women who do not use any contraceptive method usually do get pregnant within one year - 90 women in 100 will become pregnant in one year if they do not try any method to control their fertility. Since the growth of large populations in nations of the Third World (Africa, Latin America, parts of Asia, etc) represents a threat to the power and world dominance of such countries as the United States, considerable attention is being directed at the IUD by these nations. Scientists, working with grants from such organizations as the Population Council, a "private American foundation", supported by the Ford Founda-

tion, John D. Rockefeller III, and other private donors, are attempting to develop more effective IUDs which can be inserted by only semi-skilled personnel. By advocating "voluntary sterilization" and use of the IUD, the governments of the United States, Britain and other western powers are attempting to control by contraception the numbers of non-white people, just as white people from Europe eliminated large numbers of red Indians by importing European diseases for which the Indian had no antibody (immunity) resistance. One important characteristic that the IUD shares with sterilization is that the effectiveness of the method cannot be controlled directly by the individual woman who carries the IUD in her uterus. Both sterilization and IUDs are used much more extensively in countries other than the western nations. Of the 8 million IUDs used, only 1 million are carried by U.S. women. In contrast, of the 18.5 million pill users in the world, at least 8.5 million live in the U.S. and an additional .5 to 1 million in the United Kingdom.

Large scale use of contraceptive measures, applied to women who may not want to control their fertility, approaches genocide and ceases to be birth control.

condom

The condom, a sheath worn on the penis during sexual intercourse, is a widely used, effective, mechanical contraceptive. The condom is also known as: "prophylactic", "rubber", "safe", "French letter", or simply "contraceptive".

Most condoms manufactured today are made of thin, strong latex rubber; condoms made from animal membrane are also available. Rubber condoms are approximately 0.0025 inches thick, 1 inch wide and 7 inches long. At the open end of the sheath the rubber is thicker, forming an elastic ring which keeps the condom from slipping off the penis. The condom is either plain-ended or tipped with a "teat" meant to receive and hold ejaculated semen. There are no "sizes" for condoms, since all are considerably elastic.

Skin condoms, produced from sterile animal membrane, first appeared in England during the eighteenth century. Since the development of the latex rubber process in the 1930's, skin condoms have been largely replaced by the cheaper and equally effective rubber sheaths. The principal advantage of skin condoms is that natural membrane is a better conductor of heat than a film of rubber, and therefore interferes less with sensation.

Skin condoms are packaged in plastic or aluminum capsules containing water, glycerine and a preservative. Rubber condoms are packaged in paper envelopes, cardboard boxes or aluminum foil. Most rubber condoms are sold dry and powdered; but at least one company distributes lubricated rubber condoms sealed between strips of aluminum foil.

Association of the condom with prostitution and prevention of veneral disease has resulted in a reluctance on the part of many men and women to use this birth control method. In addition there exists a widespread misconception that the condom is an unreliable contraceptive when compared to other methods. In fact, statistics reveal that when properly used, the condom is as effective as the diaphragm and jelly method.

The condom method of birth control does have an important inherent disadvantage - it is a contraceptive used by the male partner alone. If the male sexual partner is reliable, and both man and woman accept this contraceptive method, there is no problem; however, not all men are trustworthy, and certainly not at all times. Since it is the woman who bears the consequence of unwanted pregnancy, women are more likely to appreciate the importance of using some form of contraception during all acts of sexual intercourse.

The mechanical nature of the condom also provides potential problems. Some men and women do not like using a "device" during sexual intercourse, claiming it disrupts spontaneity. If this is the sincere feeling of either partner the condom should be avoided. On the other hand, many men and women incorporate unrolling of the condom into the enjoyable routine of sexual foreplay.

Many men claim that the condom dulls sexual pleasure. Physiologically, this claim is highly questionable. Modern condoms are extremely thin and transmit sensation very well. Men who insist that the condom interferes significantly with sexual sensation are usually refusing to accept responsibility for birth control.

The condom does have several important advantages: it is harmless, very simple to use, and easily available. If the male sexual partner is willing to take on the responsibility of contraception seriously, the condom is the best birth control method for occasional or unexpected sexual intercourse.

Aside from contraception, the condom does provide some protection against venereal diseases such as syphilis or gonorrhea.

The condom is probably the most commonly used mechanical contraceptive in North America. Eight hundred million to one billion condoms are sold every year in Canada and the U.S.

Since 1938 the United States Food and Drug Administration (FDA) has supervised the manufacture of condoms. FDA enforcement and automated manufacturing and testing techniques contribute to the maintenance of very high quality levels.

Use

The condom must be worn throughout sexual intercourse since pregnancy can result from an early, unexpected ejaculation. If the condom is not prerolled, it should be rolled just before use. The condom should not be completely rolled up - a half an inch should be left at the closed end to receive ejaculated semen. If the condom being used is al-

ready rolled when purchased (most rubber condoms are pre-rolled), it should be unrolled half an inch. The condom is then unrolled over the erect penis. The half inch space left at the end of the condom (or the "teat", if the condom has one) should be squeezed while unrolling, so that air is not trapped in the closed end. It the man it not circumcised, he must pull back the foreskin before unrolling the condom. Properly unrolled, the condom covers the whole penis, with the half inch extension (or "teat") hanging limply at the end. Care must be taken not to tear the condom with finger nails, rings or any rough object.

When inserting the penis the male should avoid catching the extension or teat on the outside of the vagina, since it is possible to thrust a hole through the side of the sheath if the tip becomes caught.

Occasionally there is insufficient moisture in the vagina to allow for easy entry of the penis, especially if it is covered by a dry rubber condom. Forcing the penis into a relatively dry vagina can be uncomfortable and irritating for the woman. Such problems can be avoided by the use of an artificial lubricant or a pre-lubricated condom. A commercial spermicidal preparation (contraceptive foam, cream or jelly) is a good lubricant to use, since it also provides contraceptive protection. Other non-greasy jellies, such as surgical jelly, can also be used. Of course, saliva is the most readily available and cheapest lubricant of all. **Vaseline or any kind of petroleum jelly or oil should never be applied to rubber condoms,** since these materials destroy rubber. Unless a pre-lubricated condom is used, the lubricant is applied to the outside of the sheath after it has been unrolled onto the penis.

Following male orgasm and ejaculation, there is always a partial or significant loss of erection. As long as the upper open end of the condom remains tight against the penis, sexual intercourse can continue; however, if loss of erection is significant and the condom does not fit firmly against the penis, semen can leak out of the open end, or the condom can slip off the penis, into the vagina. In such cases, the male partner should hold the upper part of the condom tight against the base of his penis, and withdraw from the vagina.

If the condoms slips off the penis, it should be removed from the vagina immediately, with the open end held tightly closed.

The condom is removed by stretching the ring at the open end and pulling down. The condom should be checked immediately after removal. If for some reason the condom has burst, the woman should immediately insert an applicator-full of vaginal spermicide into her vagina, or, if that is not available, douche with water. In such clear-cut cases of contraceptive failure, pregnancy can be avoided if the woman takes a large dose of a synthetic estrogen, diethylstilbestrol (DES) within 24 hours of sexual intercourse. Such an after-the-fact contraceptive is commonly used for special cases - such as women who have been raped. Although not all gynecologists are familiar with this use of DES, many emergency clinics in large city hospitals have the drug available for this purpose. DES is a potent drug and cannot be administered casually.

Some doctors suggest that the condom should always be used in combination with a vaginal contraceptive foam, cream or jelly. This extra precaution reduces the chances of conception should the condom break; however, condoms bought from drug stores or pharmaceutical companies can be assumed to be reliable.

Good quality condoms can be used several times. If the condom is to be reused, it should be dropped into a bedside glass of water after removal from the penis. As soon as is convenient, the condom should be carefully washed in warm soapy water. Rubber condoms should be dried and powdered with cornstarch. Skin condoms can be kept in a mild solution of household boric acid and water. A condom that is reused should be tested for leaks before each use.

If the condom is not to be reused it can be flushed down the toilet.

Condoms should never be kept in a wallet or pocket since the combination of moisture and heat provided by contact with the body deteriorates and eventually rots the condom. Condoms are best kept in the small cardboard containers in which they are usually sold. Without excessive heat or moisture condoms can be stored for up to two years.

Cost

Condoms should be bought only from drug stores, pharmaceutical companies or family planning agencies. Those sold in men's washrooms, gas stations or from peddlers are likely to be of inferior quality. Condoms can be bought by anyone, without a prescription.

The most common drug store price is $1.25 for 3 rubber condoms. Lubricated rubber condoms cost about $1.50 for 3. Skin condoms can cost $1.00 or more each. Rubber condoms bought in quantity from manufacturing companies or family planning associations cost 25 to 35 cents for 3.

diaphragm

The diaphragm and spermicidal jelly method is a relatively popular and effective mechanical form of contraception.

The soft rubber diaphragm with a spring rim is fitted as a mechanical barrier to the cervix, preventing sperm from entering the cervical canal; the front end fits snugly behind the pubic bone, the dome covers the cervix and the back end rises into the posterior fornix, a small pocket beind the cervix. A spermicidal preparation (cream or jelly) smeared on the surface of the device acts as a chemical contraceptive; it kills sperm which pass the diaphragm rim or remain in the folds of the vaginal wall. Some doctors question whether the device actually blocks the cervix or merely serves as a platform for the spermicide. Even so, it is always fitted as a barrier to the cervix.

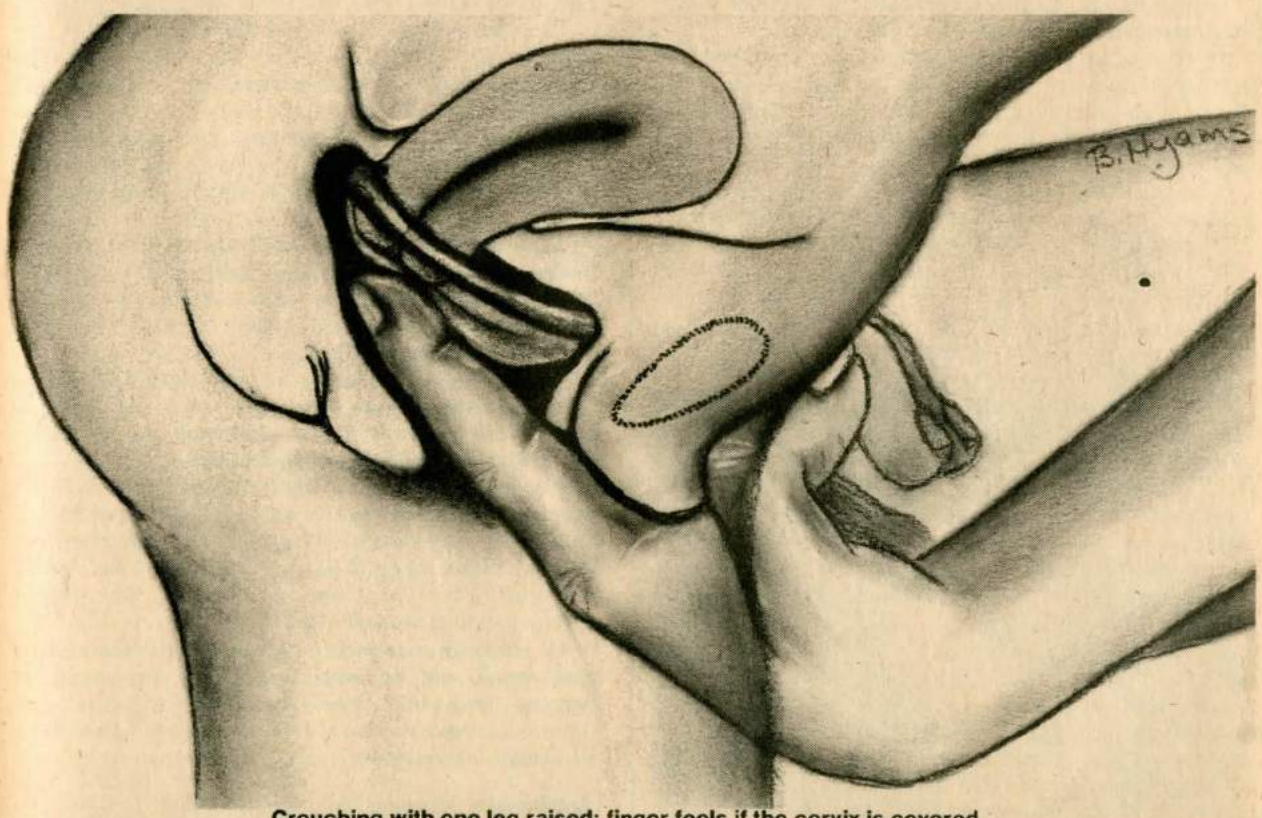
Medical examination and prescription

Each woman must be individually fitted for the diaphragm by a gynecologist or a family planning clinician. Non-prescription, "one size fits all" diaphragms should not be trusted. A virgin (woman with hymen intact) can be fitted for a diaphragm; however, sexual intercourse stretches the vagina slightly, and she should be refitted shortly after her first act of intercourse. Fitting should be checked at least every two years and after any of the following circumstances: childbirth, miscarriage, any operation (surgery), and a gain or loss of more than ten pounds.

The doctor must perform an internal pelvic examination to choose the size and type of diaphragm most suited for an individual woman. The woman is asked to examine herself internally so that she learns to recognize the edge of the pubic bone and the cervix, important for proper fitting. Then, the doctor inserts a sample diaphragm and asks the woman to examine it in place. She should be able to recognize the cervix through the rubber and the position of the front rim. The woman removes the device by hooking her finger under the front rim, and pulling down and out.

The woman then learns to insert the device herself. A teaspoonful of spermicidal jelly or cream is smeared on the upper surface of the diaphragm (dome up or down, depending on the woman's anatomy). Spermicide must not be placed on the rim since this increases the possibility of displacing the diaphragm during coitus. With one hand, the woman squeezes the diaphragm into a long narrow shape. With the other hand holding the vaginal lips apart, she inserts the compressed device into the vagina until the far rim passes the cervix. She then pushes the front rim up behind the pubic bone and checks that the cervix is completely covered.

Plastic or metal inserters facilitate insertion, especially for women who have short fingers or



Crouching with one leg raised; finger feels if the cervix is covered.

dislike handling themselves. The diaphragm is hooked to notches on a rod which the woman inserts into the vagina. When she twists the rod, the device is released. Most inserters have a blunt hook at one end for removal. The rod is hooked to the front rim of the device which is then pulled down and out.

Use

The diaphragm is most easily inserted while crouching, squatting, lying down, or standing with one foot raised.

The diaphragm may be inserted not more than two hours before sexual intercourse. If more than two hours goes by before coitus, an applicator full of spermicide should be inserted into the vagina, or the device should be removed to place more spermicide on the diaphragm's surface. A woman can walk around, bathe, or urinate with a diaphragm in place but she should recheck its position after a bowel movement.

After an act of sexual intercourse, an additional application of cream or jelly must be inserted into the vagina by means of an applicator before each additional coitus.

To ensure that all sperm are destroyed by the jelly, the diaphragm must remain in place for at least six hours after the last act of intercourse. A facial tissue or towel can be used to absorb any fluid leakage from the vagina. Spermicidal creams and jellies do not stain. After removal, the device should be washed with mild soap and water, dried and powdered with corn starch.

Douching is unnecessary but if desired must be postponed at least six hours after intercourse.

Occasionally the woman should examine the diaphragm for holes and cracks, especially near the rim. Filling the device with water and checking for leaks, or holding the device to the light are two good tests.

The diaphragm can be used during menstruation; however, conception is highly unlikely at that time.

If positioned correctly the diaphragm cannot be felt by either sexual partner during coitus. Diaphragms made of plastic are available in case of an allergic reaction to rubber. Also, the brand of spermicide should be changed if either partner is allergic to the kind being used.

The diaphragm is ineffective if left in a dresser drawer or purse. However, human frailty is not the only reason for its potential failure. The device can slip out of position for a number of reasons: improper fit, cream on the rim, expansion of the vaginal walls during sexual stimulation, and frequent insertions of the penis. The diaphragm is much more easily displaced in coital positions where the woman is above the man.

Cost

The cost of fitting a diaphragm by a private doctor is about $15 to $25, and considerably less at a hospital or family planning clinic. The device itself, which is obtainable only by prescription costs about $4. A tube which contains about 20 applications costs approximately $3.

vaginal spermicides

The insertion of a sperm-killing chemical into the vagina before sexual intercourse is an ancient contraceptive practice. More than 3,500 years ago an unknown Egyptian writer suggested a mixture of honey and acacia tips (a vegetable gum) as a vaginal spermicide. Through the ages different preparations of harmless substances have been used as vaginal contraceptives.

Today, several simple-to-use vaginal contraceptives are available. These contraceptive preparations are made up of two components: a spermicidal (sperm-killing) chemical and a harmless, bulky base. The spermicide kills sperm cells deposited in the vagina and the base mechanically blocks the cervix, so that even if some sperm cells are not killed, they cannot enter the cervical canal.

In Canada and the United States only three forms of vaginal spermicides are readily available: foams, creams and jellies. Spermicidal foaming tablets and spermicidal suppositories are also marketed but are more difficult to obtain, especially in Canada. Neither foaming tablets nor spermicidal suppositories are as effective as the least effective of the foams, creams or jellies, and therefore should not be used.

The spermicidal foams are more effective in preventing pregnancy than either the creams or jellies. Once inserted into the vagina, the foam spreads quickly and evenly over the cervix, and forms an effective barrier. The creams, and especially the jellies, often fail to spread properly over the cervix and are therefore more likely to fail as contraceptives.

"Messiness" is another problem more often associated with the creams and jellies than with the foams. Many women complain of leakage or dripping from the vagina during or after sexual intercourse while using cream or jelly.

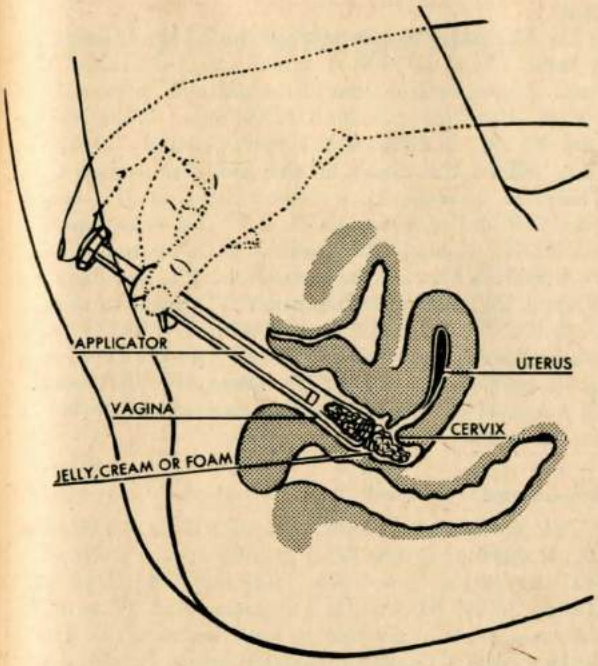
The contraceptive foams are packaged under pressure in aerosol cans or vials while the creams and jellies come in tubes. A special applicator is sold with the can or tube of spermicide.

Two brands of vaginal foam are marketed in North America, and their brand names, "Delfen" and "Emko", have become synonymous with "contraceptive foam". Since vaginal foams are both easier to use and more effective, there is no reason why creams or jellies should be used at all.

All vaginal spermicides have a high failure rate and should not be used by women who must not become pregnant. The vaginal spermicide contraceptive method is not as effective as the diaphragm and jelly or the condom.

Application of spermicidal preparation

On the other hand, vaginal spermicides have sev-



eral advantages. The preparations are harmless, can be obtained from almost any drug store without prescription, do not involve a "device" such as a diaphragm or condom and are easy to use properly. Some couples effectively combine the use of foams with other contraceptive methods such as the condom or rhythm method.

Use

To use the contraceptive foam, a woman first shakes the can or vial and then fills the applicator by pushing the open end of the applicator tube down onto the nozzle of the container. As the foam rises in the tube of the applicator the plunger is pushed up. When the plunger has risen to the top of the tube, the applicator is full. The woman lies down and gently pushes the applicator into her vagina as far as it will go. The woman then pulls the applicator back (out) half an inch and pushes down on the plunger. As can be seen in the diagram, withdrawing the applicator half an inch from the end of the vagina positions the open end of the applicator close to the cervix. When the plunger is pushed, the foam flows out of the applicator next to the cervix.

Applicators which come with creams or jellies can be screwed onto the mouth of the tube. The applicator is filled by squeezing the tube. Otherwise, creams and jellies are used in the same way as foams.

Foams, creams or jellies must be inserted not more than one hour before sexual intercourse. If more than one hour elapses between the insertion of a vaginal spermicide and sexual intercourse, another applicator-full of spermicide must be inserted.

If the woman gets up from bed or goes to the toilet after insertion of a vaginal spermicide but before sexual intercourse, another applicator-full of spermicide must be inserted.

Leaking from the vagina before, during or after sexual intercourse can be controlled by pressing a facial tissue or clean towel against the vaginal opening. Vaginal spermicides do not permanently stain clothing or sheets.

If a douche is desired, it must be delayed for at least 6 hours. Not all sperm cells deposited during sexual intercourse come into contact with the spermicide immediately, and many sperm can live on in the vagina for several hours after the male's ejaculation. Douching cannot remove all the sperm cells from the vagina, but it does dilute and remove most of the spermicidal preparation.

After sexual intercourse, the woman can get up or go to the toilet without affecting the contraceptive action of the spermicide.

After use, the plastic applicator should be dropped into a bed-side glass of water and should be washed eventually in warm soapy water. If the spermicide dries within the applicator, it hardens and sticks to the sides. If this happens, the applicator can be soaked until the spermicide softens. Since the applicator is made of soft plastic, it cannot be boiled.

Side effects

Some men and women are allergic to one or several brands of vaginal spermicides. If allergic irritation occurs a doctor should be consulted and the brand of spermicide changed.

Vaginal spermicides cannot cause cancer or any other diseases.

Should a vaginal contraceptive fail, the baby is in no way affected by the spermicide.

Cost

In Canadian and U.S. drug stores contraceptive foam "kits" (including applicator) are sold for $4.00 to $4.50. Refills of the foam alone sell for about 50 or 60 cents less than the complete kit. A can or vial of contraceptive foam contains about 20 applications of the preparation.

Vaginal creams and jellies are less expensive - selling for about $2.50 for a complete kit. There are about 25 applications in a tube of cream or jelly.

Contraceptive foams, creams and jellies can be obtained at lower prices from discount drug stores, hospital pharmacies and family planning centers.

Foam and applicator

rhythm

The rhythm method (periodic continence, safe period, Ogino method) is simply the abstinence from sexual intercourse each cycle on those days when a woman is most likely to become pregnant. Used alone, it is **not an effective birth control method,** but it is helpful in determining the possibility of pregnancy in case of failure of another method. Women who must not become pregnant should not rely on this method. Also, it should not be used by women who have irregular cycles, especially for any of the following reasons: age (under 22 or approaching menopause), recent miscarriage or childbirth, breastfeeding, or emotional problems. The rhythm method should be attempted only under the guidance of a doctor or family planning advisor.

To be successful, the rhythm method must be accepted by both the woman and her regular sexual partner, if she has one. Otherwise resulting frustration can threaten the relationship, or a sexual encounter may be imposed on the woman when she should abstain. Women whose sexual experiences are sporadic should not depend on the rhythm method, since the fertile period and a particular unexpected opportunity may frequently coincide.

Use

To calculate the **fertile period** when pregnancy is most likely, a woman must consider several factors: approximate time of ovulation, life span of sperm cells, and life span of the egg. Ovulation occurs at the middle of the cycle, usually about 14 days before the onset of the next menstrual flow. Therefore conception is least likely at the beginning and end of a woman's cycle, and most likely at mid-cycle. Sperm can survive in a woman's body for about 48 hours after ejaculation; the egg lives only about 24 hours after ovulation. Therefore, a woman using the rhythm method must not have sexual intercourse from 2 days before the earliest chance of ovulation until one day after the latest possible chance. This fertile or "unsafe" period can be calculated in several ways.

The calendar method

This method of calculation assumes that ovulation occurs approximately 12 to 16 days before a woman's next menstrual flow. Also, intercourse must be prohibited 2 days before this 5 day span and 1 day afterwards to account for sperm and egg survival. For a woman with a regular menstrual cycle, the total period of abstinence **(theoretical fertile period)** is always 8 days long.

Most women are not always regular; the length of the cycle varies one or several days in either direction. In order to use the rhythm method without error, a woman must first keep a record of her menstrual cycle for 8 months, using some other birth control method at this time. Marking the first day of the menstrual flow as day 1, a woman records the length of each cycle. After doing so for 8 cycles, she calculates the unsafe period for the 9th cycle as

Photocell: Clara Gutsche

THE RHYTHM METHOD

HOW TO FIGURE THE "SAFE" AND "UNSAFE" DAYS

LENGTH OF SHORTEST PERIOD	FIRST UNSAFE DAY AFTER START OF ANY PERIOD	LENGTH OF LONGEST PERIOD	LAST UNSAFE DAY AFTER START OF ANY PERIOD
21 DAYS	3RD DAY	21 DAYS	10TH DAY
22 DAYS	4TH DAY	22 DAYS	11TH DAY
23 DAYS	5TH DAY	23 DAYS	12TH DAY
24 DAYS	6TH DAY	24 DAYS	13TH DAY
25 DAYS	7TH DAY	25 DAYS	14TH DAY
26 DAYS	8TH DAY	26 DAYS	15TH DAY
27 DAYS	9TH DAY	27 DAYS	16TH DAY
28 DAYS	10TH DAY	28 DAYS	17TH DAY
29 DAYS	11TH DAY	29 DAYS	18TH DAY
30 DAYS	12TH DAY	30 DAYS	19TH DAY
31 DAYS	13TH DAY	31 DAYS	20TH DAY
32 DAYS	14TH DAY	32 DAYS	21ST DAY
33 DAYS	15TH DAY	33 DAYS	22ND DAY
34 DAYS	16TH DAY	34 DAYS	23RD DAY
35 DAYS	17TH DAY	35 DAYS	24TH DAY
36 DAYS	18TH DAY	36 DAYS	25TH DAY
37 DAYS	19TH DAY	37 DAYS	26TH DAY
38 DAYS	20TH DAY	38 DAYS	27TH DAY

Time-Life

follows: subtract 18 from the length of the shortest cycle to find the first unsafe day; and subtract 11 from the longest cycle for the last unsafe day. A woman must not have intercourse from the first to the last unsafe day. The chart above calculates the fertile period for cycles of varying lengths.

A woman must continue to record the length of each cycle and base her calculations on the **most recent** 8 cycles. Thus, the unsafe period for the 10th cycle is based on the shortest and longest cycles between the 2nd and 9th cycles; for the 11th, it is based on those between the 3rd and 10th cycles; and so on.

The temperature method

A woman's body temperature is higher during the second part of her menstrual cycle. Progesterone, released by the corpus luteum after ovulation, causes a rise in body temperature. Also, a temperature drop occurs about 48 hours before ovulation, although this drop is not always as noticeable as the following rise. Thus temperature change as an indicator of ovulation can be used to determine the unsafe period.

Since body temperature also varies with daily activity, a woman takes her temperature before getting out of bed or beginning any activity each morning. This is known as the **basal body temperature** (BBT). Special thermometers with fine gradations are available for this purpose.

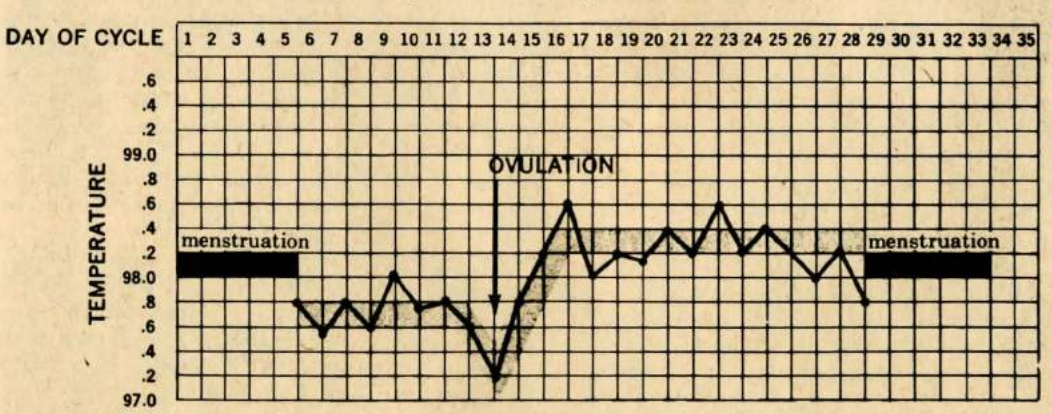
To familiarize herself with her typical cycle, a woman records her basal body temperature daily as shown in the chart for at least six months beforehand. She notes any other factors, such as a cold or restless night, which might affect the morning's temperature. She continues recording the BBT as long as she uses this method.

The **absolute fertile period** is calculated from day 5 of the cycle (onset of menstruation is day 1) until 3 days after the rise in basal body temperature. This is the unsafe period when sexual intercourse is prohibited, according to the temperature method.

Calendar-temperature method

The absolute fertile period calculated by the temperature method can be quite long, depending on a woman's cycle. The combination of the calendar and temperature methods often shortens this unsafe period. Also, if the basal body temperature is affected by other factors such as illness, a woman can rely on the calendar method for that cycle if she has kept an accurate menstrual history. In the combined method, the first unsafe day is calculated from the shortest cycle (using the chart provided); and the last unsafe day is the third day after a noticeable rise in the basal body temperature.

Basal Body Temperature during the menstrual cycle



coitus interruptus

Coitus interruptus, also known as "withdrawal" or "being careful" is the oldest method of birth control still commonly used today. Withdrawal is mentioned in Genesis, the first book of the Old Testament, written about 3,000 years ago.

Coitus interruptus is difficult to use properly and has a very high failure rate. Women who must not become pregnant should not rely on their partner's use of this contraceptive technique.

Use

"Coitus interruptus" means interrupted sexual intercourse - a good description of this contraceptive technique. When coitus interruptus is used, sexual intercourse continues until just before the male orgasm. When the male feels his ejaculation coming on, he withdraws his penis from his partner's vagina and external genitalia before ejaculating.

It is important that the male withdraws his penis completely and ejaculates **away** from his partner's vagina. Sperm cells can move on their own, and if deposited anywhere between the labia majora (external vaginal lips) they may be able to continue up the vagina and into the uterus. Contrary to common belief, more than just one particular woman has become pregnant while still virginal. The hymen need not be broken before pregnancy can occur.

Sexual intercourse can be resumed after the male's ejaculation, if the male can maintain an erection. The tip of the penis should be carefully wiped, and if the man is not circumcised, the foreskin should be withdrawn and the penis wiped again.

As a contraceptive technique, coitus interruptus has several inherent defects. Most importantly, it is the male partner alone who determines the contraceptive effectiveness of the method. Not all men are trustworthy, and few can be depended upon at all times. The assurance, "I'll be careful" means nothing to a woman who knows that her partner will not physically suffer the consequences should a "mistake" occur.

Not all men are physically able to use coitus interruptus successfully. Effective coitus interruptus, involving withdrawal before ejaculation, requires the man to be aware of when ejaculation will occur; however, complete ejaculation in a single emission (one powerful gush) is the ejaculatory pattern in not more than 50% of men. The other half of the male population usually expels semen sporadically or in a slow stream. Whether such men are aware of the exact moment when semen first begins to escape, or whether they feel only the last portion of the ejaculation is not known.

Aside from ejaculatory pattern, men differ as to timing of ejaculation. About 50% of all men ejaculate within 2 to 5 minutes after the beginning of sexual intercourse, while the other 50% can continue coitus for 5 to 20 minutes before reaching orgasm. Men who ejaculate within 5 minutes of the beginning of coitus have more difficulty withdrawing from the vagina properly.

Both men and women face still another physiological obstacle when attempting to use withdrawal. As orgasm approaches, men and women experience mild to extensive loss of consciousness during which coital movements lose their voluntary character. This condition can last several seconds, and a conscious action such as withdrawing the penis can be impossible. If intercourse continues uninterrupted for too long, one or both of the sexual partners may slip into this semi-conscious stage, and forget about withdrawal.

Side effects

For many years some doctors, especially those who opposed birth control in general, warned of possible ill effects of coitus interruptus. Modern medical and statistical research has revealed that coitus interruptus is physically harmless.

Psychologically, on the other hand, withdrawal can lead to problems, especially for women. In Western societies most women take longer to reach orgasm during sexual intercourse than their male partners. Therefore, coitus interruptus often involves interruption before a woman can reach orgasm. If the male partner can maintain an erection after ejaculation, sexual intercourse can be resumed; however, not all men can or want to continue coitus. Withdrawal thus often means frustration for the woman unless masturbation or clitoral manipulation brings the woman to orgasm.

Aside from the simple factor of timing, the woman may fear, often justifiably, that the male will not withdraw his penis before ejaculating. Concentrating on the possibility of an unwanted pregnancy is not conducive to sexual enjoyment and orgasm.

Men can also experience psychological or sexual problems related to coitus interruptus. If the man sincerely wants to protect his sexual partner from pregnancy he may find himself in a constant state of fear throughout the sexual act, afraid that withdrawal at the right time will not be possible.

For all the problems associated with coitus interruptus, this contraceptive technique is not without its advantages. Withdrawal costs nothing and is always available. The consistent use of coitus interruptus does reduce the frequency of pregnancy. Even so, given the existence of cheap, easily available mechanical, chemical and hormonal contraceptives, coitus interruptus should no longer be considered a valuable birth control alternative.

other methods

So-called contraceptive methods which are, for all practical purposes, ineffective need not be considered extensively by this handbook. These methods include: immediate post-coital douching, total self-restriction of female orgasm known as "holding back", prolonged nursing, and coitus reservatus.

There are serious drawbacks to use of the douche as a contraceptive method. If there is to be any possibility of effectiveness for conception control, the douche must be used immediately after intercourse – an unpleasant interruption for the woman. More significantly, at that time, the pressure of the douche might easily force concentrated sperm into the cervical orifice: sperm could very well continue and effect fertilization. On the other hand, if the pressure of the douche is inadequate to distend the vagina, sperm remain untouched in the vaginal crevices. For these reasons the douche should not be considered a contraceptive method, and must not be used for conception control.

It should be noted that too frequent douching is harmful since it destroys protective bacteria in the vagina.

The strong coal tar "feminine hygiene" disinfectants should never be used. If not mixed properly, they will burn the tissues.

It is a relatively common belief that if the female partner "holds back" and does not permit herself to achieve orgasm during coitus, pregnancy is impossible. This belief is based on the misconception that women, like men, ejaculate in orgasm a substance that is necessary for fertilization. While it is true that there is a release of fluids when a woman reaches sexual climax, these fluids simply facilitate the swimming movement of sperm. In the partial absence of these secretions (absence is never complete), sperm can still reach the Fallopian tubes and fertilize an egg. There have been many pregnancies in women who have never had orgasm.

There is no truth to the belief that as long as a woman is nursing a baby she cannot conceive. Because of hormonal balances, during early months of breast feeding ovulation may be delayed, but this protection does not last long, nor is it reliable.

The practice of coitus reservatus is similar to coitus interruptus (withdrawal). The essential difference is that whereas in coitus interruptus the male partner does not allow himself to achieve orgasm and ejaculate within the woman's body, in coitus reservatus there is no ejaculation. The male does not withdraw, but remains in sexual contact during the female partner's orgasm and gradually his erection subsides. Such control for an hour or longer, it has been reported, requires training; further it is highly probable that some sperm will escape through the erected penis even though the male partner does not ejaculate. The control that is necessary for utilization of coitus reservatus as a contraceptive method cannot be maintained by many men. The same psychological and physiological arguments against coitus interruptus are directed against coitus reservatus.

Gabriel Durocher

sterilization

Sterilization, a surgical procedure for the permanent prevention of conception, is usually advised in the following situations: when pregnancy could endanger a woman's life or health; when the parents have already produced a child with an inherited nervous or physical disease, such as hemophilia; where physical, mental or emotional factors prevent the couple from caring for another child properly; when a couple considers their family complete and wishes absolute protection from pregnancy. Although hospital policy varies, most regulations assume childbearing is essential to every woman's life. It is often difficult for women with few or no children to obtain permission for sterilization.

Female sterilization

A woman can be sterilized by the surgical removal of any of the reproductive organs: ovaries (oophorectomy), uterus (hysterectomy), or Fallopian tubes (salpingectomy). Since simpler methods of sterilization exist, these methods are not used unless the tissue is damaged or diseased.

The most common method of female sterilization, **tubal ligation,** which involves tying off the Fallopian tubes, effectively prevents an egg from reaching the uterus, and the sperm from travelling into the tube. The woman continues to ovulate and have menstrual bleeding each cycle.

To perform the operation, an incision is made in the abdominal wall and the tubes brought into view one at a time. The tubes are cut, usually close to the uterus, and the separated ends are tied or stapled closed.

The operation may be performed within 12 hours after normal delivery, when the uterus is enlarged and the tubes are easily reached. After ceserean section the operation is done after repairing the uterine incision. In either case, the procedure hardly lengthens the hospital stay.

When a woman has not been pregnant for several months, sterilization may be performed abdominally, as discussed above, or by making an incision in the vagina through which either tubal ligation or hysterectomy can be done. The operation is done under general anesthesia.

Tubal ligation has a failure rate of about 1 in 250 cases (somewhat higher after ceserean section). Less than 50% of the attempts at reversibility have been successful.

Tubal ligation under "laparoscopic control" is a more modern sterilization technique. A tube containing a tiny electric bulb is passed through a small incision in the abdominal wall. Carbon dioxide gas is pumped into the abdominal cavity. With the cavity bloated, the pelvic organs can be easily seen. The surgeon passes special instruments through the lighted tube, grasps the Fallopian tubes, "burns" them with an electric current, and cuts through them once they are hardened. This procedure is less traumatic than major abdominal surgery, and some hospitals discharge women the same day of laparoscopic sterilization.

Male Sterilization

Sterilization may be performed on the male in two ways. **Castration,** removal of both testicles, is never done on normal individuals because it produces impotence and eliminates sexual desire, as well as affects secondary masculine traits. It is considered only in the case of serious diseases such as cancer or tuberculosis.

The most common method of male sterilization, an operation known as a **vasectomy,** has no effects on a man's sexual desire or virility, except perhaps to enhance it by relieving him from fears of having another child. The operation involves severing the vas deferens, thereby preventing the passage of sperm from the testicles to the penis. Since the contribution of the testes accounts for only about 1/10 of the volume of the total ejaculate, the actual quantity of seminal fluid is not appreciably diminished.

A small incision is made in the upper and lateral region of the scrotum, directly over the spermatic cord. The cord itself is cut and the vas deferens is separated from the blood vessels and nerves. Two ligatures are put a small distance apart around the vas deferens and the portion between them is cut out. The incision is closed with sutures and a temporary dressing applied. The entire operation done either in a hospital or doctor's office takes approximately 20 minutes. Men are sometimes advised to wear a suspensory for a few days to hold the testicles up so that traction on the wound is not painful.

Male sterilization cannot be depended on for contraception for the first three weeks after vasectomy, during which time sperm produced before the operation may still be present in the semen. After this time a semen specimen is examined under a microscope to check for the complete absence of sperm. In about 1% of the cases the severed ends of the vas deferens grow together and continue to transport sperm. Therefore it is advisable to have a semen specimen examined about every six weeks for the first six months after which such precautions are no longer necessary.

Attempts to restore fertility after a vasectomy have been successful in only about 50% of cases. Reversible methods are being sought such as use of a silicon injection which hardens to form a removable plug.

Sterilization operations were performed by Nazi doctors on Jews in World War II. Today, the United States legal system manages to sterilize "welfare mothers" (usually black people) who have had illegitimate children. In Delaware a Senate committee recommended that welfare mothers with 2 or more illegitimate children should be sterilized. In New York, judges offer women the choice - either be sterilized or receive no more welfare.

Like the IUD, sterilization is used more extensively in Third World nations. Since male vasectomy is a quick, simple operation, it is considered invaluable in the control of Third World populations. In India where vasectomies are performed in train stations, 5,500,000 have been "voluntarily sterilized". Pakistan is initiating a program to sterilize 50,000 men a month.

effectiveness

The pregnancy rate for any period of time during which a particular birth control method is used is an expression of the failure rate of that method. The **Pearl formula** is a standardization of contraceptive failure rate.

$$1300 \times \frac{\text{total number of conceptions}}{\text{total months of exposure}} = \text{failure rate per 100 woman years of exposure}$$

The above formula assumes that ovulation occurs 13 times a year, thus providing 13 chances for conception. Thirteen is multiplied by 100 to provide an easily definable "per cent" figure - thus 1300. "One hundred woman years" standardizes the pregnancy rate in terms of the number of times conception is possible during a year's period of exposure. The formula assumes regular heterosexual contacts, no intervening pregnancies or periods of breast feeding, and ovulation during each menstrual cycle. Thus, if 60 women use one contraceptive method for 10 months, and five conceptions occur, the formula would reveal a failure rate of:

$$1300 \times \frac{5}{600} = \text{almost } 11\%$$

Two different failure rates are often provided for each contraceptive method, "theoretical failure rates" and "clinical failure rates". The theoretical failure rate reveals the effectiveness of a method if it is used absolutely consistently and according to instructions. The clinical failure rate states the effectiveness of a method used under average conditions by average people. The theoretical rate can be accurately determined for only two contraceptive methods - the Pill and the IUD. With the Pill, it is possible to objectively determine if a woman has taken one pill every day for 21 days in a cycle; and with the IUD it is similarly possible to objectively determine if the device is in place in the uterus. Since all other contraceptive techniques are not totally divorced from the sexual act, it is not possible to make objective observations as to the consistency or accuracy of personal use.

In the chart, theoretical failure rates and clinical failure rates are presented only for the oral contraceptive and the IUD. For all other methods, only clinical rates are provided. Listings are approximations, and are subject to great variation. A listing should be read:
". . . . . pregnancies in 100 women using the . . . . . method for 1 year".

When considering the meaning of effectiveness statistics it should be remembered that the most important variable is "individual failure". Oral contraceptives can be 100% effective; however this is meaningless if a woman forgets to take 1 or more pills. Similarly, the condom theoretically provides

Method	Theoretical failure rate	Clinical failure rate
Oral contraceptive (combination pill)	0	.5
IUD	1.5 - 8	1.5 - 8
Condom		10 - 15
Diaphragm and jelly		10 - 20
Vaginal spermicides		15 - 25
Rhythm method		15 - 30
Coitus interruptus		20 - 30

100% protection against conception. The chart above reveals, however, that an average failure rate for the condom is 10 to 15 per year. In terms of effectiveness, the main difference between the oral contraceptive and the condom is that the former provides many fewer opportunities for individual failure than does the latter.

When choosing a contraceptive method, personal beliefs, preferences and hang-ups must be considered, since they affect "individual failure". If a woman is afraid of the oral contraceptive, it is likely that she will "forget" a pill every so often. If a man believes that a condom dulls sexual sensation, or if he really does not care whether or not his partner becomes pregnant, he may occasionally "forget" to wear the sheath.

C. David Gutsche

new methods

The continuous progesterone pill ("mini-pill")

Estrogen is responsible for most side effects associated with the Pill. Experiments are being performed with an oral contraceptive which contains only .05 mg of a potent synthetic progesterone in the daily pill. One pill of a progesterone oral contraceptive series is taken every day, in contrast to the 3 weeks on, 1 week off regimen of the estrogen-progesterone pill. The "minipill" eliminates side effects and endocrine changes caused by estrogen. Unfortunately it is associated with another set of side effects resulting from the absence of estrogen. Estrogen as a component of the combination Pill regulates the user's cycle, and helps prevent ovulation. When progesterone is used alone as an oral contraceptive, menstrual cycles are disrupted, and ovulation still occurs.

Chlormadinone acetate (CA) is the most commonly used progesterone in minipill preparations. CA is highly anti-estrogenic, and causes localized changes in the genital tract making conception unlikely. When a woman is taking a continuous progesterone contraceptive, mucus in the cervical canal becomes thick and impenetrable to sperm. Progesterone also disrupts the cyclical development of endometrial cells, making the whole endometrium unreceptive to a fertilized egg. Even so, pregnancies do occur in women taking the progesterone-only pill. Although scientists working for pharmaceutical companies claim otherwise, the minipill's failure rate is at least 5 to 6 a year.

To be effective, the minipill must be taken at the same time every single day without fail. To forget even one pill can expose a woman to pregnancy.

The minipill is unacceptable to many women because of its high failure rate and high incidence of extremely irregular menstruation. If these problems can be eliminated, the minipill might replace the estrogen-progesterone preparations.

Several chlormadinone acetate preparations have already been on the market in England and Canada. These pills were withdrawn in England because longterm tests revealed the development of breast nodules (tumors) in female dogs given CA for several years. The significance of these findings is questionable, since dogs metabolize sex hormones differently than do humans or monkeys. Breast nodules have not been observed in monkeys treated with CA, nor are the breast nodules discovered in bitches clearly cancerous. Further experiments will probably result in the return of CA products to the general market.

The "morning-after" pill series

An effective, after-the fact oral contraceptive has been available for several years. To prevent pregnancy resulting from an unprotected act of sexual intercourse, 25 mg of a synthetic estrogen, diethylstilbestrol (DES) is taken by the woman for 5 days. To be effective, this series must be started no later

Photocell – David Miller

than 24 hours after intercourse. DES works by interfering with the action of progesterone at the uterine lining: apparently, DES causes a reduction of a progesterone-dependant enzyme called carbonic anhydrase, which is essential for implantation of the fertilized egg.

Large doses of DES often cause severe vomiting and nausea. Such side effects are easier to tolerate than an abortion, even one performed under ideal conditions. Since large doses of estrogen cause many undesirable metabolic changes, use of the morning-after pill should be restricted to special cases such as rape victims and victims of observable contraceptive failure (e.g. a burst condom). Stilbestrol has been used in gynecology for about 40 years, and most gynecologists have supplies on hand.

Progesterone injections

Injections of 150 mg. of a potent, long acting progesterone have been used as a contraceptive technique for several years. Unlike the progesterone only pill, the injection method is usually 100% effective. The synthetic progesterone used probably causes an oversuppression of the hypothalamus, blocking the secretion of LH. It can take 12 to 21 months after a progesterone injection for the hypothalamic suppression to wear off, although 100% protection against conception is only provided for 3 months. Many scientists believe that in some cases hypothalamic suppression induced by progesterone injection may never wear off, leaving a woman sterile.

Progesterone injections have not been widely used in Canada and the U.S. The majority of experiments have been performed on non-white, poor women, living in Third World nations. Since the possibility of permanent infertility is rarely explained to such women, experiments with progesterone injections often constitute non-voluntary chemical sterilization programs.

The progesterone injection technique is associated with a high incidence of extremely irregular menstruation. If this side effect, and the possibility of sterilization can be eliminated, the injection technique would be a good contraceptive.

Silastic implantations

Another progesterone-only contraceptive technique being experimented with widely on Third World women involves the implantation, under the skin, of a tiny plastic "pillow" filled with progesterone. Silastic, used in making the pillow, releases progesterone at a slow continuous rate. To implant the plastic capsule, which is about as big as a pencil tip, a small area of skin on the inside of a woman's arm is locally anesthesized. A large bore needle carrying the capsule is then injected leaving the capsule under the skin. The capsule can be removed in a similar way.

Side effects associated with this method are similar to those complicating use of progesterone injections.

Silastic intravaginal-ring

This is a highly promising method. A silastic ring, of about the same diameter as a diaphragm, and filled with a synthetic progesterone, is inserted into the vagina on the first day of menstruation. When properly placed, the ring cannot be felt by the woman or her sexual partner. The ring is left in the vagina for 21 days and the progesterone which is absorbed into the blood stream through the vaginal walls, has a localized effect on the genital tract. After 21 days, the woman removes the ring, and menstrual-like bleeding begins a few days later. Preliminary reports on this method indicate low side effect levels and regular menstruation.

The once-a-month pill

A more convenient form of the combination oral contraceptive is under investigation. A form of ethinyl estradiol (estrogen), which is picked up from the digestive system and stored in fat cells, is used in combination with a long acting synthetic progesterone. Effectiveness of this pill appears to be high and side effect levels low; however, the hormonal balance of this pill is estrogenic. Anti-estrogenic oral contraceptives are associated with a lower incidence of metabolic changes and serious complications, and so the future of this method is questionable.

Pill for men

Experiments with several non-hormonal drugs used to prevent sperm production have not yet been very fruitful.

Vaccinations

When the body is "invaded" by a toxic chemical or disease organism (e.g. bacteria) white blood cells and specialized blood serum chemicals attack the invader. In the course of the subsequent biological battle, the body's defences become specialized against the particular invading chemical or organism. This specialization process, called the development of immunity, is highly complex and hardly understood. If the same chemical or organism attacks again, specialized "antibodies" carried by the blood serum, destroy the invader without exhibiting disease symptoms.

It may be possible to immunize ("vaccinate") a woman against a particular man's sperm. Sperm cells are actually invading bodies; however, they are not normally attacked within the female body since they do not, under normal circumstances, induce immunization. If a woman could be immunized against sperm, antibodies would attack and destroy sperm cells when they enter the Fallopian tubes.

Not all antibodies are maintained for the whole life of the organism. For example, smallpox antibodies "wear out" in a few years, and booster shots are needed to redevelop immunity. Vaccination against sperm need not be permanent, and various techniques could be used to determine when re-immunization is necessary. If the vaccination method can be perfected, it would be preferable to hormonal contraception.

abortion

Photocell – Clara Gutsche - David Miller

Vacuum Curettage

This modern method of abortion, also called **uterine aspiration,** was first developed in China. It has become the method of choice for abortions up to the 12th week of pregnancy since it can be done quickly, with little blood loss, minimal anesthetic and a low risk of complications. It can easily be performed in a doctor's office or in an outpatient clinic.

In preparation for a vacuum curettage, the woman should not eat for three hours before the operation to avoid vomiting and the dangers of choking. She should bathe the day of the operation. Shaving of the pubic hair is not necessary.

To begin the procedure, the doctor (or paramedical specialist) conducts an internal examination to verify the pregnancy and check the angle of the uterus. A speculum holds the walls of the vagina apart throughout the operation. A uterine sound is passed through the cervical canal into the uterus to ensure that the canal is not blocked, and to estimate the measurements of the uterus.

A local anesthetic is sufficient to block pain occurring during the operation. The most commonly used form, the **paracervical block** is also used frequently during childbirth. The chemical (xylocaine or carbocaine) is delivered by injection at the back of the vagina behind the cervix. The injection itself is not painful. Nerves leading from the cervix are numbed by the anesthetic, and sensation from the uterus and especially the cervix is "blocked" before it reaches the spine.

The cervical canal must be dilated (widened) to permit the introduction of surgical instruments. This can be done in a number of ways. In the traditional method, the doctor passes a series of increasingly larger polished metal rods (Hegar's dilators) into the cervical opening. The first is about the width of a thin soda straw, and the last is about the width of a finger. The cervical tissue stretches more easily in women who have had children. Although the anesthetic blocks severe pain during cervical dilation, women sometimes feel cramps similar to menstrual cramps. Dilation of the cervical canal can also be accomplished by an instrument with two rounded tips which are inserted into the canal; by applying pressure to the handle, the tips separate, causing the tissue to stretch. This expansion technique takes only several seconds but occasionally it is more uncomfortable than Hegar's dilation.

Some doctors prefer to dilate the cervix with a "vibrodilator" which attaches to some vacuum operating units. Vibration of a soft metal cone held in the cervical canal dilates the canal almost instantly to an exact size, however, many doctors continue to use one of the older methods of dilation since the vibrodilator makes a loud noise which can be upsetting to the patient.

Once the canal is dilated, the doctor inserts a hollow tube called the **vacurette** into the uterus until it touches the amniotic sac. The vacurette is connected by transparent plastic tubing to a collection bottle. The vacuum pressure is turned on for 20 to 40 seconds, and the doctor observes the passage of fetal and placental tissue into the collection bottle. When the uterus is emptied, the doctor feels a slight tug on the vacurette. In order to ensure that no placental tissue is left in the uterus, the doctor goes over the uterine lining with a curette as in a D. & C. This is especially important in pregnancies close to the 12 week limit, and when the uterus is positioned abnormally. The entire operation takes about 5 to 10 minutes.

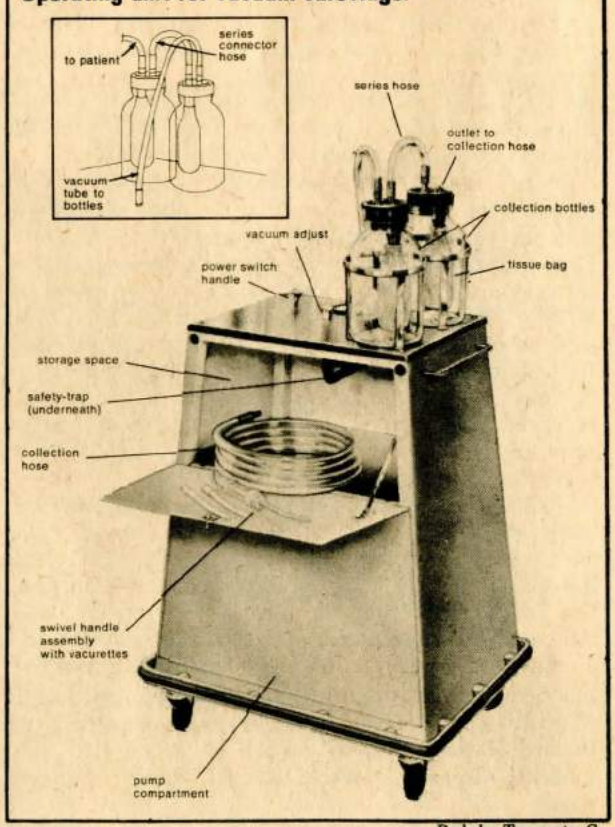
Recuperation from vacuum curettage is almost immediate. Some women want to lie down for a few minutes, others have cramps similar to menstrual cramps, and still others feel perfectly normal. Women who get up from the operating table too quickly sometimes faint.

A woman will have menstrual-like bleeding for a day to a week after an abortion. She may use either pads or tampons, whichever she prefers.

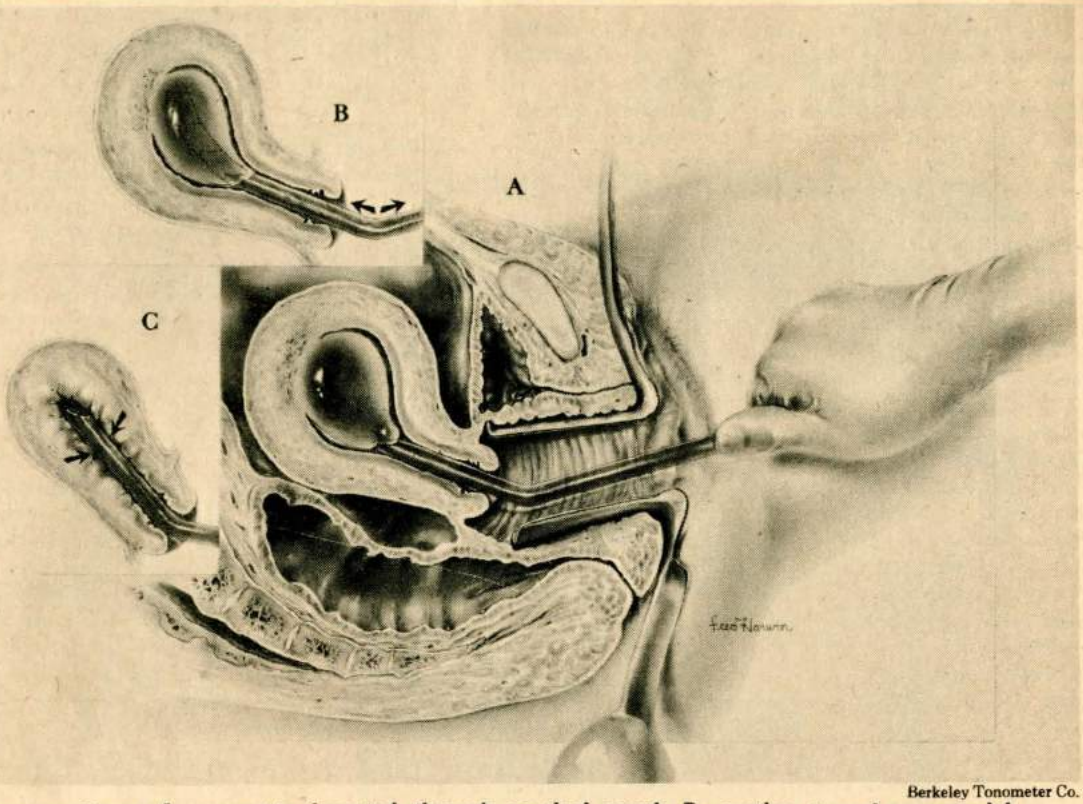
The first real menstrual flow begins 3 to 6 weeks after the abortion. Since it is difficult to tell exactly when she becomes fertile again, a woman must consider herself subject to another pregnancy immediately, and begin to use some form of birth control. A woman who wishes to use oral contraceptives must take the first pill of a series within 5 days after the abortion; otherwise she must wait until her next menstrual flow.

A woman must not douche after an abortion. The cervix remains slightly dilated and a douche can force fluid into the uterine cavity.

Operating unit for vacuum curettage.



Berkeley Tonometer Co.



Berkeley Tonometer Co.

Vacuum curettage: A. vacurette inserted through cervical canal; B. suction turned on, material flows through tubing; C. empty uterus "tugs" on vacurette.

Other than the restriction on douching, there is nothing that a woman cannot do after an abortion. Some women wish to rest for an hour or two; others go about their everyday business without interruption. There is no restriction on sexual activity so long as birth control measures are taken.

Some doctors automatically prescribe antibiotics such as penicillin after an abortion; others who do not believe in such prophylactic treatment give antibiotics only if a woman shows signs of infection, since it is more difficult to cure infection which develops despite antibiotics. Fever, and pain in the pelvic area are symptoms of infection. Infection after a properly performed abortion is fairly simple to cure; however, it is serious. If fever, pain, or uncontrollable bleeding occurs after an abortion, a woman must see a doctor or go to a hospital emergency clinic immediately.

Although the probability of Rh immunization after early abortion is slight, Rh negative women who wish to have another child should receive "Rhogam" injection within 72 hours of the abortion. If Rh positive blood cells from the fetal blood stream enter the woman's blood stream, the woman becomes immunized (develops antibodies) against Rh positive blood cells. These antibodies will attack blood cells of an Rh positive fetus in future pregnancies. Future babies, if not stillborn, would be born with "hemolytic disease of the newborn" which produces severe, often fatal anemia. Rhogam prevents the development of Rh positive antibodies in the woman's blood stream.

Dilatation and Curettage

This method has been widely replaced by the vacuum curettage. It is still used where aspiration equipment is not available and, with a general anesthetic, for cases between the 12th and 15th week of pregnancy. Both uterine aspiration and "D & C" are used as diagnostic procedures for gynecological problems such as endometrial growths or cancer.

Preparation for a D & C is the same as that for vacuum curettage, including pelvic examination, paracervical block and cervical dilation. Once the canal is dilated the doctor inserts a **curette** (surgical instrument with spoon-like tip) into the cavity of the uterus to scrape loose the embryo and placenta. Loosened portions of embryonic material are removed from the uterus with a long surgical grasping instrument called an ovum forceps. The entire operation takes about 10 to 15 minutes.

Recuperation is slightly longer than that for uterine aspiration, due in part to greater blood loss. Post-abortion instructions (no douching, etc) for vacuum curettage are applicable after a D & C as well.

Intra-amniotic hypertonic saline

This method of inducing abortion is used after the 15th week of pregnancy. Before 15 weeks, the uterus and amniotic sac are too small and the procedure is difficult to perform.

A local anesthetic is injected into a small area of

skin several inches below the navel. A long needle is inserted through the abdominal wall and uterine wall into the amniotic cavity. Since the amniotic fluid is under pressure, some should flow out freely if the needle is positioned properly. The needle is replaced with a more flexible catheter and the amniotic fluid is drained out. An equal amount (maximum 200 ml) of 20% salt solution is injected through the same catheter into the sac. This procedure must be done slowly and carefully since an injection of salt solution into the blood stream can be fatal. Since the woman is not asleep, she can report any sensations such as headache, numbness, pain or faintness which may indicate a misdirected injection.

The saline solution kills the fetus and stops the placenta's production of pregnancy supporting hormones such as progesterone. Uterine contractions usually begin within 48 hours and the cervix dilates. Eventually the amniotic sac ruptures releasing the salty fluid (breaking of the waters). Contractions become harder and closer together until finally the fetus is expelled, usually within three days of the injection. In about 50% of cases, the placenta is expelled within half an hour. If parts of the placenta are retained, a curettage is performed to remove them to reduce chances of infection or haemorrhage. Curettage is necessary after saline abortion in about 10% of the cases.

The woman may or may not be kept in the hospital between the time of the injection and expulsion of the fetus. The deciding factor is usually economic: with hospital beds costing $100 a day, poor women often have to wait the interval at home, many of them not returning to the hospital at all. Some institutions are encouraging women to abort at home, saving hospital beds for "more important" cases. Liberal rhetoric about "aborting in the privacy of one's home" can not hide the realities: overcrowded and understaffed hospitals, practically non-existent home care programs, etc. - realities which hit the poor and non-white first and hardest.

Care after saline abortion is similar to that after vacuum curettage, although greater caution is the rule. Douching is forbidden. Any symptoms of retained placental tissue or infection (severe bleeding, fever) should be reported to a doctor immediately. Sexual intercourse may be resumed when the woman so desires; some suggest waiting until the menstrual-like bleeding has stopped.

The saline method of abortion should be avoided for women with kidney disease, heart disease, or previous delivery by caesarean section. In general, the woman should be in a state of good health before undergoing saline abortion. In the interval between the injection and delivery, she should drink a lot of fluids and avoid eating salts.

The risks of saline abortion, although higher than those of vacuum curettage are still lower than those for continued pregnancy. The degree of safety is closely related to the competence of the doctor who determines the eligibility of the woman for saline abortion and who injects the solution into the amniotic sac. It is hoped that the number of women seeking abortions after the 16th week will be reduced when "free abortion on demand" is realized.

Hysterotomy (miniature caesarean section)

Hysterotomy involves major surgery with a hospital stay of about one week. An incision is made in the abdominal wall just above the pubic bone. A second incision is made in the uterine wall, and

DANGER

Competent, medically trained abortionists, whether they are acting legally or not, never use methods described below. These methods involve extreme pain and can lead to permanent disability, infection, or death:

Oral means:

- **Ergot compounds - overdose is poison**
- **Quinine Sulphate - can cause deformities in fetus or death to mother**

Nothing that is swallowed can cause abortion without also causing death or severe disability to the mother

Solids inserted into uterus:

- **Knitting Needles**
- **Coat Hangers**
- **Slippery Elm Bark**
- **Chopsticks**
- **Ballpoint Pen**
- **Pastes**
- **Catheters**
- **Gauze (packing)**
- **Artists Paintbrushes**
- **Curtain Rods**
- **Telephone Wire**

Common danger of perforation of womb and bladder - death from infection or haemorrhage.

Fluids inserted into uterus:

- **Soap suds**
- **Alcohol**
- **Potassium Permanganate**
- **Lye**
- **Lysol**
- **Pine Oil**

Severe burning of tissues - haemorrhage - shock and possible death.

Air pumped into uterus: gas emboli in the blood stream. Immediately fatal.

Injections into Uterine Wall:

- **Ergot**
- **Pitocin**
- **Sodium Pentothal**

Overdose is poison.

Vacuum Cleaner

Connected to uterus - not to be confused with vacuum aspiration - is fatal almost immediately - rips uterus from pelvic cavity.

Physical exertion

Such as lifting heavy objects, running etc is useless.

Falling down stairs

Severe injury to mother but no abortion.

the fetus and placenta are removed. Both incisions are carefully repaired. Some doctors insist on delivery by caesarean section for all pregnancies after a hysterotomy, since the uterine wound can rupture due to labor contractions. Hysterotomy is quickly being replaced by the simpler "salting out" method.

Prostaglandins

Prostaglandins are a group of naturally occurring fatty acids which contribute to the normal functioning and contractions of "smooth muscle" organs, such as the uterus and intestines. Prostaglandins have been found in many parts of the human body and the full range of their effects remains a mystery.

Three kinds of prostaglandins, El, E2 and F2-alpha, are being used experimentally to stimulate abortion. The prostaglandin is administered to the pregnant woman intravenously, by injection into the amniotic sac, or by insertion through the cervical canal into the uterine cavity. (Oral administration requires large dosages and frequently results in side effects).

Both intravenous and direct application into the uterus have been successful, causing abortion in more than 90% of women tested. Side effects result from stimulation of smooth muscles of the digestive system, causing nausea, vomiting and diarrhea. Side effects are more common with high dosages. Since local administration (i.e. not intravenous) affects uterine muscles more efficiently, lower dosages can be used. The interval between first application of prostaglandin and complete expulsion of the fetus is about 18 hours.

Prostaglandins stimulate delivery at any stage of pregnancy. When perfected, these chemicals will probably replace the saline method for abortion past the 12th week of pregnancy. For pregnancies between the 5th and 12th weeks, vacuum curettage is preferred, as it affects an immediate, complete abortion, and hospital stay can be as little as half an hour. Prostaglandins for abortion at a very early stage, before 5 weeks, is another possibility. The insertion of a prostaglandin-tampon if a period is missed could bring on an unnoticeable abortion. Many such early abortions occur naturally, felt as "heavy periods".

The morning-after-pill

Abortion immediately after fertilization but before implantation can be achieved if the woman takes 25 mg of a natural estrogen, stilbestrol, for 5 days beginning within 24 hours of sexual intercourse. (see new methods, page 37). The stilbestrol series is often given to victims of rape, and can also be obtained in other cases of unprotected sexual intercourse.

NOTE:

Women seeking abortion must not confuse the experimental techniques involving prostaglandins or stilbestrol with claims of quacks or other unscrupulous doctors who offer an "injection" or "pills" for exorbitant fees. These injections or pills usually contain progesterone which can bring on a missed period, **if the woman is not pregnant.** Progesterone can not induce abortion. Prostaglandins are not yet commercially available, either legally or on the black market, and stilbestrol is available from gynecologists or hospital clinics at low cost.

Statistics

Statistics for illegal abortion are developed on the basis of population, hospital records, total number of births, death from post-abortive complications, questionnaires etc. Some of the most carefully developed and most widely accepted figures are listed below. Statistics for legal abortion, such as performed in Communist countries and in Japan are from hospital records.

General:
In the world: at least 30,000,000 abortions every year.
At least 4/5 of all abortions are performed on married women.

Canada:
At least 100,000 illegal abortions every year.
At least 20,000 admissions to hospital for post abortive complications - at least 1,000 of these cases result in severe disability or death.

United States:
At least 1,000,000 illegal abortions every year. Four out of five legal abortions are performed on private patients, not clinic patients. Nine out of ten legal abortions are performed on whites, not Blacks.

Where abortion is legal:
Bulgaria: between 1962 and 1964, 67,000 legal abortions without a single death.
Czechoslovakia: between 1962 and 1964, 140,000 legal abortions without a single death.
Hungary: between 1962 and 1964, 358,000 legal abortions with 2 deaths.
Japan: 1,500,000 legal abortions every year performed by more than 20,000 specially licensed technicians.

Availability of abortion

The battle for change in the abortion situation in North America over the past several years has had some results. In Canada the "liberalized" law allows for abortion when continued pregnancy would threaten the life or health (undefined) of the woman. Of those states in the U.S. with reformed laws, New York is the only one which leaves the decision between the woman and the doctor, with no hospitilization and no residence requirement. Even a quick look at the realities in these areas shows that we are still a long way from abortion on demand.

Male chauvinism and conservatism on the part of the doctors are exemplified in the Canadian situation. The law is worded such that a group of hospital doctors could define the condition, "unwanted pregnancy", as a threat to women's health; applications could be rubber stamped and abortions done immediately on an outpatient basis. This has occurred only rarely. Doctors still believe they

have a right to participate in a woman's decision whether or not to have a baby, beyond offering her the use of medical technology to prevent or terminate a pregnancy. So long as male doctors see women as breeders with no other useful function within society, women will continue to be denied control of their own bodies. So long as doctors, administrators, boards of directors, and the church set the priorities of the hospitals and are not responsible to the demands of the community they serve, the real health needs of the people will not be satisfied.

The New York abortion fiasco best illustrates what happens when the health system is directed by the profit motive. No sooner was the law passed, when referral agencies, with all the style of Madison Avenue, were established to direct "ladies in distress" to cooperative doctors. These agencies have been taking from $10 to $75 for each referral (in addition to the doctor and hospital fee of $200 to $1000) while groups such as Planned Parenthood and Women's Liberation have offered the same services without charge. The agencies have placed advertisements in campus newspapers and sent introductory letters to doctors all over the country. Some agencies offer to arrange reduced fees on occasion for "hardship cases", thus ensuring that the out-of-state doctors send them a regular clientele at the full fee.

These problems are not accidental, nor can we expect them to be solved without a radical restructuring of the entire medical profession, indeed, of the whole society. The number of doctors trained each year is controlled by the American Medical Association; thus a shortage of doctors maintains the high income of the members of the profession. Para-medical staff who could easily be trained to do abortions and many other routine medical procedures would tend to demystify the god-like image of the doctor. To date, there is no program for the training of para-medical staff in the numbers required to meet the needs of the people. The prohibitive costs of all medical procedures determine the quality and amount of medical attention a person will receive, regardless of that person's needs. The emphasis on curative rather than preventative medicine ensures business for the medical profession but does little to improve the quality of life for all people.

Poor women, especially black women, suffer the worst humiliation at the hands of male doctors and their hospital boards. These woman are commonly "offered" abortion - with the stipulation that they must accept sterilization as well. The rationale that such measures are necessary to alleviate the population crisis is merely a cover for racist genocide. The children of the rich exploit and pollute the resources of the earth, not the children of the poor.

The struggle for justice on the abortion issue will not be complete until abortion becomes just another medical procedure available free to all women whenever necessary.

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