

birth control handbook



Birth Control Handbook

12th edition (revised) November 1974

Administration: Shirley Gardiner

Medical illustration: Barbara Hyams

Photography: Clara Gutsche and David Miller (Photocell — Montréal),
André Giguère, Gabriel Durocher, Elizabeth Bateman

Production by the workers of Journal Offset Inc. Montréal, Québec
Local 111, Confédération des syndicats nationaux (CSN)

Published by Montréal Health Press — Les Presses de la Santé de Montréal,
Inc. (1973), an independent, non-profit corporation under Québec law.

Written by Donna Cherniak and Allan Feingold

Edited by the members of Montréal Health Press Inc: Donna Cherniak,
Allan Feingold, Shirley Gardiner, Clara Gutsche and David Miller

© Copyright 1975 by Montréal Health Press, Inc.

Other publications by Montréal Health Press, Inc:

VD Handbook

Petit manuel de la contraception

Mailing address: Birth Control Handbook
P.O. Box 1000, Station G
Montréal, Québec
H2W 2N1
Phone: (514) 844-5838

PRINTED IN CANADA

ordering information

Orders for 50 to 300 copies are sent by insured parcel post. Since postal rates to different parts of Canada and the U.S. vary, we must calculate the cost of all such orders individually. Please write for cost information.

Orders for more than 500 copies

1. Cost: To points in Canada: \$80.00 per thousand copies. To points in USA: \$82.00 per thousand copies, plus a customs clearance charge of \$14.00 per order. These prices apply to orders for the **Birth Control Handbook**, **VD Handbook**, or **Petit manuel de la contraception**, or any combination order of these publications.

2. Shipping: Canada: Bulk orders are shipped by truck or train.

USA: Bulk orders are shipped by truck or air freight. (If air freight is preferred, please request

it, and omit the customs clearance charge. You can arrange to clear them yourself.)

Britain, Australia, New Zealand, and Africa: Bulk orders are shipped by ship.

NOTE: We do not ship large bulk orders of the Handbooks with shipping charges prepaid. **You will be billed separately for shipping costs.** Do not forward shipping charges to us.

Shipping weight: 140 lb. per 1000 copies.

Single copies: FREE, send 25¢ per copy (maximum 10) for mailing and handling.

Reproduction of the Birth Control Handbook in whole or in part, or any systematic mutilation of, or addition to, copies before distribution, constitutes copyright violation unless the express consent of the publishers has been granted.

The Birth Control Handbook is sold to organizations at cost price and is meant for free, mass distribution. Re-sale of the Handbook is forbidden.

table of contents

introduction.	3	condom.	31
anatomy.	4	diaphragm.	33
hormones and the menstrual cycle.	10	vaginal contraceptives.	35
sexual intercourse.	13	rhythm method.	36
conception.	14	coitus interruptus.	37
birth control pill.	17	effectiveness.	38
other hormonal contraceptives.	25	sterilization.	38
intrauterine devices.	26	abortion.	41

Today, population control is the focus of a great deal of attention. We are constantly warned of the grave dangers of the "population bomb". Many people believe that efficient population control is the only possible solution to the world's pressing social problems of pollution, famine and crime.

The idea of population control is not new. Through the ages, societies found that some kind of population regulation was necessary; however, it was not until the industrial revolution in England, which brought together large numbers of people to serve as an industrial labor force in overcrowded, disease-ridden cities, that population control was suggested as a solution for social problems. In 1798 the Reverend Thomas Malthus published his "Essay on the Principle of Population". Steven Polgar, of the Carolina Population Center, describes Malthus's work: "Malthus's primary concern was not the regulation of population in general, but regulation of the poor. Malthus wrote that poverty stems from the laws of nature." Malthus believed that population increases faster than society's ability to produce food, and so, some people must always be hungry and poor. "To give relief to the poor would only encourage them to have more children.... Malthus saw population control as important to forestall revolutions - such as the one of 1789 in France."

The Malthusian theory was disproven by the events of the industrial revolution. Mechanical techniques of farming greatly increased food production, and the starving working class found strength in the union movement and fought successfully for more adequate wages and working conditions. Malthus was discredited as a shoddy economist, and his theory was forgotten.

Since World War II, U.S. industrialists, economists and politicians have been increasingly interested in the nations of the Third World - Africa, Asia and Latin America. These countries have vast supplies of raw materials such as oil, metals and agricultural products which are becoming scarce in the United States. In many countries, U.S. business has purchased the right to use these raw materials; however, the people of the Third World have rarely benefitted from the sale of their own resources. In fact, U.S. control has brought poverty and misery to the Third World. For example, many of the 90 million people who live in Brazil are hungry. Within the borders of Brazil, which is nearly as large as the U.S., there exists as much arable, potentially food-producing land as exists in all of Europe; but little of Brazil's land is used, and most of what is cultivated is used to grow coffee, a cash crop with no food value. American companies own most of the cultivated land and 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 the profits go to the U.S. companies.

In addition to non-food agricultural products such as coffee, and industrial raw materials such as copper and iron, the United States imports protein-rich food from the starving Third World nations. Francis Lappée, author of "Diet for a Small Planet", writes that "When it is available, we import enough

introduction

When a woman and a man use birth control, they affirm that the goal of their sexual intercourse is mutual pleasure and delight, not reproduction. It is our basic human right to be able to find such delight in each other, and it is our human responsibility not to make an unwanted child the result of our most personal pleasures.

Because of simple biological fact, birth control is more important for women than for men. More than an affirmation of human sexuality, the use of birth control is a declaration of female sexuality.

The purpose of the Birth Control Handbook is to provide women and men with the information they need to control their own bodies, to find pleasure in sex as often as they desire, and to have children as a result of planning, not accident.

Birth control and population control are not the same thing. Birth control is used by individual women and men for their personal advantage; population control is the control of individuals for the advantage of society or part of society. Population control is the regulation of the number of people who live in a society.

fishmeal from Chile and Peru to meet the protein requirements of the Peruvian population for an entire year."

And when the people of the Third World nations attempt to regain some control over their own resources, the United States uses its military and industrial power to stop them. Hearings before a U.S. Senate Committee revealed that the International Telephone and Telegraph Co. (ITT) requested the CIA to disrupt the democratically-elected socialist government of Chile.

The modern population control movement developed during the 1960s in the United States. Groups such as Zero Population Growth (ZPG) and the Committee to Check the Population Explosion rediscovered Malthusian theory, and argued that the poor of the Third World are hungry because there are too many of them, not because foreign industry owns and controls their natural resources. Representatives of U.S. industry were quick to agree. The Rockefeller Foundation poured millions of dollars into the population control movement. From 1965 to 1972, the U.S. government Agency for International Development (AID) raised its budget for population control activities from \$2 million to \$100 million. U.S. agencies and scientists have imposed population control programs on Third World nations.

The population control movement has warned that the population explosion is the cause not only of hunger, but also of political unrest and revolution. In a speech given at the University of Notre Dame, Robert McNamara, president of the World Bank and former U.S. secretary of defence, said 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 that rising populations of young, hungry, jobless people might refuse to give up their national riches to foreign American companies, and fight wars of national liberation.

It is true that increasing population size puts increasing pressure on already inadequate resources of food. And it is also true that despite increasing sophistication of food production, the world can only support a certain number of people. However, the cause of starvation in today's world is not population size, but rather the unjust distribution of products, and the theft, by the rich capitalist nations, of natural resources, including food, from the poor countries. "The expanding numbers of Third World people, who are no longer dutiful subjects toiling in their mines and fields, and not consumers either for an ever-expanding flow of manufactured products, have become a burden for the industrial powers. Not only a burden, but a threat also, for - as in the time of Malthus - a great revolution is taking place."

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 (release of semen during the male's sexual climax). 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 orgasm and 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.

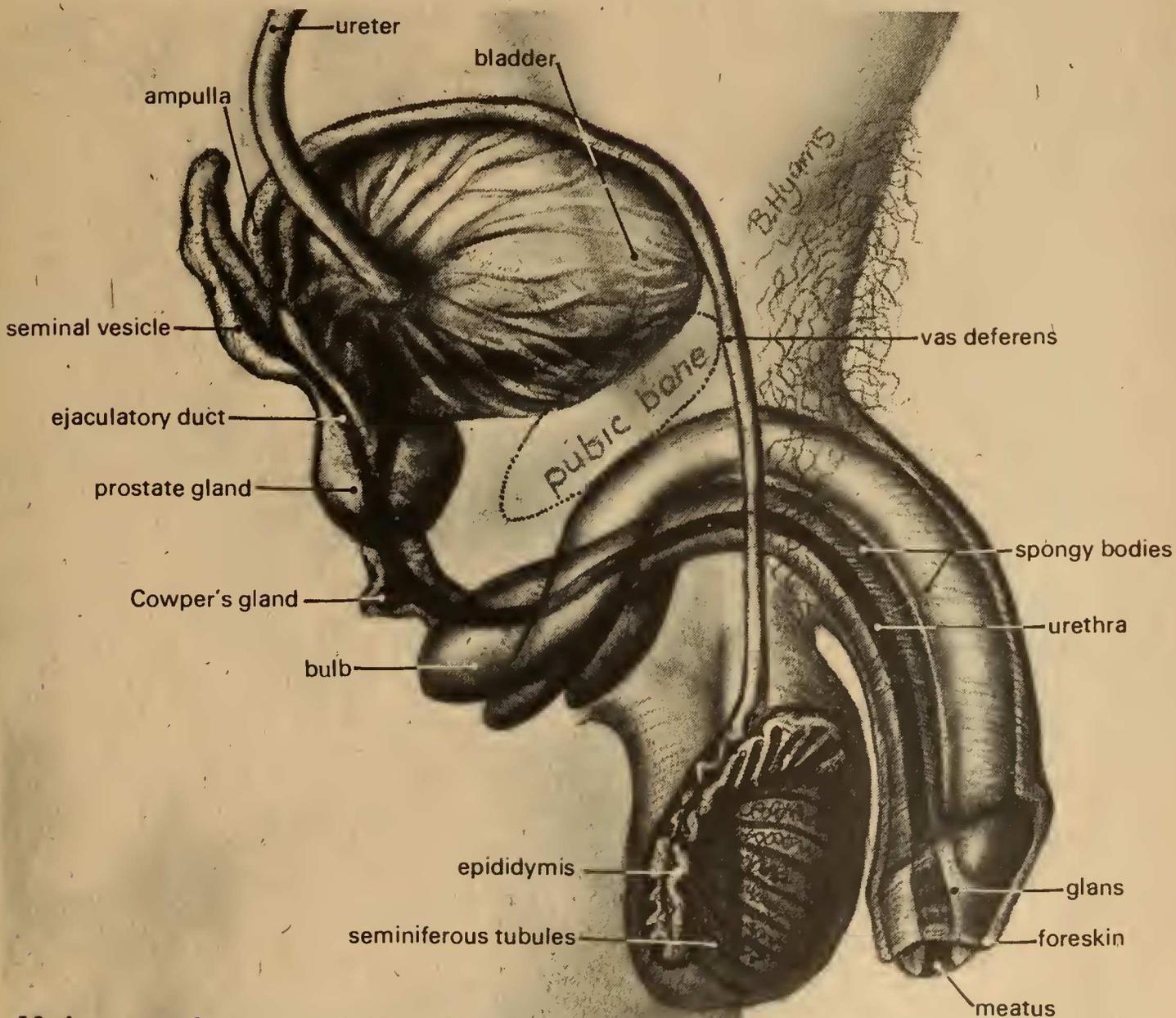
Bladder: The bladder is a muscular sac lying behind the pubic bone and in front of the rectum. Below it is the prostate. The bladder collects urine which flows into it from the kidneys in two tubes called ureters. Urine is excreted from the bladder through the urethra.

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. 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, is 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 projects from the vaginal wall at the vaginal entrance. In most women, the hymen does not block the vaginal opening comple-

tely, allowing the menstrual flow to pass through. Rupturing of the hymen (loss of virginity) can be painless or quite difficult; 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 cut surgically.

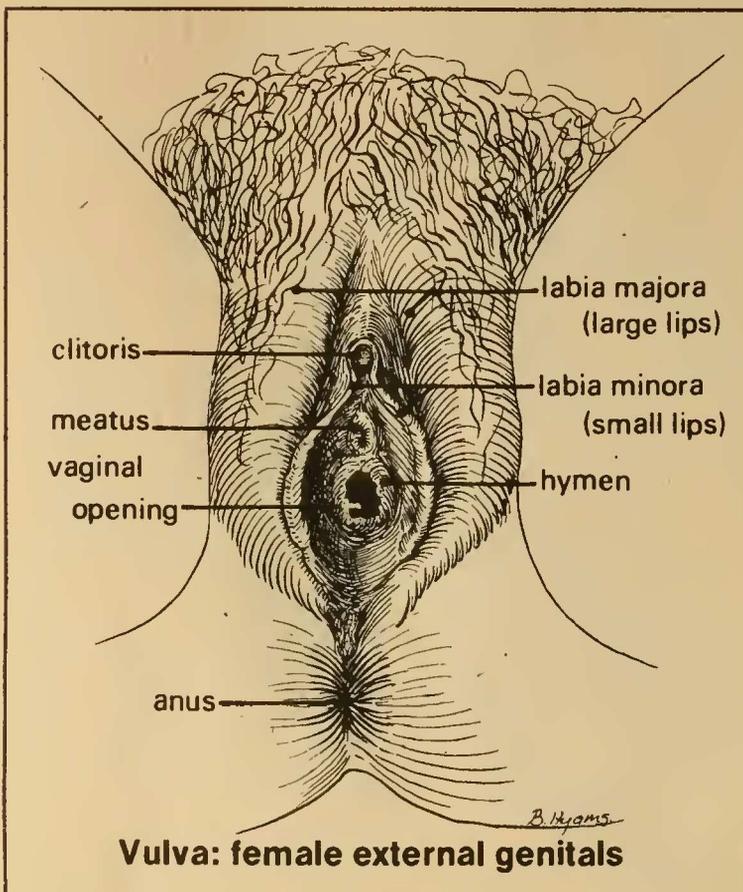
Internal reproductive organs

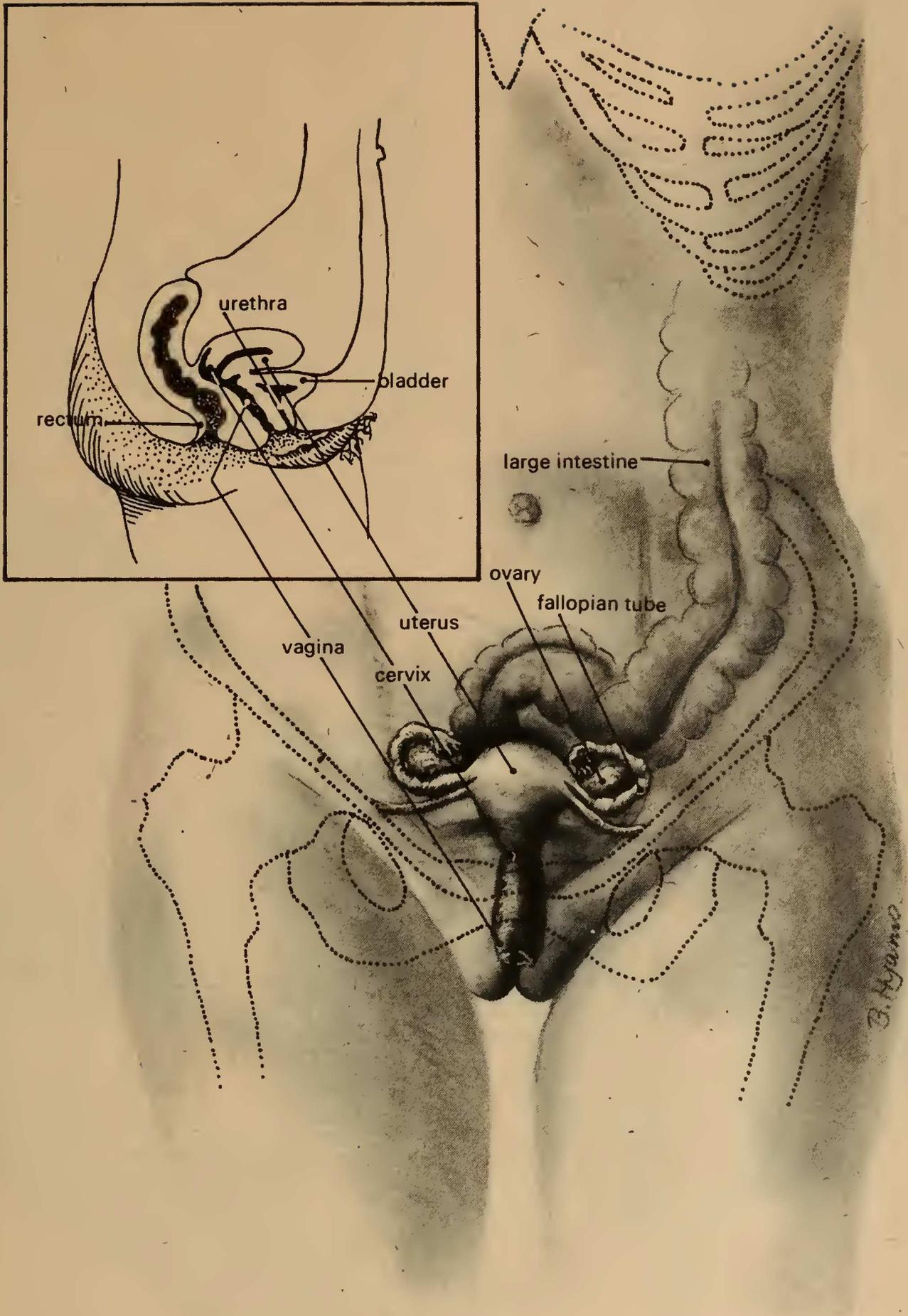
Vagina: The vagina, located between the bladder and the rectum, is about 4 or 5 inches long. Normally its elastic walls touch each other but they stretch considerably during intercourse and even more during childbirth. When a woman is excited, lubricating mucous secretions pass directly from blood vessels 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 lie on either side of the uterus. In a female child, 100,000 to 600,000 immature egg cells (ova), each within a follicle, are embedded deep within the body of the ovaries. After puberty, the follicles move toward the ovarian surface; during each menstrual 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

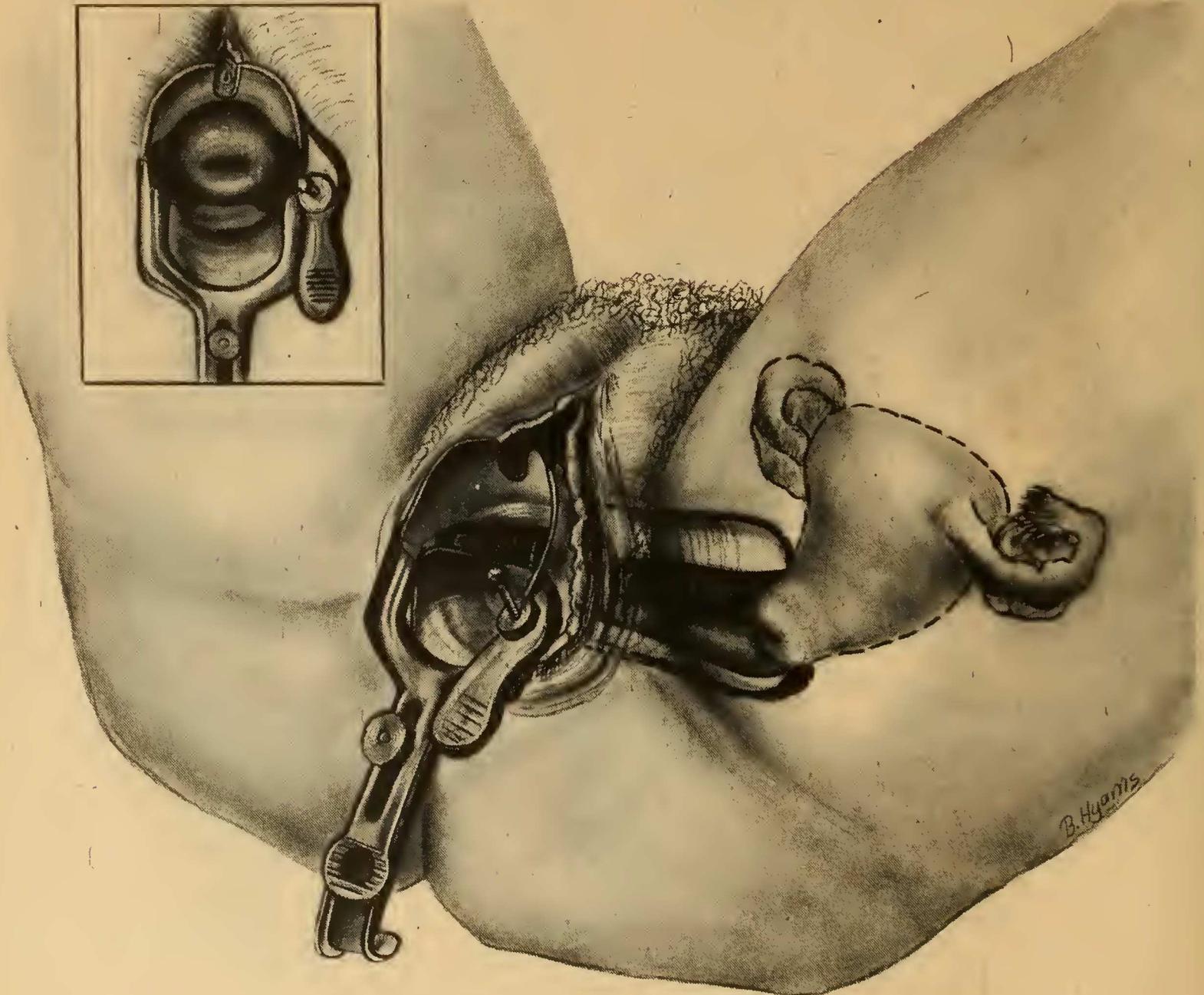
After puberty, a woman should have a gynecological examination once a year. On her first visit, a general medical history is taken, including: past illnesses or operations; allergies or sensitivity to drugs; present medication; and general state of health. This general information is essential for proper 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, is 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 woman has been pregnant the doctor should ask for a complete obstetrical report: number of pregnancies; miscarriages; induced abortions; type of delivery (vaginal or cesarean): premature or full term delivery; weight of newborn; complications before, during or after delivery; breastfed or formula; plans for future pregnancies. What method of birth control has she used and with what success? What gynecological problems has she had previously? How long ago? How were they treated? The woman should offer any information she feels will be useful, whether or not she is asked.

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

The woman is left alone in the examining room to undress, and is given a disposable robe or sheet to wear. The woman's height, weight, and blood pressure are recorded. A blood sample is taken for



Use of the speculum

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

analysis of the woman's blood type, hemoglobin 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 also taken.

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 groin. 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 after each menstrual period.

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

To inspect the vagina and cervix the doctor holds the vaginal walls apart with a speculum. This metal or plastic round-bladed instrument should be warmed and lubricated with warm water before it is inserted into the vagina. The blades are opened and the vaginal

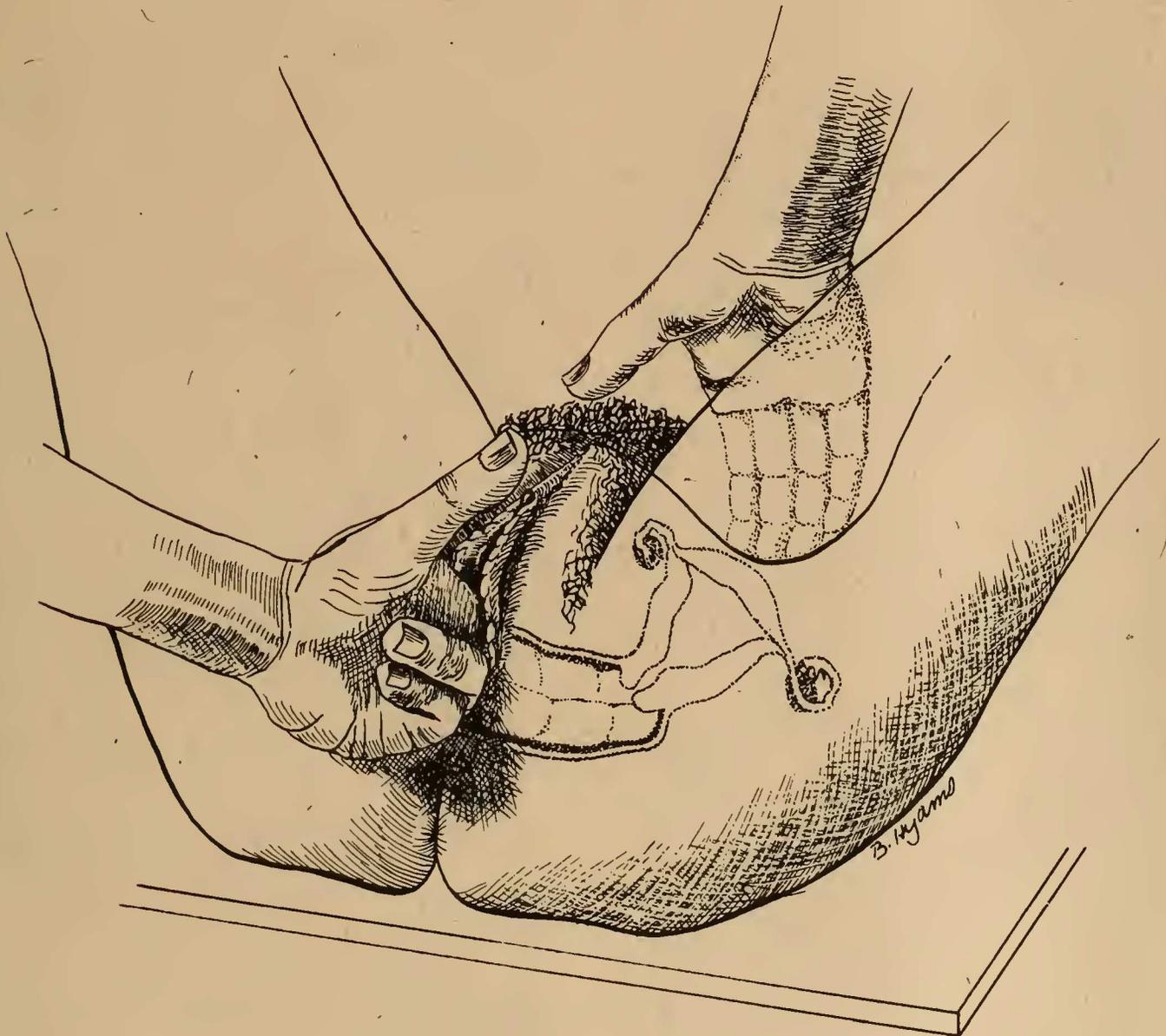
walls gently separated. The speculum can be used in most cases even if the hymen is intact.

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 cannot 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

At every instant, countless physical and chemical events occur within the human body: muscles contract, blood flows, cells are produced or destroyed, chemicals are absorbed into the body from the air, food and water and other chemicals are discarded and excreted out of the body. These complex events do not occur on their own; the functioning of the body is controlled delicately and precisely by the body's two controlling systems, the nervous system and the endocrine system.

The nervous system is made up of the brain, spinal cord and nerves. It sends messages of control to organs such as the heart, lungs and muscles by way of the nerves.

The endocrine system is made up of: the **hypothalamus**, which is part of the underside of the brain; the **pituitary gland**, which is attached to the hypothalamus; and the **endocrine glands**, such as the thyroid, pancreas, adrenals, ovaries (female) and testicles (male). The hypothalamus, pituitary and endocrine glands all produce chemicals called **hormones** which are released directly into the bloodstream. Hormones are chemical messengers which instruct organs and cells to grow, change or perform certain functions. Reproduction is controlled mainly by the endocrine system.

The different parts of the endocrine system all have special roles. The hypothalamus is the link between the nervous system and the endocrine system. The hypothalamus is sensitive to the amount of hormones circulating in a person's blood. If the quantity of a certain hormone falls too low, the hypothalamus sends a hormone message to the pituitary gland.

In response to hormones from the hypothalamus, the pituitary releases its own hormones which control the activities of all other endocrine glands. Two pituitary hormones which control the ovaries in the female and the testicles in the male are **follicle stimulating hormone (FSH)** and **luteinizing hormone (LH)**.

In response to hormone messages from the pituitary, the endocrine glands produce their own hormones and release them into the blood. Some of the endocrine glands produce things other than hormones: for example, in addition to producing the female sexual hormones **estrogen** and **progesterone**, the ovaries also produce the female eggs ready for fertilization. In the male, the testicles produce the male sexual hormone called **testosterone** as well as the sperm which can fertilize a female egg. FSH and LH from the pituitary control both the hormone-producing and the sperm or egg-producing activities of the ovaries and the testicles.

Hormones such as estrogen and progesterone have direct effects on various body organs such as the breasts and uterus. By controlling the production of endocrine gland hormones, the hypothalamus and pituitary control the activities of the body organs.

The hypothalamus and pituitary stimulate each endocrine gland to produce and release its hormones. When an endocrine gland hormone reaches a high enough concentration in the blood, the hypothalamus and pituitary slow down release of their own hormones. For example, the hypothalamus stimulates the pituitary to release FSH and LH which stimulate the ovaries to release estrogen and progesterone. When the blood contains enough estrogen and progesterone to cause the body changes needed for reproduction, the hypothalamus and pituitary stop releasing their hormones. This regular pattern of changing release of hormones from the hypothalamus, pituitary and ovaries determines the regular pattern of the menstrual cycle.

The menstrual cycle

The first day of menstrual bleeding (the period) is the beginning or "day 1" of each menstrual cycle. One menstrual cycle is the time between the first day of one period and the first day of the next period. The average menstrual cycle, that is, the time between two periods, is 28 days; thus, most women have 13 menstrual cycles a year. Some women always have cycles that are longer or shorter than 28 days; others, especially young women, have cycles which vary in length. The length of the menstrual cycle can be affected by a change in climate or emotional stress. This is easy to understand, since the hypothalamus, which plays a large part in control of the menstrual cycle, is part of the brain.

The menstrual cycle can be divided into several phases:

Day 1 to day 5: menstrual phase (the "period")

The cycle begins with the shedding of the developed endometrium (inner lining of the uterus) causing the menstrual flow. During menstruation, the amount of estrogen and progesterone in the woman's blood is low; therefore, the hypothalamus stimulates the pituitary to release follicle stimulating hormone (FSH) and luteinizing hormone (LH). FSH and LH stimulate the growth of several **ovarian follicles**, each containing an egg, on the surface of the ovaries. These follicles begin to secrete estrogen.

Day 6 to day 13: proliferative phase

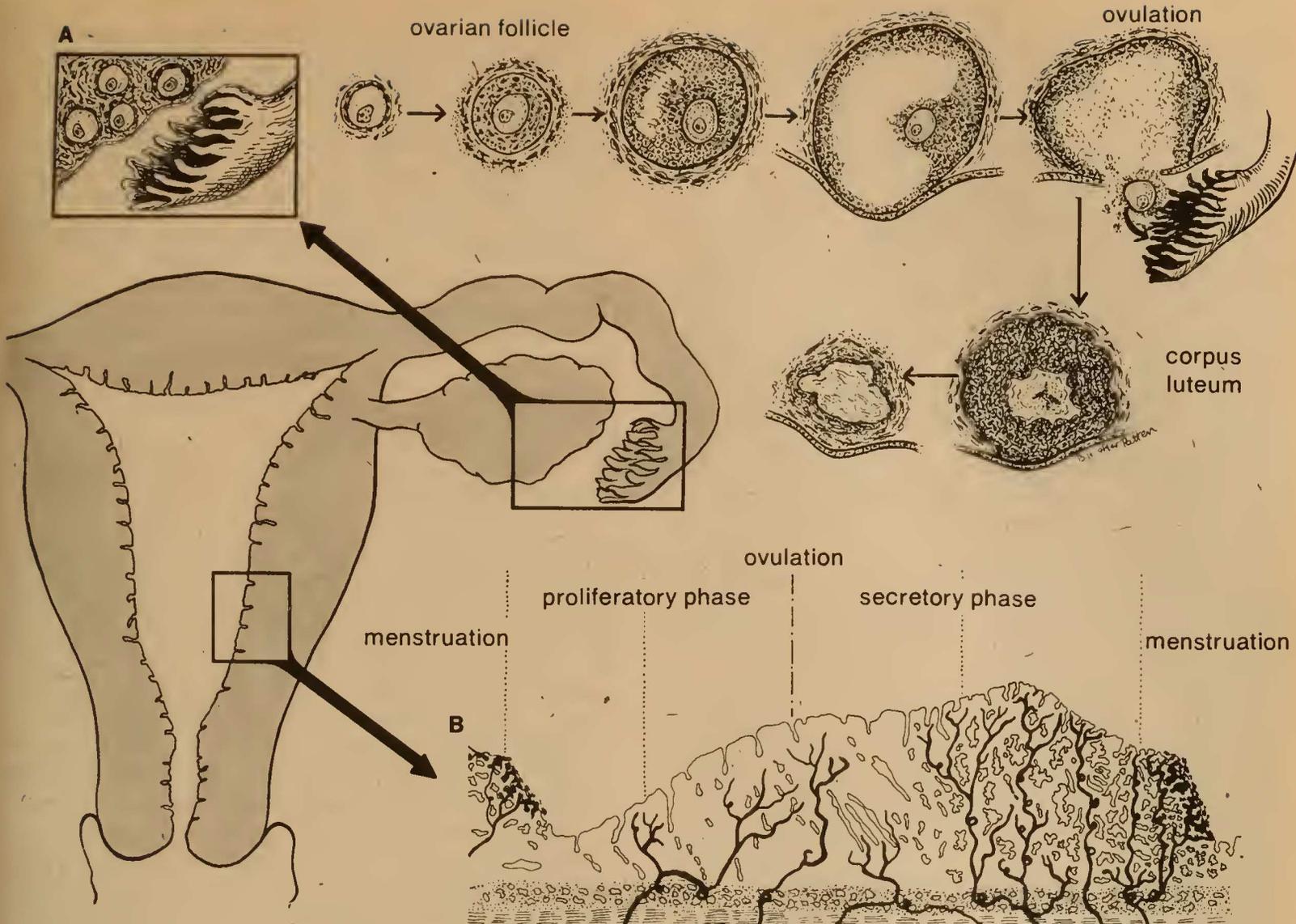
Estrogen released by the follicles stimulates the endometrium to grow thicker and also causes changes in the mucus lying in the cervical canal, making it easier for sperm to enter the uterus. At about day 12, the amount of FSH and LH released from the pituitary begins to increase rapidly. One follicle develops more than the others and sticks out like a pimple from the surface of the ovary.

Day 14: ovulation - release of an egg

At about day 14 of the cycle, the pituitary releases a sudden burst of LH which causes the one well-developed follicle to split open, releasing its egg. The fringed end of the fallopian tube draws the egg into the tube. Under the continuing influence of LH the burst follicle changes into a hormone-secreting gland called the **corpus luteum**.

Day 15 to day 25: secretory phase

The corpus luteum on the surface of the ovary

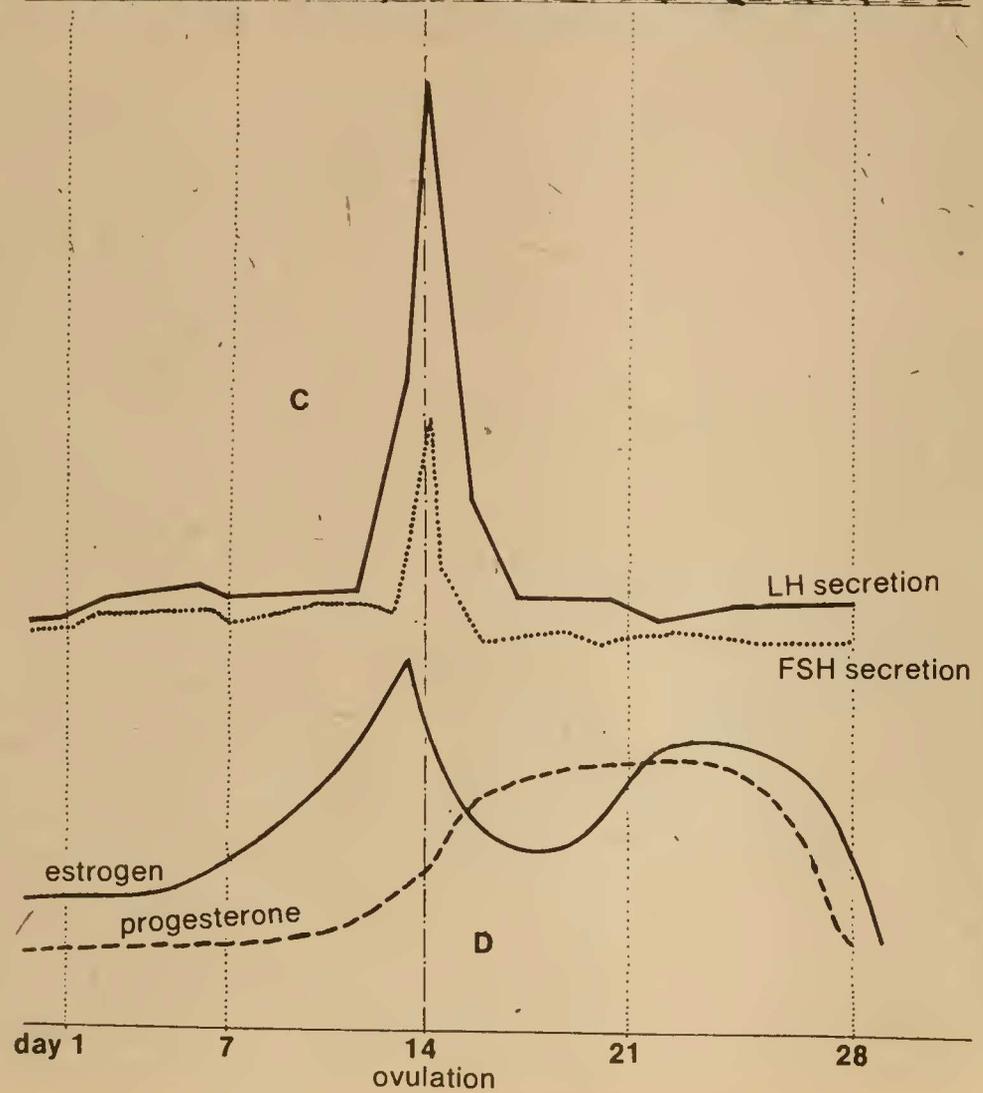


A. Ovulation: The box (upper left) shows several ovarian follicles, each containing an egg, pushing toward the surface of the ovary. One follicle develops and ruptures (upper right), releasing an egg near the open end of the fallopian tube. The ruptured follicle develops into the corpus luteum.

B. Growth cycle of the endometrium (uterine lining): Day 1-5: menstrual bleeding. Day 6-14: proliferative 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.



secretes progesterone which, along with the estrogen causes further growth of the endometrium (inner lining of the uterus). The endometrium becomes a rich bed of blood vessels and thick, sugar-containing tissues ready to accept a fertilized egg. Estrogen and progesterone also affect the hypothalamus and pituitary, slowing down the pituitary release of FSH and LH.

If the egg released at ovulation is fertilized by a sperm, it implants itself into the waiting endometrium. The fertilized egg develops into two parts: the embryo which soon becomes the fetus (unborn baby) and the placenta ("afterbirth") which is a mass of tissue lying on the endometrium and drawing nourishment from the mother for the growing baby. The placenta also produces estrogen, progesterone and other hormones. These hormones continue to block pituitary release of FSH and LH which in turn prevents the release of another egg throughout pregnancy.

If fertilization does not occur the corpus luteum starts to break down about day 25. Its cells are reabsorbed and replaced with normal ovary cells. Those follicles which began to develop but did not rupture are also reabsorbed by the ovary.

Day 26 to day 28: secretory phase - premenstrual

The break-down of the corpus luteum reduces the production and release of estrogen and progesterone from the ovaries. The amount of these hormones in the woman's blood begins to fall. The low level of estrogen and progesterone causes contraction of 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 split open, beginning the menstrual flow. The low levels of estrogen and progesterone also stimulate the hypothalamus to release hormones which cause the pituitary to release FSH and LH, thus restarting the whole cycle.

Controlling menstrual bleeding

Total blood loss during a menstrual period is about 50 millilitres (a little less than 2 fluid ounces); most of the flow is fluid but occasionally 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. Most women experience some cramp-like pain during menstruation, as the uterus contracts to force the menstrual blood out through the cervix and into the vagina. In some women, especially young women who have never been pregnant, menstrual cramps can be quite severe, requiring pain medication.

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 who have never had sexual intercourse (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.

A woman can have sexual intercourse during menstruation without harm to herself or to her partner. Many women notice a heavier flow for several hours after an orgasm.

Menstrual extraction

Menstrual extraction is the removal of the endometrium (inner lining of the uterus) through a thin, hollow, flexible plastic tube which is inserted into the uterus through the cervical canal. The tube is attached to a source of suction, and the endometrium is sucked out. Menstrual extraction was developed by the women's self-help movement in the United States. Menstrual extraction should be performed by trained individuals and should not be attempted by a woman on herself.

When performed at the time of menstruation, menstrual extraction eliminates the nuisance of menstrual bleeding and the discomfort of menstrual cramps. The monthly menstrual period is shortened from several days to several minutes.

Although the occasional use of menstrual extraction is probably harmless, we believe that repeating this procedure every month for many months can cause damage or disease of the uterus. Menstrual extraction pulls off the uterine lining with considerable force, and more lining may be removed than is shed during the natural period. Like suction abortion, menstrual extraction can cause infection of the uterus and fallopian tubes. These potential complications can threaten the woman's health and her ability to have children.

For some women, the monthly menstrual period is painful and incapacitating. Such women should receive thorough medical attention to see if a cause for their pain can be found and treated. Menstrual extraction is not likely to benefit such women.

Some people advocate the use of menstrual extraction when a woman's period is late, and before the woman knows for sure that she is pregnant. It has been suggested that using menstrual extraction in this way simply "extracts" or forces the woman's normal menstrual period out of her uterus. In fact, the menstrual period is a natural event in women who are not pregnant; if the woman is pregnant, the procedure is no longer menstrual extraction, but rather an early abortion.

Many women have late periods even though they are not pregnant. For such women, menstrual extraction is likely to make their natural menstrual periods even more irregular.

sexual intercourse

Sexual intercourse means communication between people by means of direct, mutually pleasurable, physical contact. There are many kinds of physical contact that people find sexually exciting and delightful. Some of these are touching, hugging, mouth-to-mouth kissing, oral-genital contact (kissing the partner's sex organs) and insertion of the erect male penis into a partner's vagina or anus. Heterosexual people prefer to have their sexual activity with members of the opposite sex (that is, female-male). Homosexual people enjoy sexual contact with members of their own sex. There are many people who enjoy both heterosexual and homosexual activity.

The ability to enjoy sexual intercourse develops with knowledge of the human body and with experience in social and sexual relations with others. The pleasures of sex without fear of unwanted pregnancy or moral sinfulness continue to be denied, especially to women, because of the repression of such knowledge and experience.

This publication is committed to providing people with the information they need in order to avoid unwanted pregnancy; therefore, those means of human sexual intercourse which cannot lead to conception, such as homosexuality, oral-genital intercourse and anal intercourse, are not discussed fully. A complete discussion of human sexuality is beyond the scope of the *Birth Control Handbook*.

Human sexual response

Although all people have some understanding of their own sexuality, our precise, scientific knowledge of human sexual response was most limited until the recent pioneering work of two American scientists, William Masters and Virginia Johnson. Working at Washington University with volunteers, Masters and Johnson learned that the sexual response in women and men is very similar but not quite identical. No matter what the kind of sexual activity, during any one sexual event both women and men go through four phases of their sexual response: excitement, plateau, orgasm (also called climax) and resolution.

Excitement phase: This is the beginning of intense interest in the sexual partner(s) - the period of becoming "turned on". In the male, the penis becomes larger, harder and erect, that is, it stands away from the body. Erection is caused by unconscious nerve messages to valves on blood vessels coming from the penis. The valves close, trapping blood in the tissue of the penis. A similar event occurs in the female clitoris which also becomes enlarged and erect. A thin, watery-mucous secretion passes through the vaginal walls, making the vagina moist and lubricated. In both sexes, the heart and breathing rate increase and there is a generalized increase of nervous and muscular tension in the body. The excitement phase lasts for a few minutes.

Plateau phase: During this period the changes of the excitement phase become stable and constant. The nervous and muscular tension is felt strongly. The



plateau phase can last minutes or hours.

Orgasm (climax): Orgasm is the sudden, intensely pleasurable release of nervous and muscular tension in the whole body. Orgasm brings relief and a strong feeling of well-being. In the male it is followed almost immediately by ejaculation, which is the release of semen from the penis.

The nature of orgasm is somewhat different in men and women. In the male, orgasm is always a sudden, brief, intense experience. Women can have that kind of sudden orgasm, but they can also experience a long, slower climax or a rippling, less intense but equally pleasurable orgasm. Most men have at least one orgasm during every sexual event; however, many women have difficulty reaching orgasm. There is no physical reason for this difficulty. In our society there has been little emphasis on the woman's pleasure in sex - only on her ability and responsibility to give a man pleasure. Many women, especially sexually inexperienced women, cannot "come" during penile-vaginal intercourse but can when stimulated in some other way. For some women, the opposite is true. It takes time and patience to undo strong social conditioning. Women should not be made to feel inadequate but rather should be given support and encouragement in their sexual growth and development.

Orgasm is not an absolutely essential event and many people enjoy sex without having an orgasm during every single sexual intercourse. Orgasm should not become the "goal" of sexual intercourse. Sex should be enjoyed without concentrating on the achievement of orgasm.

Resolution phase: This is the period of slowing down and returning to the normal body state. For many people, it is a gentle time of quiet caresses and discussion, in contrast to the excitement and activity of orgasm. In the male, the first few minutes of the resolution phase is called the **refractory period**, during which time the male cannot have another orgasm even if he tries to. In the female there is no refractory period. Women can interrupt their resolution phase to become re-excited and have another orgasm immediately after having a previous orgasm. Thus, women can have one orgasm after another while in men orgasms are usually separated by at least 5-10 minutes. Also, women can have an unlimited number of orgasms while men usually do not desire and cannot achieve more than 2 to 4 orgasms during any one sexual event.

The pattern of human sexual response is the same during any kind of sexual contact. Thus, women and men experience the same kind of excitement, plateau, orgasm and resolution phases during masturbation, male-female vaginal intercourse, oral-genital intercourse, anal intercourse or any of the other imaginative and enjoyable methods by which people find sexual pleasure.

Male-female vaginal intercourse

Because of Church and State pressures, especially in the past, many people mistakenly believe that male-female vaginal intercourse (that is, penis in vagina) is the "best", most pleasurable form of

sexual activity. There is no "best" form of sexual intercourse. The only thing that is special about male-female vaginal intercourse is that it is the only form of sexual intercourse that can lead to pregnancy.

Most people precede vaginal intercourse (or any form of sexual intercourse) with a period of sexual foreplay during which time the partners excite each other by undressing, kissing and caressing. To begin vaginal intercourse, either partner guides the man's erect penis into the woman's vagina; this can be done in many different positions. Together, the partners move their bodies in such a way that the clitoris and penis are stimulated. Most people find the back and forth, rocking, thrusting motion of the hips particularly pleasing. When the male has an orgasm, a fluid called semen which contains sperm is forced out of his penis into the woman's upper vagina. Immediately after release from the penis, the sperm begin swimming up through the cervical canal into the uterus.

conception

All plants and animals, except the most primitive kinds (such as bacteria), reproduce sexually; that is, there are two sexes, male and female, and each contributes an essential cell in the production of new life. The male cell and the female cell join together and the combined cell is the beginning of a new plant or animal. In human beings, the male cell is called the sperm and it is produced in the testicles. The female cell is called the egg or ovum and it is produced in the ovaries. Conception is the joining together of the sperm and egg. Conception is also called fertilization: the egg is fertilized by the sperm.

In humans, sperm are delivered to the egg by means of penis-in-vagina sexual intercourse. When a male has an orgasm during vaginal sexual intercourse, the semen that is released from his penis is deposited high in his partner's vagina, near the cervix (opening of the uterus). The amount of semen released at any one time contains about 350 million sperm. Each microscopic sperm cell consists of a head, mid-piece and tail. Sperm can move on their own by means of a whip-like, back and forth thrashing of the tail. Once released in the upper vagina, 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. A few million sperm do make it through



the cervix and are moved up towards the fallopian tubes by muscular activity of the uterus. Some sperm enter each fallopian tube.

Fertilization can occur only in the fallopian tubes. After it is released from one of the ovaries, an egg can survive within the fallopian tube for about 24 hours. Sperm can remain alive in the fallopian tubes for about 48 hours. Even if sexual intercourse occurs 2 days before ovulation, there can still be live sperm in the tubes when the egg arrives. The first sperm cells to reach the egg release a chemical which cleans off the many small cells which cover the egg in a protective coating. Once the egg is exposed, one sperm cell bores its way through the wall of the egg. A chemical reaction occurs immediately which prevents any other sperm from entering the egg. The sperm cell and the egg cell fuse together to form one cell; in other words, the egg is fertilized by the sperm.

The fertilized egg slowly floats down the fallopian tube, taking about 3 days to reach the uterus. During that time, the fertilized egg divides many times until it becomes a cluster of cells called the blastocyst. Upon reaching the uterus, the blastocyst floats freely for a few days. About 6 days after fertilization, the blastocyst attaches itself to the endometrium (inner lining of the uterus) and buries itself by chemically dissolving a bit of endometrial tissue. Blood surrounds the blastocyst and nourishes it. This process of implantation into the inner wall of the uterus is complete by the 12th day after fertilization.

The blastocyst continues to divide rapidly. Part of the blastocyst soon develops into the embryo which eventually becomes the fetus (unborn baby); another part of the blastocyst develops into the placenta. The placenta is a mass of tissue which grows into the wall of the uterus and picks up nutrients from the mother's blood. These nutrients are transferred to the growing fetus through the umbilical cord which enters the fetus' body through the navel. After childbirth, the placenta separates from the uterus and comes out of the vagina as the "after-birth".

As many as 50% of fertilized eggs fail to implant into the wall of the uterus. In these cases, the fertilized egg dies and passes out of the body unnoticed.

Chromosomes

Except for sperm and eggs, every cell in the human body contains 23 pairs of chromosomes (that is, 46). A chromosome is a strand of special molecules which are ordered in a specific way. The order of the chromosome molecules is a code. The chromosome codes provide instructions for each cell to follow in whatever it does. For complicated tasks, such as the growth of a body organ, the determination of eye, hair or skin colour, or the determination of body size, the cells of the body follow millions of different chromosome codes, each code controlling one small aspect of the complicated task. The chromosome codes not only instruct the cells how to produce something, they also tell the cells what to produce and when. Thus, the 23 pairs of chromosomes in each cell are like the data bank of a computer and the cell itself is like a factory that is controlled by the computer.

Basically, the information stored in the chromosome data bank of every cell of every animal of a particular kind (such as humans) is identical. Thus, every normal human has two eyes in its one head, two arms and legs, etc. However, the chromosome information for some of the exact characteristics such as eye and hair colour and body shape and size is slightly different in every animal; therefore, people do not look exactly alike.

Sperm and eggs are different from other body cells in that they contain only 23 chromosomes, that is, 1 from each of the 23 pairs. At conception, when sperm and egg unite, the 23 chromosomes from the sperm join the 23 from the egg, thus forming the normal full number of 23 pairs or 46 chromosomes. The new set of 23 chromosome pairs is a mixture of chromosomes from the male and female; therefore, the exact characteristics of the newly conceived human will be determined by the chromosome codes from both its parents. One of the pairs of chromosomes determines whether the fetus is male or female.

Pregnancy tests

Usually, a woman first suspects that she is pregnant when her menstrual period is late. The length of pregnancy is calculated from the first day of the woman's last period; if a woman is 10 days late and normally has her period every 28 days, she is considered 38 days or 5½ weeks pregnant.

Whether or not a woman is pregnant can be determined by laboratory tests and by direct physical examination. Lab tests for pregnancy work by detecting a hormone called human chorionic gonadotropin (HCG) in the urine of the pregnant woman. HCG is produced in increasing amounts by the placenta of the developing fetus. By the 6th week of pregnancy, that is, when the woman is 2 weeks late, the placenta is releasing enough HCG so that some of the hormone appears in the woman's urine.

There are several different urine pregnancy tests in current use. Some of these are very fast, giving results in 2 minutes, while others require up to 2 hours. All the modern pregnancy tests are very accurate, but, false results can occur. In 4-10% of cases where the woman is pregnant, the urine test gives a false negative result and in about 2-4% of cases where the woman is **not** pregnant, the urine test gives a false positive result. False negative results are particularly common in pregnancies of less than 6 weeks duration and false positive results are common in older women who are going through menopause. Past or present use of the birth control pill does not affect the accuracy of the urine tests for pregnancy. If there is any doubt about the test results, the test should be repeated.

To ensure the greatest accuracy possible the urine tested should be a sample from the first urine that the woman passes in the morning. The urine that remains in the woman's bladder all night is concentrated and therefore contains a large quantity of HCG. The urine should be collected in an absolutely clean glass or plastic container.

Pregnancy tests are commonly performed in drug stores and hospital laboratories. Tests performed in drugstores are expensive costing \$5 to \$10. Tests

performed in hospital laboratories are both cheaper and more accurate. In Canada, a urine test for pregnancy performed in a hospital and ordered by a doctor is free under provincial medicare.

Since pregnancy tests are not absolutely accurate, a woman who suspects that she is pregnant must have an internal gynecological examination. A pregnant woman's uterus is enlarged by the 6th to 8th week of pregnancy and a trained examiner can detect this enlargement.

When a woman's period is late but her uterus is not noticeably enlarged, some doctors prescribe progesterone pills for 3 days (progesterone is a female hormone). The progesterone enters the woman's blood and reaches fairly high levels by the third day of taking the pills. Once the progesterone pills are stopped, the amount of the hormone in the woman's blood begins to fall. A falling level of progesterone is a natural stimulus for menstruation and so, if the woman is not pregnant, her period may begin within a few days of taking the last progesterone pill. If menstruation does not come on, the woman might be pregnant. Progesterone pills cannot cause an abortion, they can only bring on a late period.

Recent reports from scientists of the New York State Department of Health indicate that if a pregnant woman takes progesterone early in pregnancy, her baby has a slightly increased risk of rare birth defects. If the woman is not pregnant, delayed menstruation may be caused by minor hormonal disturbances which normally go away by themselves. The progesterone pregnancy test can make such minor hormonal disturbances worse. Progesterone should never be used as a pregnancy test and a woman who thinks that she might be pregnant should refuse to accept this drug (often under the brand names of Amenorone Forte or Provera).

birth control pill

Few scientific achievements have had greater social impact than the development of the birth control pill. "The Pill", as the oral contraceptive has come to be called, is the first birth control method that is 100% effective, safe, easy to use, and completely controlled by the woman. The availability of this kind of birth control has made it easier for women to achieve control over their own lives by preventing unwanted pregnancies. To date, the Pill has been used by more than 50 million women throughout the world, and at the moment, it is used by more than 8 million women in North America alone. The vast popularity of the Pill reflects a new mood of women who are demanding and achieving social and sexual independence.

The importance of good methods of birth control to the liberation of women was recognized at the beginning of this century by Margaret Sanger who

wrote, "No woman can consider herself free until she can determine the number of children she will have." Margaret Sanger founded the Planned Parenthood Federation of America and organized, lectured and wrote in support of women's right to control their own bodies.

During the first half of this century, the Planned Parenthood Federation attacked antiquated laws against birth control, and succeeded in making birth control legally available in most states of the U.S. The legal victories were not enough, for the contraceptive methods then available were neither sufficiently effective nor easy to use. In 1950, Margaret Sanger and other members of Planned Parenthood met with Dr. Gregory Pincus, a research scientist who worked at the Worcester Foundation of Experimental Biology in Massachusetts. Margaret Sanger asked Dr. Pincus to work on a new, more effective birth control method. Pincus developed the idea of using the female hormones, estrogen and progesterone, as a birth control pill. Pincus and a colleague, Dr. Min-Chueh Chang researched and perfected the idea.

Pincus and Chang received financial support from a major U.S. drug company, the G.D. Searle Co., and also started working with two other scientists, Dr. John Rock and Dr. Celso Garcia. The scientists experimented with various combinations of synthetic hormones. In 1956, 265 Puerto Rican women volunteers "from the low income population living in a housing development project in a slum clearance area" were selected for the first large-scale experiments on human beings. Officially, Puerto Rican women were chosen for this research because of their high pregnancy rate.

U.S. scientists have often tested new drugs on poor people who cannot obtain medical care in any way other than by volunteering for experiments. The use of Puerto Rican women as guinea pigs for the G.D. Searle Co., and other similar incidents of experiments on poor, non-white women in the U.S., taints the history of the development of oral contraception.

Description

The birth control pill is made of artificial estrogen and progesterone. Estrogen and progesterone are human female hormones. The Pill is taken as a series of 21 daily pills (20 in some brands).

There are two kinds of birth control pills, the combination pill and the sequential pill. In a series of combination pills, each pill contains a combination of estrogen and progesterone. In a sequential pill series, the first 11, 14, 15, or 16 pills (depending on brand) contain only estrogen, and the last 10, 6, 5, or 4 pills contain a combination of estrogen and progesterone.

There are more than 20 brands of the birth control pill available in North America. Most of these brands are combination pills. The different brands vary as to the kind and amount of synthetic hormones which make up each pill. There are 2 kinds of synthetic estrogen and 9 kinds of synthetic progesterone used for birth control pills. Only one kind of estrogen and one kind of progesterone is used for each brand of Pill. The different estrogens

and progesterones have different strengths. To some extent, estrogen and progesterone produce opposite effects in the body. Whether a particular brand of the Pill has more estrogen effects or more progesterone effects depends on the balance of the kind and quantity of estrogen versus the kind and quantity of progesterone which makes up each pill.

The most important characteristic of any brand of birth control pill is the quantity of estrogen included in each pill. Several years ago it was discovered that each pill of a birth control pill series need not contain more than 0.05 mg of estrogen to ensure 100% contraceptive protection. It was also discovered that most of the side effects and the rare serious complications experienced by some women taking the Pill are caused by estrogen. Therefore, the best brands of the birth control pill are those which contain not more than 0.05 mg of estrogen in each pill; these brands of the Pill are called "low dose pills". The names of the low dose pills currently available in Canada and the U.S. are **Demulen, Norlestrin 1, Norlestrin 2.5, Ovral, Zorane 1/50, Norinyl 1 and Ortho-Novum 1/50.** (Norinyl 1 and Ortho-Novum 1/50 contain the same hormones but are manufactured by different companies.) In the great majority of cases, only these low dose pills should be used; brands of the Pill containing more than 0.05 mg of estrogen should be used only in cases of special medical problems.

In late 1973 and early 1974 the Canadian and U.S. Food and Drug administrations approved 5 new "extra low dose" birth control pills which contain even less than 0.05 mg of estrogen per pill. **Loestrin 1.5/30, Zorane 1.5/30 and Minovral** all contain 0.03 mg of estrogen per pill, while **Loestrin 1/20 and Zorane 1/20** contain only 0.02 mg of estrogen. (Loestrin and Zorane contain the same hormones but are manufactured by different companies). Loestrin 1/20 and Zorane 1/20 contain too little estrogen to achieve 100% contraceptive protection; also, women, taking these pills often have irregular menstrual cycles and troublesome bleeding between periods. In contrast, Loestrin 1.5/30, Zorane 1.5/30 and Minovral contain enough estrogen to give complete protection from pregnancy; however, they do not contain enough estrogen to prevent irregular menstrual bleeding in many women. Loestrin 1.5/30, Zorane 1.5/30 and Minovral can be used by some women. We believe that Loestrin 1/20 and Zorane 1/20 should not be used.

Only combination-type birth control pills are low dose pills: all sequential pills contain more than 0.05 mg of estrogen per pill. Also, because the first pills of a sequential pill series do not contain any progesterone to balance the effects of estrogen, the sequential pills have more estrogen effects. Furthermore, the lack of progesterone in sequential pills reduces their contraceptive effectiveness. In contrast to the combination birth control pills which are 100% effective if taken as directed, the sequential pills have a failure rate of 1% to 2% per year. Sequential birth control pills should not be used. **Women taking sequential pills such as C-Quens, Estalor, Mini-Quen, Norquen, Ortho-Novum SQ, Oracón and Secrovin should see a doctor for a change of prescription.**

How the Pill works

A healthy woman who is not pregnant or breast feeding has a menstrual period about once every 28 days. Soon after the menstrual period begins, part of the brain called the hypothalamus stimulates the pituitary gland to release a hormone called follicle stimulating hormone (FSH) into the woman's bloodstream. FSH stimulates the growth of several follicles on the surface of the ovaries. Each follicle contains an egg. As they develop, the ovarian follicles release the female hormone estrogen. A few days after the first release of FSH, the pituitary gland begins to secrete another hormone called luteinizing hormone (LH). The egg-containing follicles on the ovaries continue to grow; one follicle develops more than the others and sticks out from the surface of the ovary like a pimple. Around the 14th day of the menstrual cycle, a sudden increase of LH secretion from the pituitary causes the largest ovarian follicle to burst open, releasing its egg.

The release of the egg is called ovulation. After ovulation, LH from the pituitary stimulates the burst ovarian follicle to change into a gland called the corpus luteum which secretes the female hormone progesterone. Estrogen and progesterone from the ovaries stop release of FSH and LH from the pituitary gland. If the egg released at ovulation is not fertilized, the corpus luteum and the follicles of the ovaries stop their release of estrogen and progesterone. At the end of each menstrual cycle, the amount of estrogen and progesterone in the woman's blood falls to low levels. This permits the pituitary to release FSH and LH again, thus restarting the whole cycle by stimulating a new group of egg-containing follicles on the surface of the ovaries.

If the egg released at ovulation is fertilized, the corpus luteum does not stop its production of progesterone. In addition, the placenta ("afterbirth") of the fetus releases large quantities of estrogen and progesterone during pregnancy. The estrogen and progesterone from the placenta and corpus luteum prevent the pituitary from releasing FSH and LH during the 9 months of pregnancy. Without FSH and LH, new egg-containing ovarian follicles do not develop, and ovulation does not occur. Thus, overlapping pregnancies are prevented.

The birth control pill mimics the body's natural defences against pregnancy. Each pill of a birth control pill series contains enough estrogen and progesterone to prevent the pituitary gland from releasing FSH and LH; therefore, ovulation is prevented.

In addition, the synthetic progesterone of the birth control pill causes local changes in the uterus which make pregnancy unlikely even if an egg is released.

Progesterone causes the mucus within the cervical canal (opening of the uterus) to become thick. Sperm cannot penetrate the thick cervical mucus and therefore cannot enter the uterus. Progesterone also upsets the growth pattern of the endometrium (inner lining of the uterus). Even if an egg is fertilized, it cannot easily bury itself into the endometrium of a woman who is taking the Pill.

Medical examination and prescription

The birth control pill, as all potent drugs, must not be used by certain women. Proper medical screening can spot those women for whom oral contraception would pose unacceptable risks:

A complete medical history must be taken before a woman starts taking the Pill. Questions which must be asked include:

1. Does the woman have, or has she ever had: a blood clotting disease such as thrombophlebitis, pulmonary embolism, "stroke", or retinal thrombosis; migraine headaches; heart disease or defect; endocrine disease such as diabetes or thyroid problems; 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? Does the woman have sickle cell anemia (HbSS), sickle cell-hemoglobin C disease (HbSC) or sickle cell trait (HbSA)? Do any of the woman's close relatives have diabetes?

3. 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 them can be important.

4. 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, diabetes or liver disease?

5. At what age did the woman have her first menstrual period? What is the average length of her menstrual cycle and the flow itself? Does the woman have regular menstrual cycles, or does she often have early or late periods? Does she experience cramps, fluid retention ("bloating"), breast swelling and tenderness, or mood changes before, during and/or after her period?

Women who have or who have had: thromboembolism, thrombophlebitis, pulmonary embolism, a "stroke", retinal thrombosis, sickle cell anemia (HbSS), severe heart disease or defect, severe endocrine disorder, recurrent jaundice of pregnancy, or any form of cancer, must not take the

birth control pill. The synthetic hormones of the Pill, like the natural hormones of pregnancy, can worsen existing conditions of these diseases or increase a woman's chances of having a relapse.

Women who have or who have had: migraine headaches, minor heart defect, high blood pressure, varicose veins, asthma, epilepsy, any significant psychiatric problem, or diabetes, can take the birth control pill provided that they receive periodic medical examinations and tests to ensure that the Pill is not worsening their condition. Women who have migraine headaches must stop taking the Pill if it causes the headaches to become more severe or more frequent. Women who have high blood pressure before starting the Pill must have frequent blood pressure recordings and the Pill should be stopped if it causes an already high blood pressure to become significantly higher. The Pill should be stopped if it causes significant worsening of varicose veins. If fluid retention occurs as a side effect of the Pill, asthma or epilepsy can be worsened. Women with existing psychiatric problems should receive careful psychiatric follow-up and the Pill should be stopped if the psychiatric problem becomes worse. Women who have diabetes may need their daily insulin requirement adjusted while taking the Pill; the Pill should be stopped if the diabetes becomes significantly worse. Women who have close relatives who have diabetes should have a blood test called the glucose tolerance test before starting the Pill, one test 6 months after starting the Pill and one test each year while taking the medication. A woman who has a family history of diabetes should stop taking the Pill if a glucose tolerance test reveals that she is developing diabetes. Women who have a mild endocrine disorder such as mild thyroid disease can take the Pill if the disease is well under control. Women who have had kidney or liver disease can take the Pill if the disease is completely cured.

About 10% of black Americans have an inherited hemoglobin abnormality called sickle cell trait (HbSA). Hemoglobin is the oxygen-carrying protein in red blood cells. Sickle cell trait is normally harmless, but the related disorder, sickle cell anemia (HbSS), which occurs in only 0.25% of black Ame-



ricans, causes serious illness. Sickle cell anemia is usually diagnosed soon after birth. The Pill does not affect hemoglobin and women who have sickle cell trait (HbSA) can use the Pill; however, women who have sickle cell anemia (HbSS) are seriously ill and should not take any medication that is not absolutely necessary.

The birth control pill should not be used by young women before they are physically mature. Physical maturity cannot be defined precisely, but its signs include physical growth in height and weight, regular menstruation, breast development and the growth of pubic and underarm hair. Most women become physically mature at about the age of 16, although some women become physically mature as early as 13 or as late as 18. It is possible that the birth control pill can interfere with normal growth and development if used before the woman is physically mature.

Once the medical history is taken, the woman should receive a complete medical examination, including a gynecological examination. A careful breast examination and a Pap test (for cervical cancer) must be performed. The woman's blood pressure and weight must be recorded and samples of blood and urine should be taken.

A doctor has a wide variety of brands to choose from when prescribing the birth control pill. Except in special cases, only low dose brands which contain not more than 0.05 mg of estrogen per pill should be used. The doctor should select the brand of birth control pill best suited for the woman on the basis of the woman's medical history, the nature of her menstrual cycle, and her body build.

One to three months after starting the Pill, the woman should return to her doctor for a brief check-up including blood pressure and weight recordings. Women taking the birth control pill must have a complete check-up including a gynecological examination, breast examination and Pap test once a year.

Use of the Pill

To begin taking the Pill, a woman must wait for a menstrual period. Counting the first day of her menstrual flow as day 1, the woman takes the first pill of her first birth control pill series on day 5, whether or not her menstrual bleeding is continuing. The woman takes one pill at about the same time every day for 21 days. In most brands of the Pill, there are 21 pills in each package. After taking all 21 pills of a package, the woman stops taking the pills for 7 days. Menstrual bleeding usually starts 2 to 4 days after the woman takes the last pill of a package. Most women notice that while they are taking the Pill, their menstrual periods are lighter and do not last as long. On the eighth day after taking the last pill of the first package, the woman takes the first pill of her next package whether or not menstrual bleeding is continuing. For example, if a woman takes the first pill of her first package on a Tuesday, she takes the last pill of that package on a Monday (three weeks later), and takes the first pill of her next package on the Tuesday of the following week. The "starting day", that is, the day that the first pill of each package is taken, is the same day of the week for every package (Tuesday, in this case).

Some brands of the birth control pill come in 28-day

series. The first 21 pills contain the synthetic hormones but the last 7 pills are placebos - pills that contain nothing but sugar. A woman taking a 28 day series of the Pill takes one pill every day, beginning a new package the day after taking the last (28th) pill of the previous package. Thus, the woman takes the 7 candy pills instead of not taking any pills at all during the 7 days between each 21 day series of hormones. Most women do not find that the 28 day series has any advantage over the normal 21 day series. Most women find it quite easy to remember to take the Pill for 21 days, then stop for 7 days, and then restart for 21 days.

The birth control pill should be taken at about the same time each day. The daily pill is less likely to be forgotten if taking it is made part of the daily routine of waking up or getting ready for bed. 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 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 any sequential pills are forgotten, the forgotten pills should be taken when remembered, but another birth control method should also be used for the remainder of the cycle.

The combination birth control pill provides 100% contraceptive protection from the first pill of the first series, as long as the Pill is taken as directed.

If a woman is changing her brand of the Pill from one with a higher dose of estrogen to one with a lower dose of estrogen, another birth control method should be used for the first 2 weeks of the first low dose series.

Becoming pregnant after taking the Pill

The pregnancy-preventing effect of the birth control pill is easily stopped. When pregnancy is desired, the woman finishes a pill package and does not start another package. Sixty to 75% of women who stop taking the Pill to become pregnant achieve their aim within 3 months after taking the last pill, and 90% become pregnant within one year. The pregnancy rate is the same in women who have never taken the birth control pill and who are attempting to become pregnant.

Large scientific studies have shown that babies are not affected by their mother's past use of the birth control pill; however, recent reports, including one from scientists of the New York State Department of Health, indicate that there is a slightly increased risk of rare birth defects in children born to women who take the Pill while they are pregnant or who become pregnant within one month after stopping the Pill. These birth defects are very uncommon and many thousands of normal babies have been born to women who took the Pill during or immediately before pregnancy; we recommend:

1. Women should never take the birth control pill while already pregnant. If a woman suspects that she is pregnant, she should not start taking the Pill.
2. When a woman wants to become pregnant, she should use another method of birth control for 1 month after stopping the Pill. Once she has had a normal period, she can try to become pregnant whenever she wishes. This both protects the baby and also

makes it easier for the mother to know when she becomes pregnant, and therefore, when the baby is due. This is important for good prenatal care.

The hormones of the Pill should not be confused with a synthetic hormone called diethylstilbestrol (DES) which was recently shown to cause vaginal cancer in girls born to women who received DES during pregnancy. The hormones used in the Pill are chemically very different from DES.

The oversuppression syndrome

Most women ovulate normally and have regular menstrual periods soon after stopping the Pill. In some rare cases, the woman does not ovulate and does not have a period for 6 months or more after she stops taking the birth control pill. This lack of ovulation and menstruation after the Pill is called the oversuppression syndrome. In the rare women who do not have periods after stopping the Pill, the hypothalamus and pituitary gland are especially sensitive, and do not regain normal functioning for some time after the Pill is stopped. Some such women also develop galactorrhea, which is the production and secretion of milk from the breasts. Oversuppression and galactorrhea after stopping the Pill are more common in women who have irregular menstrual cycles before starting the Pill. Almost all cases of oversuppression eventually disappear by themselves; however, for women who want to become pregnant, and for women who find the lack of menstruation worrisome, ovulation and menstruation can usually be restarted with a drug called clomiphene citrate (brand name, Clomid). Also, a new, highly promising drug called ergocryptine (Sandoz CB 154) can be used to stop the galactorrhea. If clomiphene is not effective, other more powerful drugs can be used to restart ovulation.

The oversuppression syndrome is so rare that accurate estimates of its frequency have not been made. The development of this condition is not more common in women who have used the Pill for a long time. Some doctors advise that the Pill be stopped

every two years to check if the woman can still have regular periods; this practice is medically useless and often results in unwanted pregnancy.

Side effects

A side effect is an unnecessary effect. The birth control pill causes certain body changes which are unnecessary in that they do not help prevent pregnancy. There are three kinds of side effects to the Pill: nuisance effects, metabolic changes, and the rare serious complications.

Nuisance side effects

Nuisance side effects are the harmless but sometimes annoying effects noticed by many women during the first 3 months of using the birth control pill. Most women are not bothered by these side effects which usually disappear once the woman's body adjusts to the hormones of the Pill. If any of the side effects described below continues for more than the first 3 months, or becomes severe, the prescribing doctor should be consulted. In some cases, it is necessary to change the brand of birth control pill.

Nausea similar to the "morning sickness" of early pregnancy is the most common side effect of the birth control pill. Some women also have vomiting or stomach cramps. The nausea can often be avoided by taking the daily pill after a full meal or just before going to sleep.

Fluid retention: In some women, the Pill causes the body to store excess water. This is called fluid retention or "bloating" and is similar to the fluid retention that occurs in many women just before their periods. The symptoms of fluid retention are enlarged and tender breasts, rapid weight gain and a general bloated feeling. Fluid retention usually disappears by itself. Fluid retention is harmless except for women who have migraine headaches, epilepsy, high blood pressure, heart defect, or heart disease.

Breast growth: Many women notice a small amount of breast growth soon after starting the Pill.



Photocell: Clara Gutsche

The breasts return to their original size when the woman stops taking the Pill.

Breakthrough bleeding and spotting is menstrual-like bleeding that occurs between periods. If it occurs, such bleeding is usually noticed during the first 3 months of using the Pill, although it sometimes develops for the first time after the Pill has been used for many months. Such bleeding usually disappears by itself; however, it sometimes occurs during every cycle and can become as heavy as a menstrual flow. If this occurs, a pill with a stronger progesterone should be tried (such as Ovral or Norlestrin 2.5). For some tall, large, non-obese women who weigh more than 160 lb, a pill containing slightly more estrogen (such as Ortho-Novum 1/80 or Norinyl 1 + 80) is needed to stop the bleeding between periods.

Lack of menstrual bleeding: In many women, menstrual bleeding sometimes does not occur during the week between finishing one Pill package and starting the next package. The woman should start her next Pill package on the usual day, even if she has not had any menstrual bleeding. If the woman took every pill of the previous Pill series, she cannot be pregnant. If the woman did forget one or more pills, she should begin her next pill package, but she should have a pregnancy test 2 weeks after the missed period. If a woman taking the Pill misses more than one period, she can continue taking the Pill, but she should see her doctor.

Estrogen deficiency and progesterone excess side effects occur if the brand of birth control pill used is too highly anti-estrogenic for a particular woman. Such side effects include mood changes such as depression and changes in sexual desire; increased appetite and weight gain; tiredness; decrease in amount and duration of menstrual flow; oily scalp and skin sometimes causing acne; and increased body hair. Such progesterone-related side effects, although usually minor, either remain constant or become worse with each additional Pill cycle. If such symptoms are bothersome, a brand of the Pill which contains a smaller amount or a weaker kind of progesterone should be used. For example, if a woman is taking a pill such as Ovral which contains a strong progesterone, or Norlestrin 2.5 which contains a lot of progesterone, her progesterone-related symptoms can be reduced if she switches to a pill such as Ortho-Novum 1/50, Norinyl 1, Norlestrin 1 or Demulen.

Vaginitis: There is no medical evidence to show that women taking low dose brands of the Pill have vaginitis (minor infection of the vagina) any more frequently than women not taking the Pill. Vaginitis is a common infection in all women, especially in those who have frequent sexual intercourse.

Metabolic side effects

Many of the essential activities of the human body, such as digestion, excretion, growth, thinking, etc. are basically chemical activities. For example the digestion of a single meal involves millions of chemical reactions in the intestines, blood, liver and body cells. All of the intricate chemical activities of the body are collectively called metabolism. The metabolism of the body is delicately and precisely controlled by special chemicals such as enzymes and proteins produced by the liver, and by hormones of

the endocrine system. Therefore, it is not surprising that the artificial hormones of the birth control pill cause changes in the body's metabolism. Most of these metabolic changes are apparently harmless, do not produce symptoms and cannot be felt by a woman taking the Pill; however, some of the metabolic side effects can cause disease in certain women.

Cortisol: The Pill causes a change in the amount and kind of cortisol in a woman's blood. Cortisol is a hormone produced by the adrenal glands which are on the top of the kidneys. Cortisol affects many of the body's chemical activities. It is possible that some of the side effects of the Pill are caused by the changes in cortisol.

Liver function: The Pill causes the liver to increase its rate of production of many enzymes and proteins including blood clotting proteins (also called blood clotting factors). This makes women taking the Pill more susceptible to diseases of blood clotting such as thromboembolism.

The liver also produces bile which is a fluid that helps in the digestion of fats within the small intestine. Bile normally collects in a muscular sac called the gall bladder which lies on the underside of the liver. The gall bladder squirts bile into the intestine during the digestion of a meal.

In some people, some of the bile does not remain fluid, but rather joins with other chemicals to form solid gall stones. Such stones interfere with the flow of bile out of the gall bladder and cause lower abdominal pain during digestion. In some people, the after-meal pain of gall stones becomes so severe that it is necessary to remove the gall bladder surgically.

Gall stones develop more commonly in women than in men. It is probable that the female hormones estrogen and progesterone make it easier for gall stones to develop. The artificial hormones of the Pill further increase the risk of developing gall stones. In one year, 79 women out of 100,000 women not using the Pill develop gall bladder disease that is serious enough to require an operation. During the first year of using the Pill, 158 women out of 100,000 Pill-users require a gall bladder operation. After the first year of use, the risk of gall bladder disease in Pill-users goes down, but it is still higher than the risk in women not using the Pill.

Insulin and diabetes: Special cells of the pancreas produce a hormone called insulin which is essential to the body's use of sugar. If the pancreas does not produce enough insulin, the person has a "low glucose tolerance", which means that the body cannot efficiently use sugar for energy. If the pancreas does not produce any insulin, the person has a disease called diabetes mellitus. Diabetes cannot be cured, but it can be controlled by daily injections of insulin. The tendency to develop diabetes is largely inherited, and a person is much more likely to develop diabetes if his or her close relatives have the disease. Also, certain conditions such as overweight and pregnancy cause diabetes to develop at an earlier age in people who are, by reason of heredity, already susceptible to diabetes.

The Pill does not cause diabetes, but it does cause a slight, apparently harmless reduction of glucose tolerance in most women. Glucose tolerance goes back to normal when the woman stops taking the

Pill. Nevertheless, it is possible that the Pill can hasten the beginning of active diabetes in women who have blood relatives who have the disease. Women who have diabetic relatives should have a blood test called a glucose tolerance test before starting the Pill, a test 6 months after starting the Pill, and a test once a year while taking the medication. The woman should stop taking the Pill if a glucose tolerance test reveals that she is developing active diabetes; by stopping the Pill, such a woman can avoid, for several more years, the need to use insulin.

Blood pressure: Blood pressure is the pressure of the blood pushing against the walls of the arteries. There is no single "normal" blood pressure but most healthy people have blood pressures that are not below or above certain levels. If a person's blood pressure is above the top of the normal range, he or she has "high blood pressure" or hypertension.

The Pill causes a slight, insignificant rise of blood pressure in most women. In the great majority of cases this small blood pressure rise is certainly not enough to give the woman high blood pressure; however, in a very few women, the Pill causes a significant and potentially harmful blood pressure increase. Pill-related high blood pressure is more common in women who are older and overweight, and in those who have a history of high blood pressure during pregnancy and/or have relatives who have hypertension.

All women should have their blood pressure checked before taking the Pill, 3 months after starting the Pill and once a year thereafter. A woman who is found to have high blood pressure before starting the Pill can take the medication provided that it does not cause a further rise in her blood pressure. In any woman, if the Pill causes a significant rise of blood pressure, the woman should stop taking the medication. In such cases, blood pressure falls back to normal in about 3 months.

Cholesterol and other fats: The Pill causes a slight increase in the amount of fats such as cholesterol and triglycerides circulating in a woman's bloodstream. The effects of this increase are not known.

Protein and vitamin metabolism: The Pill causes changes in the way the body uses certain proteins and this causes, in certain susceptible women, a deficiency of vitamin B6. Such a deficiency can cause depression in certain women. Vitamin B6 deficiency depression is rare; if it develops, the woman should stop taking the Pill. (Additional vitamin B6 should not be taken.)

Breast feeding: The Pill reduces the quantity and food value of human breast milk. Also, if a woman who is breast feeding takes the Pill, some of the Pill's hormones are secreted in her milk and are absorbed by the child. Therefore, women should not take the Pill while they are breast feeding. The past use of the Pill has no effect on milk production.

Serious complications

The birth control pill, as all potent drugs, can cause serious complications. Such complications are extremely rare.

Diseases of blood clotting - thromboembolism,

pulmonary embolism and "stroke": Blood normally remains fluid. Pumped by the heart, the blood flows through the arteries, capillaries and veins carrying oxygen and food to all the cells of the body. Without the blood, the body dies very quickly.

If the surface of the body is injured and cut open, blood flows out of the body through torn blood vessels; however, the blood contains chemicals called blood clotting factors which help form blood clots to plug up the torn blood vessels and stop the bleeding. The blood clotting system, composed of the blood clotting factors and other chemicals, is a delicately balanced system; occasionally, it works incorrectly and forms unnecessary and dangerous blood clots within blood vessels that are not cut. A blood clot that forms within a blood vessel is called a thrombus. Thrombosis is a disease in which a thrombus forms in an important blood vessel, interfering with the flow of blood and starving the body cells. In some cases, part of the thrombus breaks off and flows along with the blood. This kind of free-floating thrombus is called an embolus. Thromboembolism is a disease in which an embolus, usually from a thrombus in a leg vein, becomes trapped in a smaller blood vessel of an important body organ. Pulmonary embolism is a form of thromboembolism in which an embolus becomes trapped in a blood vessel of a lung. Pulmonary embolism causes difficulty in breathing, rapid breathing, chest pain and a fast pulse. In young, otherwise healthy people, pulmonary embolism usually goes away by itself; however, close observation in the hospital, sometimes for many weeks, is necessary. In some cases, pulmonary embolism causes death. "Stroke" is a disease usually caused by a thrombus or embolus blocking a blood vessel of the brain. Stroke causes the rapid development of paralysis and sometimes unconsciousness. In some kinds of stroke, there is also severe headache, neck stiffness and vomiting. Stroke can cause permanent brain damage or death. Both pulmonary embolism and stroke are extremely rare in young people.

The natural hormones of pregnancy cause an increase in the amount of blood clotting factors circulating in the blood of the pregnant woman. This makes it easier for the pregnant woman's blood to clot. This is good because blood loss during and after childbirth is reduced, but it is also bad because pregnant women have an increased tendency to develop diseases of blood clotting, especially pulmonary embolism.

In 1968, three British scientists, M.P. Vessey, R. Doll and H.W.H. Inman presented carefully collected statistics which revealed that, like the hormones of pregnancy, the artificial hormones of the Pill increase the risk of fatal and non-fatal thromboembolism. In one year, death from thromboembolism occurs in 1.5 out of 100,000 Pill users aged 20-34, and in 3.9 out of 100,000 Pill-users aged 35-44. In one year, death from thromboembolism in women not using the Pill occurs in 0.2 out of 100,000 women aged 20-34, and in 0.5 out of 100,000 women aged 35-44.

The British statistics also showed that in one year, 47 out of 100,000 Pill users are treated in

hospital for non-fatal thromboembolism. Among women who are not using the Pill, in one year only 5 in 100,000 are treated in hospital for non-fatal thromboembolism.

More recent research by the same scientists reveals that the risk of fatal thromboembolism is lower in women using low-dose brands of the Pill, that is, brands that contain not more than 0.05 mg of estrogen per pill.

All of the above statistics are for cases of thromboembolism that occur independent of any other disease, and for no apparent reason; however, most cases of thromboembolism occur after injury or surgical operations. In 1970, the British scientists presented statistics which showed that the Pill causes an additional risk of thromboembolism in women who have had operations. If possible, women who are going to have operations should stop taking the Pill one or two months before the operation.

Important research on thromboembolism and the Pill has also been conducted in the United States. A study organized by Philip Sartwell and presented in the 1969 U.S. Food and Drug Administration report on the Pill, reveals findings which are approximately the same as the British ones. More recently, in 1973, the Boston Collaborative Drug Surveillance Programme published the results of their excellently conducted research which detected slightly higher risks than the risks reported by the British. The Boston group estimated that in one year, 66 out of 100,000 Pill users are treated in hospital for non-fatal thromboembolism, while only 6 out of 100,000 women not using the Pill have the same kind of disease.

In 1973 the Collaborative Group for the Study of Stroke in Young Women published the results of their study, based on findings from 91 U.S. hospitals, which showed that the Pill increases the risk of stroke. Stroke is such a rare disease in



C. David Gutsche

young women, whether or not they are taking the Pill, that the exact number of cases per 100,000 Pill-users has not yet been determined.

All of the research conducted in England and the U.S. has shown that the risks of thromboembolism are not related to the length of time that a woman uses the Pill.

Breast diseases: There are three common types of breast disease, cystic breast disease, breast cancer and fibroadenoma of the breast. All three cause breast lumps of different kinds. All women should examine their own breasts after each menstrual period. If a woman finds a breast lump, she should show it to her doctor.

The only dangerous form of breast disease is breast cancer. Presently available treatment for breast cancer is not very successful, and many women who develop this disease die within 5 years. Breast cancer is less common in women who have children at an early age and possibly less common in women who breast feed their babies. Breast cancer is more common in women who already have cystic breast disease and in women whose mother or sister has breast cancer.

In 1972 and 1973 the results of important British and U.S. studies on breast disease and the Pill were published in medical journals. These studies showed that women taking the Pill do not develop breast cancer more often than women not taking the Pill. Also, non-cancerous breast disease such as cystic disease or fibroadenoma occurs less commonly in women taking the Pill. (However, pre-existing cystic breast disease can become more painful and bothersome while the woman is taking the Pill.) Because women who have cystic breast disease have a higher risk of developing breast cancer in later life, and because the Pill seems to protect women from developing cystic breast disease, the Pill may provide some long term protection against breast cancer.

Estimates of risk of death to women in England 1966		
	AGE	
	20-34	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

Cervical cancer: It is not known whether or not the Pill has an effect on the risk of developing cancer of the cervix (opening of the uterus). Cervical cancer can be detected by the simple Pap test. For this test, a few cells are gently scraped from the end of the cervix that sticks into the upper vagina; the cervical cells are examined under a microscope. All women, whether or not they are taking the Pill, should have a Pap test once a year. If detected early, cervical cancer has a 100% cure rate.

The risks of the Pill in perspective

The risks of the birth control pill should be compared to the risks of pregnancy, and to the risks of the other available methods for preventing pregnancy. Among young women, the complications of pregnancy and childbirth cause the death of about 23 out of 100,000 pregnant women. In the same age group, in one year, the Pill causes the death of about 1.5 women out of 100,000 Pill-users. Thus, the use of the Pill for one year involves about 1/15th the risk of one pregnancy.

None of the other birth control methods is as effective as the Pill. The diaphragm, for example, has a 12% annual failure rate, which means that out of 100,000 women who use the diaphragm for one year, 12,000 become pregnant, leading to 2.7 deaths from the complications of pregnancy and delivery. Thus, use of the Pill is slightly less dangerous than use of the diaphragm. Similarly, the IUD has a failure

rate of 3% to 8% per year; also, the IUD sometimes causes infection and other serious complications. Therefore, the use of the IUD provides about the same amount of danger as the use of the birth control pill.

The risks of the Pill should also be compared to the risks of other widely used drugs. Everybody uses aspirin, but aspirin is potentially harmful and even lethal. Penicillin is a life-saving antibiotic, but it is also deadly poison for people who are allergic to it. Our food is contaminated with cancer-producing pesticides and food additives. Millions of people smoke cigarettes, the most advertised and dangerous of the easily available drugs.

Many routine activities such as travel in automobiles carry much greater risks to health and life. In one year, more than 60,000 North Americans are killed and more than 2,000,000 are injured in automobile accidents; among young women, about 5 in 100,000 die each year in car accidents.

Many things in life are far more dangerous than the birth control pill. The risks of the Pill have attracted so much attention simply because this drug is associated with sexual intercourse, and more specifically, with freedom of sexual expression for women. Some people still do not believe that effective contraception is worth any risks at all. We believe that although safer forms of birth control should be developed as quickly as possible, the benefits of the Pill far outweigh its dangers.

other hormonal contraceptives

Aside from the Pill, there are other birth control methods which prevent pregnancy through the action of hormones.

Progesterone-only pill

The estrogen of the combination birth control pill is the cause of most of the side effects, including the metabolic changes and the rare serious complications, which occur in some women taking the Pill. A kind of birth control pill which contains only progesterone has been developed in an attempt to eliminate side effects. Although this progesterone-only pill is less likely to cause metabolic changes or serious complications, it is much more likely to cause other side effects. Furthermore, the progesterone-only pill is not completely effective.

The progesterone-only pill is taken as a continuous series of daily pills which contain a small amount of progesterone. The daily progesterone pill must be taken at the same time every day; a delay of even a few hours can result in pregnancy. Progesterone alone does not prevent ovulation; however, the progesterone does change the mucus in the cervical canal (opening of the uterus), making it dif-

ficult for sperm to enter the uterus. The progesterone also changes the inner lining of the uterus, making it difficult for a fertilized egg to implant itself into the lining. These effects of progesterone are not always enough to prevent pregnancy. The progesterone-only pill has a failure rate of 2% to 8% per year; that is, out of 100 women using this pill for one year, 2 to 8 will become pregnant.

Many women have very irregular menstrual cycles, troublesome bleeding between periods or no periods at all while taking the progesterone-only pill.

The brand names of the progesterone-only pills available in North America are **Micronor**, **Noriday**, **Nor QD**, and **Ovrette**. Because of their failure rate and frequent side effects, these pills should not be used.

Morning-after pill

The "morning-after" pill is an effective hormone birth control method which can be used after sexual intercourse. The morning-after pill is a 5 day series of pills: the woman takes 25 mg of an artificial estrogen called diethylstilbestrol (DES) every 12 hours for 5 days, beginning as soon as possible after sexual intercourse. If the DES pill series is started within 24 hours after sexual intercourse, it is almost 100% effective in preventing pregnancy. Even if the pills are started as late as 72 hours after intercourse, pregnancy is still unlikely. It is not yet known how the DES pill series prevents pregnancy.

The morning-after pill often causes severe nausea and vomiting; also, while a woman is taking the DES pills, undesirable changes occur in her body metabolism (body chemistry). The morning-after pill must

not be used routinely, but it can be used as an emergency measure for women who have forgotten to use another birth control method. Also, the DES pill series must be made available to women who have been raped.

The DES series must be started as soon as possible after sexual intercourse. A woman may have to go to a hospital emergency room for a prescription. DES is cheap and available on prescription from most drugstores.

DES was discovered in the 1930s and has been used widely as estrogen treatment for many different medical problems in women. In the late 1940s and the 1950s many doctors gave DES to pregnant women who had experienced a previous miscarriage, in an attempt to prevent another miscarriage. The DES treatment for miscarriage was abandoned when it was found that in fact, DES has no effect on a woman's chances of having repeated miscarriage. Several thousand women in North America and Europe received DES during pregnancy.

In 1970, doctors working at the Massachusetts General Hospital in Boston reported their discovery of a rare form of cancer called adenocarcinoma of the vagina in 7 young women. Further investigation revealed that these young women had been born to women who had received diethylstilbestrol during pregnancy.

It is now quite certain that DES given to a pregnant woman can, in some cases, cause vaginal cancer in her child, once the child reaches puberty. Fortunately, the risk appears to be small: out of 1000

women born to women who received DES during pregnancy, 1-4 will develop vaginal or cervical cancer during or after puberty. So far, about 100 cases of vaginal adenocarcinoma have been discovered; however, more cases may appear as the affected women grow older.

The use of DES by a pregnant woman can also cause other non-cancerous changes in the vaginal cells of her daughter. About 30% of women whose mothers took DES during pregnancy have abnormal patches of vaginal cells called adenosis. It is possible that these patches of adenosis have a greater chance of becoming cancerous than do normal vaginal cells.

- Young women should ask their mothers if they took any drugs during pregnancy. All women whose mothers received DES during pregnancy must have gynecological examinations every 6 months by a doctor who is trained to search for vaginal cancer and adenosis.

New regulations in Canada and the U.S. forbid the use of DES during pregnancy. DES can still be used as a morning-after pill to prevent pregnancy; however, sometimes the DES fails and the woman does become pregnant. Because of the risk of cancer in the child, women should not use the morning-after pill unless they intend to have an abortion should the drug fail to prevent pregnancy.

Diethylstilbestrol should not be confused with the artificial estrogens used for the birth control pill. DES is chemically very different from the Pill hormones.

intrauterine devices

An intrauterine device (IUD) is a small object that is placed into the uterus through the cervical canal (opening into the uterus). As long as the IUD stays in place, it prevents pregnancy by disturbing the normal environment within the uterus.

History

It has been known for more than 2000 years that pregnancy is prevented by the presence of a small object within the uterus. 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. For centuries, Arabian and Turkish camel drivers inserted small pebbles into the uteri of their camels to prevent the animals from becoming pregnant during long desert journeys.

Despite this ancient knowledge, the development of the intrauterine device as a birth control method for women was delayed until this century. In 1909 a German doctor, Richard Richter, described an IUD made of silk wound into a ring and held together by a spiral of fine bronze wire. Unfortunately, Richter's work was almost completely ignored. In the following years many different IUDs were developed. These devices were larger and bulkier than Richter's ring and had parts which stuck down into

the cervical canal and upper vagina. When doctors noticed that these devices caused many serious infections of the uterus, all intrauterine devices were condemned. In the early 1930s another German doctor, Ernest Gräfenberg, re-discovered Richter's silk ring. Gräfenberg believed that the bulky IUDs used in the beginning of this century caused infections because their projections which stuck through the cervical canal served as "ladders" for the upward movement of bacteria from the vagina into the uterus. Gräfenberg claimed that an intrauterine device without a part projecting into the cervical canal would be just as effective in preventing pregnancy and would not cause infections. Gräfenberg produced silk rings and had considerable success with the device as a birth control method for his private patients. Despite repeated reports of the safety of the Gräfenberg ring, the medical profession refused to accept the device and the IUD was not widely used. In 1959, two doctors working independently, Oppenheimer in Israel and Ishihama in Japan, again re-discovered the intrauterine ring. Their reports of considerable success prompted renewed interest in the IUD as a birth control method, and led to the very rapid development of newer, safer and more effective devices.

The modern IUDs

Since the early 1960s a great many types of IUDs have been developed and manufactured. These IUDs vary in shape and in the material from which they

are made. Some of these new IUDs are clearly superior to others, and should be used in preference.

There are four kinds of IUDs:

1. **Closed rings:** These are devices similar to the original Richter-Gräfenberg ring, such as the Hall-Stone, Ota and Zipper rings and the Birnberg bow. These are all "closed" devices in the sense that they form a closed, continuous ring. These IUDs are not as safe as the newer IUDs and should no longer be used.

2. **Plastic IUDs:** The more recently developed plastic devices include the Lippes loop, Saf-t-coil, Margulies coil and Dalkon shield. Of these, the Lippes loop is the most widely used. The Saf-t-coil is similar to, but not quite as good as the Lippes loop. The Margulies coil is too bulky and uncomfortable and should not be used. The Dalkon shield is the most recently developed of these plastic devices. At first, many scientists believed that the Dalkon shield would have the lowest failure and side effect rates of any IUD; however, more recent research has shown that the failure rate of the Dalkon shield is significantly higher than the failure rate of the Lippes loop. In late 1974 several scientists reported the occurrence of severe infections and several deaths in women who became pregnant with a Dalkon shield in place. Until further research is done, the use of the Dalkon shield has been banned. Any woman who has a Dalkon shield should see her doctor and have the device removed.

3. **Stainless steel IUDs:** The only common stainless steel IUD is the Majzlin spring. The Majzlin spring tends to become buried in the wall of the uterus. In some cases, minor surgery is necessary to remove the device. The Majzlin spring should not be used. Women who are wearing a Majzlin spring should return to their doctor and have the device removed.

4. **Copper IUDs:** These are made of plastic but have a covering of fine copper wire. There are two kinds of copper-covered IUDs: the copper-T and the copper-7.

When a copper IUD is in the uterus, the copper wire on the surface of the device dissolves very slowly into the fluids of the uterus. The copper interferes with certain protein substances within the uterus which are important for fertilization and implantation of an egg. Also, dissolved copper is poisonous for human sperm. In theory, the copper IUDs should be very effective; however, in practice they are no more effective in preventing pregnancy than the plastic IUDs. The only advantage of the copper-T is that it is somewhat easier and less painful to insert into the uterus of a woman who has never been pregnant.

Most of the copper that dissolves from the copper IUD leaves the body in uterine secretions which escape through the cervix; however, some of the dissolved copper enters the woman's bloodstream. Most of the recent research on copper IUDs, as well as unrelated research on normal copper use in the body, suggests that such absorption from the copper IUD into the blood is not dangerous. It is not known whether or not the copper can cause local disease in the woman's uterus, cervix or vagina or in the penis of the woman's sexual partner(s).

Some recent medical papers on the copper IUDs have contained incorrect references and false implications about the safety of these devices. Also, some of the research on these IUDs has been done in an unethical way. For example, women participating in one large study conducted through Hôpital Notre Dame in Montréal were often told that the copper-T is "as effective as the Pill". This is not true. Although further research on the copper-T should be conducted, women participating in such studies have the right to know that this IUD is not perfect, that it has a failure rate similar to other IUDs and that it is probably not significantly better than the Lippes loop or the Dalkon shield.

In summary, we believe that the Lippes loop is the best IUD for women who have been pregnant and that careful additional research on the copper-T (not the copper-7 which is not as comfortable) is needed, especially for women who have never been pregnant.

How the IUD works

The IUD does not interfere with ovulation (release of eggs) or with fertilization. When an IUD is present, fertilized eggs die when they reach the uterus, and pass out of the body unnoticed.

Many conflicting theories have been suggested to explain how the IUD causes the death of fertilized eggs. At the moment, many scientists believe that the IUD affects fertilized eggs indirectly, by stimulating the entry of many white blood cells into the uterus. White blood cells are not normally present in the uterus. White blood cells attack and destroy "invading" cells such as bacteria by swallowing and digesting the invader. It is possible that the many white blood cells present in the uterus when an IUD is in place attack and destroy fertilized eggs.

Effectiveness

The IUD is considerably less effective than the birth control pill. At best, out of 100 women who use the IUD for 1 year, 2 to 3 become pregnant.



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

IUDs are most effective for women who have given birth and who are older than 30 years. Age is the more important factor. For example, in one study on the Lippes loop, 5.7 % of women 15-24 years old, 4.7 % of women 25-29 years old and 2.9 % of women 30-34 years old became pregnant during one year of using the device. In another, more recent study of the Lippes loop, 8 % of women who were less than 30 years old and who had never given birth became pregnant during one year of using the loop.

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

Insertion of the IUD

Before having an IUD inserted, a woman should have a complete "internal" gynecological examination to ensure that her cervix, uterus, fallopian tubes and ovaries are normal and healthy.

An IUD is inserted into the uterus through the cervical canal. The opening of the cervix is normally smaller than the width of a pencil. It is impossible to push the IUD in its normal shape through the small canal. Therefore, IUDs such as the Lippes loop, Saf-t-coil and copper-T are straightened out and threaded into a narrow inserter tube that looks like a long plastic soda straw. The Dalkon shield cannot be straightened out because of its shape; instead, the shield is stretched lengthwise and held in a narrow shape by its inserter tube.

A speculum is placed in the woman's vagina to hold the vaginal walls apart. The doctor then pushes the "loaded" inserter tube, carrying the IUD, into the cervical canal. When the end of the tube reaches the cavity of the uterus, the IUD is pushed out of the

inserter tube by a special plunger. As the IUD is released into the cavity of the uterus, it springs back into its normal shape.

The insertion of an IUD is usually simple and rapid, but also painful. Once the IUD is released into the uterus, the woman is likely to feel menstrual-like cramps. The discomfort of IUD insertion is worse for women who have never given birth. After a woman has a child, her uterus is permanently enlarged and her cervix remains slightly open. Therefore, in women who have had children, the cramps of IUD insertion are usually not severe and can be tolerated easily; however, the insertion of an IUD into the smaller, tighter uterus of a woman who has never given birth can cause severe pain and fainting. Women who have never given birth should receive a local anesthetic ("freezing") before insertion of an IUD. The anesthetic procedure that should be used is the para-cervical block, which "blocks" pain from the cervix and uterus. To perform the block, the doctor injects an anesthetic drug into the end of the vagina, next to the cervix. The injections are quite painless in themselves, since the end of the vagina has few nerve endings, and the anesthetic makes insertion of the IUD considerably easier. Women who have never given birth should specifically ask their doctor to perform a para-cervical block before inserting the IUD.

After the IUD is inserted, the woman should rest lying down for about 15 minutes before leaving the doctor's office. Many women have severe menstrual-like cramps beginning soon after IUD insertion and sometimes continuing for several days. In most cases, the cramps are quite mild after the first few hours; however, if the pain is severe, the woman



should receive pain-killing drugs such as aspirin with codeine.

About 50% of women experience a temporary slowing of the heart rate after IUD insertion. This is caused by the stimulation of certain nerves as the IUD stretches the cervical canal. The heart rate slowing is not dangerous but in some women it can cause fainting; therefore, women should not drive or handle machinery for a few hours after IUD insertion. For women who have heart disease or epilepsy, special medical precautions have to be taken before IUD insertion.

Like the birth control pill, the IUD cannot be safely used by all women at all times. **An IUD should not be inserted in the following situations:**

1. If the woman has an infection of her uterus, fallopian tubes or ovaries: The presence of an IUD can make such infections more serious and difficult to cure. An IUD can be inserted once the infection is completely cured.

2. If the woman's uterus is severely retroverted (tipped backwards): A retroverted uterus is a common and normally harmless condition; however, the insertion of an IUD can be difficult and extremely painful if the woman's uterus is very retroverted.

3. If the woman is pregnant: The insertion of an IUD can cause an abortion, but this is a dangerous way to interrupt pregnancy. The insertion of an IUD can cause serious and even life-threatening infections if the woman is pregnant. The best time to insert an IUD is during the woman's menstrual period since when the woman is menstruating she is definitely not pregnant and the IUD insertion cannot interfere with an early, unsuspected pregnancy. Also, the cervical canal is open wider during menstruation than during other times in the woman's menstrual cycle, and so insertion during the period is easier.

4. If the woman has given birth or has had an abortion in the previous 8 weeks: For some time after childbirth and abortion the walls of the uterus are softer than normal. Insertion of an IUD too soon after childbirth or abortion is dangerous because the device can perforate the uterus; that is, it can go right through the soft wall of the uterus and into the abdominal cavity. Also, there is an increased risk of infection and a greater chance of pregnancy when an IUD is inserted earlier than 8 weeks after childbirth or abortion.

Despite the increased risks, many doctors insert IUDs right after childbirth or abortion. This is particularly common when the woman is on welfare or has so-called illegitimate children. Some doctors believe that such women are "irresponsible" and that they are unlikely to return 8 weeks later for an IUD. Indeed, some doctors actually believe that poor women and women who have already had abortions or "illegitimate" children do not have the right to decide for themselves whether or not to use birth control. It is not uncommon in North American hospitals that such women have IUDs inserted after childbirth or abortion, without their knowledge or permission.

Use of the IUD

The IUD prevents pregnancy from the moment it is within the uterus.

All IUDs have "tails" made of nylon thread

which descend through the cervix and into the upper vagina. The IUD tail is so thin that it cannot keep the cervix open and therefore, it cannot cause the upward movement of bacteria into the uterus. The nylon thread cannot be felt by either the woman or her male sexual partner during sexual intercourse; however, the thread can be felt if the woman reaches high, into her own vagina with one or two fingers. As long as the woman can feel the thread of the IUD, she can be certain that the device is in place within the uterus. If the woman cannot feel the thread the IUD may be out of place or may have escaped unnoticed from the uterus. The woman should check for the IUD thread once a week and after each menstrual period. If the woman cannot feel the thread she should return to her doctor.

Removal and replacement of the IUD

When desired, the IUD can be removed easily. To remove the device, the doctor pulls gently on the IUD tail and the device usually slips out of the uterus easily. Women should not attempt to do this themselves since occasionally the cervical canal is blocked or the IUD is lodged in the wall of the uterus and an unskilled tug could cause injury. As soon as the IUD is out of the uterus, the woman can again become pregnant.

If left in the uterus for too long, plastic IUDs become hard and brittle. A plastic IUD can be left in the uterus for up to 5 years; it should then be removed and replaced with a new device. Because the copper of copper IUDs slowly dissolves away, these devices have to be replaced every 2 years.

Spontaneous expulsion - loss of the IUD into the vagina

The uterus is not a passive organ. It is a sac of powerful muscles which are capable of contracting strongly. The pain of menstrual cramps or of childbirth is actually the pain of the uterine muscles squeezing down hard.

In some women, the presence of an IUD irritates the muscles of the uterus and stimulates those muscles to push the device out of the uterus (through the cervix) and into the upper vagina. Because such loss of the IUD can happen at any time without apparent cause, it is called "spontaneous expulsion". Between 10% and 12% of all women who receive an IUD expel the device in the first year of use. Most expulsions occur during the first 3 months that the device is in the uterus. Expulsions usually occur during the menstrual period. Women using IUDs should look for the device on the surface of their menstrual tampons or pads. After each period, women should check for the continued presence of the IUD by feeling for the nylon thread of the device.

If a woman expels an IUD from her uterus she can have another one inserted; however, the chances are about 50% that the device will be expelled again. At present, there is no way of knowing in advance which women are likely to expel the IUD.

Side effects

Minor side effects of the IUD are common. Most women have heavier than normal menstrual bleeding

during the first few periods following insertion of an IUD. Some women also have irregular bleeding or spotting in between periods. Heavy or irregular bleeding is not dangerous but it should be reported to the doctor who inserted the IUD.

Some women experience bad menstrual cramps for the first few periods after IUD insertion. Pain-killing drugs such as aspirin with codeine should be used and the pain should be reported to the doctor. Some women have continuous menstrual-like pain from the time that the IUD is inserted. In such women the pain does not stop until the IUD is removed.

Severe cramps and heavy or irregular bleeding cause 8% to 10% of women who receive an IUD to have it removed.

Serious complications

Pelvic infections: The cavity of the uterus is normally sterile; that is, bacteria are normally not present in the uterus. In contrast, the vagina and lower part of the cervical canal normally contain many bacteria. Within the vagina, these bacteria are harmless; however, within the uterus they can cause disease. Despite the fact that all IUDs are sterilized before use, the insertion of an IUD through the cervical canal always carries along some bacteria from the vagina into the uterus. In a few cases, an infection of the uterus and fallopian tubes develops after insertion of an IUD. Infection of the uterus and fallopian tubes is called **pelvic inflammatory disease** or PID.

Actually, just the insertion of an IUD is rarely enough in itself to cause PID. In most cases, an incident of IUD-related PID is actually a relapse or flare-up of a previously existing, low grade pelvic infection of which the woman was not aware. In such cases, 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 symptoms of active pelvic infection. Women who have had a pelvic infection must make sure that the infection is totally cured before having an IUD inserted. The most common cause of PID in young women is gonorrhoea, although other bacteria cause pelvic infection as well.

The symptoms of active PID are: lower abdominal pain, severe menstrual-like cramps, back pain, fever, nausea and vomiting and a general feeling of ill-health. In most cases of IUD-related PID, the active infection starts within a few weeks or months of the insertion of the device, although PID has developed in women wearing the IUD for a long time. The symptoms of PID typically come on soon after a menstrual period.

PID occurs in 2% to 4% of women wearing an IUD. Without treatment, PID can be serious and even life-threatening; however antibiotic treatment usually brings the disease rapidly under control. In most cases of IUD-related PID, the IUD should be removed, although in mild cases, successful antibiotic treatment can be given with the device still in the uterus. Any woman who has symptoms of PID should see a doctor immediately.

Infection during pregnancy and the Dalkon Shield

Infection of the unborn baby and the placenta is an

uncommon complication of pregnancy. If such an infection occurs, it can destroy the fetus and spread to the mother. In 1974 there were reports of more than 200 serious infections and 11 deaths of women who became pregnant while using the Dalkon shield IUD. Until further research is done, the Dalkon shield has been taken off the market. Women who have a Dalkon shield should see their doctors and have the device removed. **No matter what kind of IUD is used, if the device fails and the woman becomes pregnant, she should have the device removed immediately.**

Perforation of the uterus: In about 1 case out of 2,500 IUD insertions, the device perforates the uterus, that is, the IUD goes right through the wall of the uterus and into the abdominal cavity. In some cases, the IUD perforates only half-way, so that part of the device remains within the uterus and part sticks through the uterine wall.

Perforation usually occurs during insertion; however, some IUDs are pushed through the uterine wall by contractions of the uterine muscles themselves. Whatever the cause, perforation of the uterus by an IUD usually does not cause symptoms and the woman does not know that anything is wrong until she realizes that she cannot feel the nylon thread of the IUD. If the IUD cannot be found either in the uterus or in the vagina, and if the woman is not pregnant, an X-ray of the lower abdomen should be made. If the IUD is within the abdominal cavity, the X-ray will reveal its position. (X-rays can damage the fetus. If the woman is pregnant, she should not have an X-ray unless she intends to have an abortion.)

An IUD which has perforated the uterus can injure the intestines or one of the other abdominal organs, or it can be the source of infection or some other disease within the abdominal cavity. Therefore, an IUD that perforates the uterus should be removed from the abdomen by a surgical operation.

Effect on pregnancy

If the IUD fails as a contraceptive and the woman becomes pregnant, the continued presence of the IUD within the woman's uterus causes miscarriage in about 50% of cases. The IUD should be removed before the 12th week of pregnancy; this reduces the miscarriage rate to 30% which is about twice the miscarriage rate in women who become pregnant without an IUD in place. Even if the woman does not want the baby and plans to have an abortion, she should still have the device removed because miscarriage caused by an IUD is associated with a higher than normal rate of infections and other complications.

Once an IUD is removed, it cannot affect future pregnancies.

Ectopic pregnancy and the IUD

At the beginning of normal pregnancy, the fertilized egg travels down the Fallopian tube and implants into the wall of the uterus. In about 1 out of 200-500 pregnancies, the fertilized egg does not reach the uterus, but implants into the ovary or wall of the Fallopian tube. Such an out-of-place pregnancy is called ectopic pregnancy.

The IUD is not as effective in preventing ectopic

pregnancies as it is in preventing normal pregnancies. The IUD does not cause ectopic pregnancy; however, a pregnancy that occurs despite a woman's use of the IUD is more likely to be ectopic than a pregnancy that occurs without an IUD in place. Out of 100 pregnancies occurring in women who are using an IUD, 4 to 9 are ectopic.

The first symptoms of ectopic pregnancy are the same as those of normal pregnancy. Within 2 weeks of the missed period, there may be some spotting or light menstrual-like bleeding which is often mistaken to be a late period. Most women feel some mild to moderate cramp-like pain on one side of the abdomen. As the embryo develops it weakens and stretches the walls of the ovary or Fallopian tube. After 2 to 3 months the tube bursts, causing internal bleeding. Many women feel a sharp stabbing pain in the lower abdomen which becomes bloated and tender; however, other women do not have such severe symptoms. Immediate surgery must be performed to remove the misplaced fetus and ruptured tube or ovary, and to stop the bleeding.

Ectopic pregnancy can often be diagnosed before the tube or ovary ruptures. Any woman who becomes pregnant while using an IUD should have careful examinations to make sure that the pregnancy is not ectopic.

Infection of the Fallopian tubes (salpingitis) makes a woman more susceptible to ectopic pregnancy. A woman who has had salpingitis caused by gonorrhea or other bacteria, must not use the IUD.

Cancer: On the basis of considerable evidence, it is believed that the plastic IUDs cannot cause cervical or uterine cancer. The long range risks of disease to women using copper IUDs are not known.

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 because of side effects and the 2% to 3% (at least) who become pregnant, the IUD is an acceptable birth control method for only about 75% of women by the end of the first year of use. By the end of 2 to 3 years, only 50% of the women who started with an IUD are still using the device. For those women who can use the IUD successfully, it is the best method available - it is safe, cheap, does not require repeated action (such as taking a daily pill) and does not interfere with the act or enjoyment of sexual intercourse. Unfortunately, the only way for a woman to find out whether or not she can use the IUD successfully is to try the device.

For the average woman, the IUD is no safer than the birth control pill. If one million young women use the Pill for one year, about 15 of them will die from blood clotting diseases. In contrast, very few women die as a direct result of complications of the IUD (such as infection or perforation); however, many women using the IUD become pregnant and pregnancy is dangerous in itself. If one million women use the IUD for one year, about 30,000 to 80,000 will become pregnant. Of these women, 7 to 18 will die as a result of complications of pregnancy. Thus, the 15 deaths per million Pill-users

must be compared to the 7 to 18 deaths per million IUD-users.

There are certain diseases which make the use of the Pill unwise. Similarly, there are certain diseases and physical abnormalities which make the IUD a poor choice. The safety and acceptability of any method of birth control should be determined as an individual problem for each individual woman.

The IUD and genocide

In many countries of the Third World - Latin America, Africa and Asia - U.S. business interests dominate the national economy and control the use of natural resources. The needs of the people of these countries are overlooked and their natural riches are taken from them. For example, in Brazil much of the arable land is "owned" by U.S. companies and used to grow coffee. Many of Brazil's 90 million people are hungry but Brazil cannot even buy food on the world market because the profits from their own coffee remain in the United States. The U.S. government and many people working for U.S. organizations such as the Zero Population Growth movement (ZPG) and the Population Council, argue that the people in countries such as Brazil are starving only because of their high rate of population growth. This is not true. Brazilians are starving because their land is used to grow coffee for America instead of food for Brazil.

There are important reasons why the people of the Third World continue to have large families. In many of these countries, infant and child mortality rates are high and unless a woman has many children, it is unlikely that she will see any of them survive to adulthood. The poverty of these countries and the attitude of their governments make it impossible for them to have old age pensions, social security or welfare. The only way a person can ensure his or her own survival in old age is to have many children who will provide support and care.

It is true that increasing population size puts increasing pressure on already inadequate resources of food. Suffering from this pressure, many people in countries of the Third World have been searching for radical new solutions to the ills of their countries. The solutions involve an end to the exploitation of natural resources by foreign companies.

The United States has responded to this threat by actively encouraging vigorous population control measures in Third World nations. The IUD is an almost ideal tool for such population control actions, since the device is cheap to manufacture, easy to insert and in large scale terms, very effective. Moreover, once the IUD is inserted, its continued effectiveness is not dependent on the woman's continued willingness to prevent pregnancy. The IUD can serve as a simple although not completely effective sterilization technique - and that is exactly how it has been used in many Third World countries. In the past few years, millions of women in these countries have received IUDs, often in exchange for a day's salary or a transistor radio. Some women have received IUDs after giving birth in U.S. supported maternity hospitals, without even being told that the device is being inserted.

Women of the Third World have the human right

to control their own bodies. Safe and effective birth control, abortion and sterilization, as well as other forms of medical care, must be available to all women; however, large scale application of contraceptive measures to women who have their own ideas about controlling 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". The condom is one of the oldest and still one of the best birth control methods.

The condom was first described in 1564 by Fallopio, an Italian doctor who suggested the use of a moistened linen sheath as protection against venereal disease. Skin condoms, made of thin animal membrane, were available in England by the 17th century. The name "condom" supposedly comes from a Dr. Condom who was physician to the court of King Charles II of England.

Since the development of the latex rubber process in the 1930s, skin condoms have been largely replaced by the equally effective rubber sheaths. Skin condoms are still available, but they are expensive and do not provide any special advantage.

Rubber condoms manufactured today are approximately 0.0025 inches thick, 1 inch wide and 7 inches long. There are no sizes for condoms, since they are considerably elastic. At the open end of the sheath, the rubber is thicker, forming an elastic ring which keeps the condom from slipping off the penis. Most condoms are plain-ended, but some end in an extension or "teat" meant to receive ejaculated semen.

Rubber condoms are available either dry and packaged in paper envelopes, or prelubricated with silicone lubricant and sealed between strips of aluminum foil. They are usually sold in boxes of 3 or 12. Skin condoms are packaged in plastic or aluminum capsules containing water, glycerine and a pre-

servative.

Many women and men do not like the condom because of its historical association with prostitution and venereal disease. Also, many people mistakenly believe that the condom is an unreliable birth control method. In fact, when properly used, the condom is as effective or more effective than the diaphragm.

The condom does have an important disadvantage: it is a contraceptive used by the male partner alone. If the male sexual partner is reliable and both man and woman find this contraceptive method acceptable, there is no problem; however, not all men are trustworthy and certainly not at all times. Since it is women who are most directly affected by unwanted pregnancy, they are more likely to be careful to use a birth control method during every act of sexual intercourse. An uncaring man may occasionally "forget" to use the condom.

Some men and women do not like the condom because it requires interrupting the sexual caresses and loving "foreplay" that come before intercourse. On the other hand, many men and women make the unrolling of the condom over the erect penis part of their enjoyable routine of sexual foreplay.

Some men feel that the condom slightly dulls sexual pleasure. 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, simple to use, and easily available without prescription. If the male sexual partner is willing to take on the responsibility of contraception seriously, the condom is definitely the best birth control method for occasional or unanticipated sexual intercourse.

Aside from contraception, the condom does provide some protection against venereal diseases such as syphilis and 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.A. Since 1938 the United States Food and Drug Administration (FDA) has supervised the manufacture of condoms. FDA



enforcement, automated manufacturing and electronic testing methods all ensure that condoms are of high quality.

Use

The condom must be worn throughout sexual intercourse, since pregnancy can result from an early, unexpected or unfelt release of semen from the penis. If the condom is not prerolled, it should be rolled just before use. The condom should not be completely rolled up: half an inch should be left at the closed end to receive ejaculated semen. If the condom is already rolled when purchased (most rubber condoms are prerolled), 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. Properly unrolled, the condom covers the whole penis, with the half inch extension hanging limply at the end. Care must be taken not to tear the condom with fingernails, rings or any other rough object.

In some women the inside of the vagina is not sufficiently moist to allow for easy entry of the penis, especially if the penis is covered by a dry rubber condom. Forcing the penis into a relatively dry vagina hurts the woman. This can be avoided by the use of a prelubricated condom, or an artificial lubricant. Good lubricants are contraceptive foam, cream or jelly, and saliva. **Vaseline or any kind of petroleum jelly or oil must never be applied to rubber condoms, since these lubricants destroy rubber.**

Some men can maintain a relatively hard erection after having an orgasm, but in most men the penis becomes smaller and softer soon after climax. As long as the penis remains somewhat erect and 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, semen can leak out of the open end, or the condom can slip off the penis into the vagina. If the condom does not fit firmly after an orgasm, the male partner should hold the upper part of the condom tightly against the base of his penis and withdraw from the vagina. If the condom slips off the penis, it should be removed from the vagina immediately, with the open end held tightly closed.

Once sexual intercourse is completed, the condom is taken off the penis by stretching the ring at the open end and pulling down. The condom should be checked after removal. In rare cases the condom tears or bursts during intercourse. In such obvious cases of birth control failure, pregnancy can still be avoided if the woman takes the "morning-after pill", a 5 day series of pills which contain a synthetic estrogen called diethylstilbestrol (DES). To prevent pregnancy, the DES pills must be started within 72 hours after sexual intercourse. DES has side effects and can only be used in emergencies.

Some doctors suggest that the condom should be used in combination with a vaginal contraceptive foam. This extra precaution reduces the chances of pregnancy should the condom break; however, condoms bought from drug stores or drug companies

break so very rarely that the extra vaginal contraceptive is not really necessary.

Good quality rubber condoms can be washed, dried and reused several times; however, condoms are available cheaply and it is easier to simply flush used condoms down the toilet and use a new one for each sexual intercourse.

Condoms should never be kept in a wallet or pocket since body heat and moisture rots the rubber of the condom. Condoms are best kept in the small cardboard boxes in which they are sold. Without excessive heat or moisture, condoms can be stored for up to 5 years.

Purchase and cost

Condoms can be bought by anyone, without a prescription, in most drug stores. The most common drug store price is \$1.25 for 3 rubber condoms. Lubricated rubber condoms cost about \$1.50 for 3. Skin condoms cost \$1.00 or more each. Rubber condoms bought in quantity from the manufacturer or from family planning associations cost 25¢ to 35¢ for 3.

diaphragm

The diaphragm is a birth control device that is worn inside the vagina during sexual intercourse. It is a round dome of soft rubber sealed over a circular steel spring about 3 inches in diameter. Although the device appears bulky, it cannot be felt during sexual intercourse by either the woman or her lover. The diaphragm prevents pregnancy by blocking the cervix (opening of the uterus) and by providing a platform within the vagina for a spermicidal (sperm-killing) cream. Thus, with the diaphragm in place, sperm are prevented from entering the uterus, and are killed within the vagina.

The diaphragm, developed in 1823 by a German doctor named Wilde, was the first effective, easy to use contraceptive totally controlled by the woman sexual partner, and as such, it revolutionized the whole idea of birth control. The diaphragm has been unjustly downgraded and overlooked since the development of the Pill and IUD. The device is still an excellent birth control alternative and possibly the best method for a young woman who has infrequent and unforeseen sexual intercourse.

Medical examination, fitting and prescription

Women vary slightly as to the length, and width of the vagina. Although the exact size of the normal vagina has no effect on the sensation of sexual intercourse, it does influence the fitting of the diaphragm. Women must be individually fitted for the diaphragm by a doctor or other qualified, specially trained person.

Before being fitted for the diaphragm the woman should learn about her own internal anatomy. She should learn to examine herself internally and be able to recognize her cervix and pubic bone. The cervix lies deep in the vagina and feels like a

springy-hard bump of tissue, something like the end of the nose. The pubic bone is the bone just under the pubic hair. Its surface can be felt through the upper wall of the vagina.

Women have been prevented from really knowing about their own bodies. Little girls have been warned not to put their fingers "down there". Anything to do with sexuality was considered dirty and was hidden. Women are actively rejecting such attitudes. In North America the "women's self-help movement" has committed itself to helping women understand and appreciate their own bodies. Women's self-help clinics provide excellent information and teach women how to examine themselves and each other. A woman planning to use the diaphragm may find a women's self-help meeting very valuable.

To fit the diaphragm, the doctor or trained examiner first performs an internal pelvic examination to ensure that the vagina and uterus are normal. The doctor estimates the required diaphragm size by inserting two fingers deep into the vagina and determining the distance from behind the cervix to just before the pubic bone. The doctor selects a sample diaphragm or special diaphragm fitting ring of the estimated size and inserts it into the woman's vagina. Usually, two or three sizes have to be tried before the best fit is obtained. Properly placed, the outermost, front rim of the diaphragm fits snugly behind the pubic bone, the dome covers the cervix, and the innermost, far rim rises behind the cervix. The woman examines herself with the diaphragm in place. She should be able to recognize the cervix through the rubber dome of the device. She should also be able to feel the front rim snug

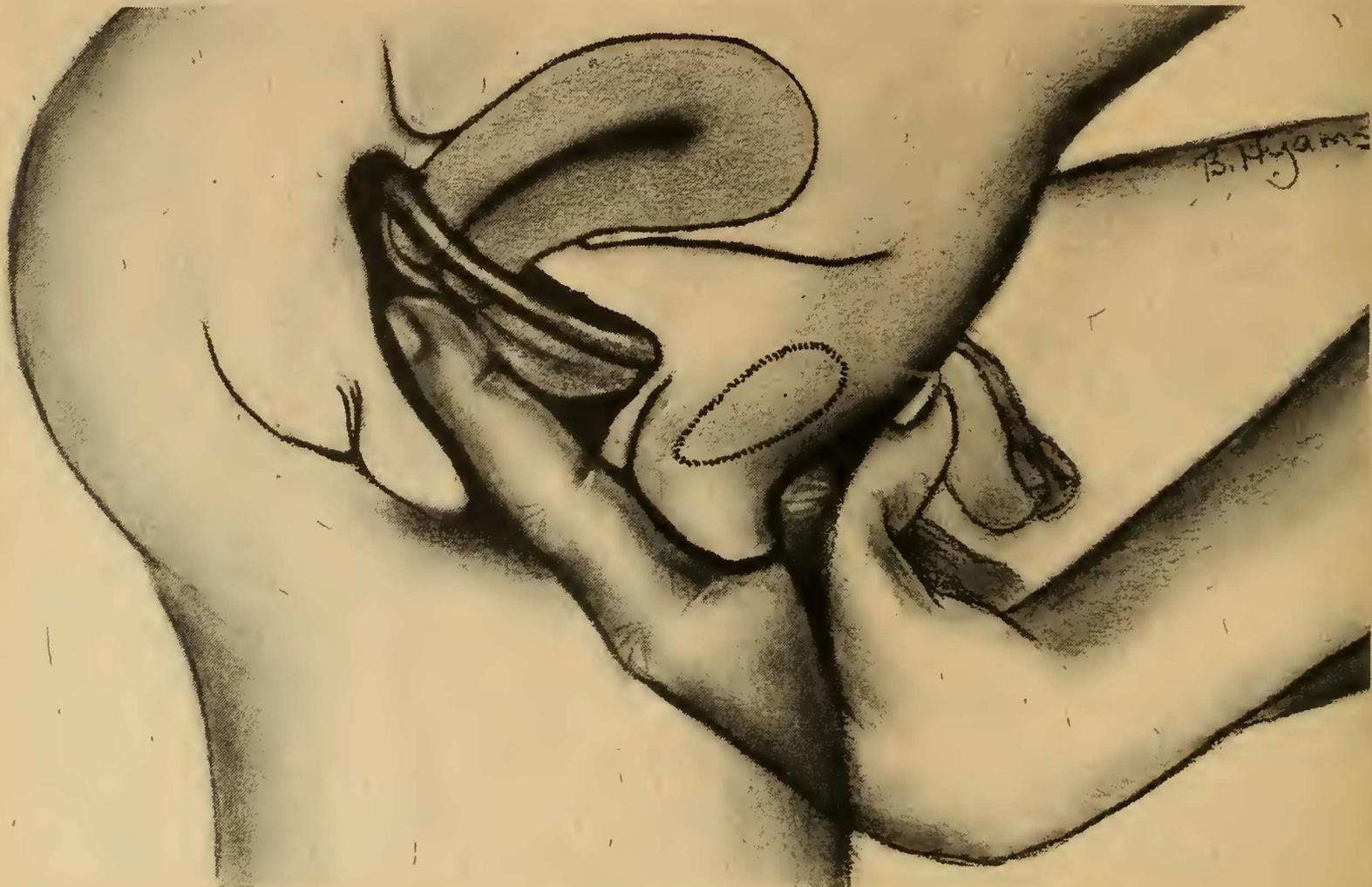
behind the pubic bone. The woman removes the device by hooking her finger under the front rim and pulling down and out.

The woman then learns to insert the device herself. First, about 1 tablespoon of spermicidal cream is smeared on both surfaces of the dome. Some cream is also smeared on the rim. The diaphragm is most easily inserted while the woman is crouching, squatting, lying down with knees raised, or standing with one foot raised. The woman holds the diaphragm so that the dome is pointing downwards. With one hand the woman squeezes the diaphragm into a long narrow shape between thumb and first finger. With the other hand holding the vaginal lips apart, she inserts the compressed device into her vagina, sliding the device along the lower vaginal wall until the far rim passes the cervix. The woman then tucks the front rim up behind the pubic bone. Once the diaphragm is in place, the woman checks that the cervix is completely covered. While still in the examining room, the woman removes the diaphragm and repeats the insertion several times, until she is confident that she does not need any further assistance or instruction.

Women should have the fit of the diaphragm checked at least every two years and after childbirth, miscarriage, any surgical operation, or gain or loss of more than 10 pounds. A woman who is still a virgin can be fitted for the device; however, sexual intercourse stretches the vagina somewhat and the fit of the diaphragm should be checked a few weeks after the woman starts having intercourse.

Use

The diaphragm should always be used with



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

vaginal contraceptives

spermicidal cream on its surface. The device is not effective if used without the cream.

The diaphragm can be inserted up to 2 hours before sexual intercourse. If more than 2 hours go by before intercourse, the device should be removed and more spermicide put on its surface. The amount of spermicidal cream on the diaphragm is enough to provide contraceptive protection for only one act of sexual intercourse. If intercourse is repeated, the woman should leave the diaphragm in place and insert an applicator-full of contraceptive foam (see next chapter) into her vagina before each additional sexual intercourse.

The woman can perform any normal physical activity with the diaphragm in place. The position of the device should be checked after a bowel movement. If positioned properly, the diaphragm cannot be felt by either sexual partner during intercourse.

Even with spermicide on the surface of the diaphragm, sperm can survive for several hours within the vagina; therefore, to ensure that all sperm are killed by the spermicide, **the diaphragm must remain in place for at least 6 hours after intercourse.** After removal, the device should be washed with mild soap and water.

Douching is unnecessary, but if desired must be postponed for at least 6 hours after intercourse.

The diaphragm can be used during menstruation. In some rare cases, women become pregnant during menstruation.

Occasionally, the diaphragm should be checked for holes and cracks, especially near the rim. Filling the device with water to check for leaks, and holding the device to the light are two good tests.

The diaphragm is ineffective if left in a dresser drawer or purse; however, human frailty is not the only reason for its failure. Occasionally the diaphragm slips out of place after the woman has an orgasm (the vagina enlarges after orgasm). With the diaphragm out of place the cervix is exposed and sperm can enter the uterus. The diaphragm is more likely to slip out of place in positions of sexual intercourse where the woman is on top of the man.

Side effects

The diaphragm is a harmless device. It cannot get lost in the vagina and cannot injure the woman in any way. Some women are allergic to rubber and should use a diaphragm made of plastic. Also, some women and men are allergic to specific brands of spermicidal cream. If an allergic reaction occurs, (itchiness, burning, redness) a different brand of cream should be used.

Cost

In Canada all medical examinations including the fitting of a diaphragm, are free under the provincial medicare plans. In the U.S. the cost of fitting a diaphragm by a private doctor is about \$15 to \$25 and considerably less or free in a hospital or family planning clinic. The device itself, which is available only by prescription, costs about \$4. A tube of spermicide containing about 20 applications costs about \$3.00.

The insertion of a spermicidal (sperm-killing) cream or paste into the vagina before sexual intercourse is an ancient birth control method. More than 3,500 years ago an unknown Egyptian writer suggested a mixture of honey and acacia tips (a vegetable gum) as a vaginal contraceptive.

Today, there are three kinds of simple-to-use vaginal contraceptives: foams, creams and jellies. When inserted into the vagina before intercourse, these substances prevent pregnancy by blocking the cervix so that sperm cannot enter the uterus, and also, by killing the delicate sperm within the vagina. Thus, the contraceptive action of the vaginal contraceptives is the same as that of the diaphragm; however, the diaphragm provides a more effective barrier over the cervix and therefore gives better protection against pregnancy. All vaginal contraceptives have a high failure rate and should not be used by women who must not become pregnant.

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 a relatively good barrier. In contrast, the creams and especially the jellies often fail to spread properly over the cervix and are more likely to fail as contraceptives. The contraceptive creams and jellies are only effective when used with a diaphragm. The creams and jellies should not be used alone.

Vaginal contraceptive foams do have certain advantages: they are harmless, can be obtained from almost any drug store without a prescription, do not involve the use of a "device" such as a diaphragm or condom and are easy to use properly. Some couples use contraceptive foams for extra protection while using another birth control method such as the rhythm method.

Two brands of vaginal foam are marketed in North America under the names "Delfen" and "Emko". The foams are packaged under pressure in aerosol cans or vials. An applicator is sold with the spermicide. The applicator is a clear plastic tube open at one end, with a plunger that can slide up and down in the tube. The applicator is about the size of a vaginal tampon applicator (such as "Tampax").

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 applicator tube, the plunger is pushed up. When the plunger has risen to the top of the tube and can go no farther, the applicator is full. To insert the foam, 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) about half an inch, and pushes down on the plunger. Pulling the applicator back half an inch from the end of the vagina positions the open end

of the applicator just in front of the cervix. When the plunger is pushed, the foam is forced out of the applicator and onto the cervix.

Vaginal foam can be inserted up to 1 hour before sexual intercourse. If more than 1 hour goes by between the insertion of the foam and intercourse, another applicator-full of foam must be inserted. One applicator-full of foam provides contraceptive protection for only one act of sexual intercourse. The woman should insert one applicator-full of foam before each intercourse. Also, if the woman gets up from bed or goes to the toilet after insertion of the foam, another applicator-full must be inserted. After sexual intercourse, the woman can get up or go to the toilet without affecting the contraceptive action of the foam.

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 applicator is not washed after being used, the small amount of foam that remains in the applicator dries and sticks to the sides. If this happens, the applicator can be soaked in water until the foam softens and comes off. Since the applicator is made of soft plastic, it should not be boiled.

Many women notice that some of the vaginal foam leaks out of the vagina, especially after sexual intercourse. Vaginal contraceptives do not permanently stain clothing or sheets.

It is not necessary or useful to douche after using a vaginal contraceptive. If a douche is desired, it must be delayed for at least 6 hours after sexual intercourse. Douching cannot remove all the sperm from the vagina, but it does dilute and remove most of the sperm-killing foam.

Side effects

Vaginal contraceptives are harmless. They cannot cause cancer or any other disease.

Should a vaginal contraceptive fail to prevent pregnancy, the baby is not affected.

Some women and men are allergic to one or several brands of vaginal contraceptives. If allergic irritation occurs (itchiness, burning, redness), a doctor should be consulted and the brand of contraceptive changed.

Cost

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

Contraceptive foams can be obtained at lower prices from hospital pharmacies and family planning clinics.

rhythm method

To use the rhythm method (periodic continence, safe period, Ogino method), a woman does not have sexual intercourse during the "fertile period" of her menstrual cycle. The fertile period is a period of several days during each cycle when the woman is most

likely to become pregnant. Used alone, the rhythm method is not an effective birth control method. Women who must not become pregnant should not rely on this method. Also, it should not be used by women who have irregular menstrual cycles, especially for any of the following reasons: age (under 20 or approaching menopause), recent miscarriage or childbirth, breast feeding, or emotional problems.

To be successful, the rhythm method must be accepted by both the woman and her sexual partner(s); otherwise, resulting frustration can threaten her relationship(s). Women who have infrequent and sporadic sexual experiences should not depend on the rhythm method, since the fertile period and an unexpected opportunity may frequently coincide.

Use

To calculate the fertile period of each cycle, a woman has to consider the approximate time of ovulation (release of an egg from an ovary), and the life span of the egg and sperm. Ovulation occurs at about the middle of the menstrual cycle, usually 14 days before the beginning 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 sexual intercourse; the egg lives about 24 hours after ovulation. Therefore, a woman using the rhythm method must not have sexual intercourse from 2 days before the earliest likely time of ovulation until 1 day after the latest likely time of ovulation. This fertile or "unsafe" period can be calculated in several ways:

The calendar method: This method of calculating the fertile period is based on the length of the woman's shortest and longest menstrual cycles. First, the woman must record the length of 8 menstrual cycles (the length of each cycle is the number of days from the first day of bleeding of one period until the first day of bleeding of the next period). The woman can then calculate the fertile period of the 9th cycle as

The calendar rhythm method			
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

follows: subtract 18 from the length of the shortest cycle to find the first unsafe day; and subtract 11 from the longest cycle to find the last unsafe day. In the following chart, these subtractions are already done for cycles of various lengths. The woman must not have sexual intercourse from the first to the last unsafe day. A woman must continue to record the length of each cycle and base her calculations on the **most recent 8 cycles**.

The temperature method: The female hormone progesterone, which is released from the ovaries after ovulation, causes a slight rise in body temperature. Also, a slight temperature drop occurs about 48 hours before ovulation, although this drop is not always as noticeable as the following rise. Temperature change can be used to determine the time of ovulation and the fertile period.

Body temperature varies with daily activities; therefore, for the purposes of the temperature rhythm method, the woman records her temperature each morning before getting out of bed or beginning any activity. This temperature is called the "basal body temperature" (BBT). There are special thermometers for taking the BBT.

According to the temperature rhythm method, the fertile period is from the 5th day after the beginning of the menstrual flow until the 3rd day after the rise in basal body temperature.

Calendar-temperature method: The fertile period as 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 the unsafe period. Also, if basal body temperature is affected by 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 and the last unsafe day is the 3rd day after a noticeable rise in the basal body temperature.

coitus interruptus

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

Withdrawal is difficult to use properly and has a high failure rate. A woman who must not become pregnant should not rely on her partner's use of this birth control method.

Use

Coitus interruptus means interrupted sexual intercourse. When coitus interruptus is used, sexual intercourse continues until just before the male partner has an orgasm (sexual climax). The man withdraws his penis from his partner's vagina before ejaculating. (Ejaculation is the release of semen from the penis at the time of male orgasm.) If sperm do not reach the woman's vagina, she cannot become pregnant.

It is important that the man withdraw his penis completely and ejaculate away from his partner's vagina. Sperm can move on their own and if deposited between the vaginal lips, they may be able to continue up the vagina.

Sexual intercourse can be resumed after the male's climax. Semen should be carefully wiped off the tip of the penis before intercourse is resumed.

As a birth control method, coitus interruptus has serious drawbacks. Most importantly, it is the male partner alone who determines the contraceptive effectiveness of the method. The assurance,



"I'll be careful" means little to the woman who knows that it is she and not her partner who will become pregnant should a "mistake" occur. Also, the use of withdrawal can cause sexual frustration for both partners.

Not all men are even aware of the beginning of ejaculation. One powerful gush is the pattern of ejaculation in not more than 50% of men. In other men, semen flows out of the penis in small amounts both before and after climax, and such men are usually not aware of the moment when semen first begins to escape. Also, as orgasm approaches, both men and women experience some loss of self-

control. If intercourse* continues uninterrupted for too long, the sexual partners may lose themselves in their passion and forget to separate before the man ejaculates in the woman's vagina.

For all the problems associated with withdrawal, this birth control method does have certain advantages. Withdrawal is physically harmless, costs nothing and is always available. The careful use of withdrawal does reduce the frequency of pregnancy. Even so, given the existence of cheap, easily available modern birth control methods, withdrawal should no longer be considered a valuable birth control alternative.

effectiveness

The effectiveness of any birth control method is a measure of how well the method protects a woman from becoming pregnant. The failure rate is another way of describing the effectiveness of a birth control method; the failure rate is a measure of how many women become pregnant while using the method. For example, the diaphragm is about 90% effective, that is, it has a failure rate of about 10%; this means that out of 100 women using the diaphragm, 10 become pregnant and 90 do not become pregnant.

Actually, it is not accurate just to say that the diaphragm has an effectiveness of 90% or a failure rate of 10%. The effectiveness or failure rate of a birth control method should be described in terms of a time period. Therefore, the diaphragm is described as having an effectiveness of 90% per year, or a failure rate of 10% per year; this means that out of 100 women who use the diaphragm for one year, 10 become pregnant.

The use of all birth control methods is subject to human error. Even if used correctly, all methods

other than the Pill do not always prevent pregnancy. For example, even if contraceptive vaginal foam is inserted before every act of sexual intercourse, sperm sometimes manage to enter the uterus and fertilize an egg in the fallopian tube.

Failure rates of birth control methods

Birth control pill (combination pill)	0.5 (theoretically 0 if no pills are forgotten)
IUD	1.5 - 8
Condom	10 - 15
Diaphragm	10 - 15
Vaginal contraceptives	15 - 25
Rhythm method	15 - 30
Withdrawal	20 - 30

The above rates should be read as "..... pregnancies in 100 women using the..... method for 1 year."

sterilization

Sterilization is a surgical operation that permanently eliminates fertility. A sterilized woman cannot become pregnant. A sterilized man cannot provide the sperm necessary to fertilize a female egg.

Most people need contraceptive protection for a large part of their lives. Unfortunately, there is no reversible birth control method that most people would be happy to use for a long time. All existing methods have certain problems such as side effects, possible long term dangers, or lack of 100% protection against pregnancy. Sterilization is an alternative to the long use of a birth control method; however, it is difficult or impossible to undo a sterilization operation and restore a person's fertility. Therefore, the decision to be sterilized must be made with the certainty that additional (or any) children are not desired.

Many North American hospitals allow sterilization only for married people, above a certain age, who have a certain number of children. Such restrictions are unjustifiable. Responsible people make many serious and irreversible decisions in their daily lives. All people have the human right to control their

own bodies and to decide for themselves whether or not to be sterilized.

Sterilization has been imposed on men and women by individuals and governments intent on "purifying" or "saving" the human race. As part of their genocidal program during World War II, the Nazis forcibly sterilized Jewish women in concentration camps. Today, similar crimes are committed against non-white women by people who claim that pressing social problems such as starvation and poverty can be solved simply by reducing the rate of population growth. There have been repeated reports from South America that native women have been sterilized without their knowledge or consent after giving birth in U.S. supported maternity hospitals. The Montreal Star recently reported that Eskimo women in northern Canada have been sterilized in a similar way. In the United States there have been numerous reports of poor black and Chicana women being sterilized involuntarily. In 1973, a \$1 million suit was started against the Montgomery Alabama Family Planning Clinic and the U.S. federal government for allegedly sterilizing two young black women without their consent or their parents' consent. The New York Times reported that C.W. Weinberger, secretary of the U.S. Department of Health, Edu-

cation and Welfare, ordered a freeze on government funds that might be used for similar involuntary sterilizations, until "detailed guidelines" are prepared.

The involuntary sterilization of helpless men and women will not eliminate starvation or poverty. These problems can only be solved by a redistribution of wealth in societies that respect the rights of all human beings.

Sterilization for women

A woman can be sterilized by removing the ovaries, removing the uterus, or by interrupting the fallopian tubes through which eggs travel from the ovaries to the uterus. Since the ovaries produce important hormones as well as eggs, removal of the ovaries is undesirable. Removal of the uterus, called **hysterectomy**, is sometimes necessary because of disease. Hysterectomy is not an acceptable routine sterilization operation because it is major surgery that has significant risks of complications and even death. In contrast, interruption of the fallopian tubes is relatively simple.

Until recently, the standard sterilization operation for women was **tubal ligation** or "tying the tubes". In this operation, the woman is first put to sleep by a general anesthetic. An incision is made in the lower abdomen, just above the pubic hair and the fallopian tubes are brought into view one at a time. A part of each tube is cut out and the cut ends of the tubes are tied closed.

Tubal ligation can be conveniently performed before a woman leaves the hospital after having a baby. For some time after childbirth the uterus is enlarged and the tubes are easily reached. Tubal ligation can also be performed during a cesarean section, since in that operation the uterus and tubes are already exposed. In either case, the sterilization procedure hardly lengthens the normal post-childbirth hospital stay. When tubal ligation is done at a time other than just after childbirth, the woman has to stay in the hospital for 4 to 5 days.

Although tubal ligation is fairly simple, it is a significant surgical undertaking that involves an incision, several days of recovery time in hospital and discomfort for the woman. Today there is a simpler, safer and faster method called **laparoscopic sterilization**.

In the early 1960s two surgeons, Raoul Palmer in France and Patrick Steptoe in England, described a method for looking directly at the internal body organs by inserting a small telescope-like instrument called a **laparoscope** through the abdominal wall, just below the navel. While looking through the laparoscope, a surgeon can insert instruments through a very small incision in the lower abdomen and perform simple operations such as closing off the fallopian tubes.

For the laparoscopic operation the woman should be asleep, under a general anesthetic. Laparoscopic sterilizations have been performed with local anesthetic but this is not advisable since the operation can be uncomfortable and indeed painful despite the local "freezing". More importantly, because of special aspects of this operation, the woman's rate of breathing has to be controlled artificially and

extra oxygen must be given. To accomplish this, a special tube is passed down the woman's throat once she is unconscious. The tube is attached to a machine which breathes for the woman during the operation. Artificial breathing is difficult to accomplish and uncomfortable for a conscious person.

Before the laparoscope can be inserted, the abdominal wall has to be lifted away from the internal organs, otherwise the view through the scope is blocked by organs lying directly on the lens. To lift the abdominal wall, the surgeon inserts a needle into the abdomen and blows the abdominal cavity up like a balloon by injecting about .3 quarts of carbon dioxide gas. Then, the surgeon inserts the laparoscope into the inflated abdomen through a small cut on the lower edge of the navel. The surgeon makes another small incision on the lower abdominal wall and inserts a special pair of forceps which are connected to a source of electricity. By looking through the laparoscope the surgeon finds the uterus and fallopian tubes. The surgeon grasps each fallopian tube with the forceps and turns on the electrical current, burning the tubes closed. The laparoscope and forceps are pulled out of the abdominal wall and the carbon dioxide gas rushes out through the small incisions. The two small wounds are closed with a single stitch or a special skin staple and a bandaid is put on. The whole operation takes about 15



Photocell - Clara Gutsche

minutes. The woman is taken to the recovery room where she wakes up a few minutes later.

In most cases, a woman can leave the hospital a few hours after having a laparoscopic sterilization. Once at home she should take it easy for a day or two, but she can resume normal activities, including sexual intercourse, as soon as she feels able.

Complications of tubal ligation and laparoscopic sterilization

Post-operative discomfort: As a side effect to the general anesthetic, many women feel weak or generally unwell for a short time after waking up. After laparoscopy many women also notice a temporary sore throat which results from the insertion of the breathing machine tube, and soreness in the shoulders which is caused by the carbon dioxide gas pressing on nerves which go up from the abdomen to the shoulders.

Pregnancy: In about 1 case out of 200-500, the sterilization operation (either tubal ligation or laparoscopic sterilization) does not succeed in closing off both fallopian tubes and the woman becomes pregnant once she resumes sexual intercourse. In such cases an abortion is usually performed and the sterilization procedure is repeated.

Bleeding: In about 1 case out of 50-100 a blood vessel somewhere in the abdomen is torn open during the sterilization and the woman bleeds into her abdomen. This is usually noticed in the recovery room if blood pressure and pulse recordings are abnormal. In such cases it is necessary to perform another operation to find the bleeding vessel and tie it closed. In some cases, blood transfusions are necessary.

Other complications: Occasionally an organ such as the small or large intestine is mistakenly injured during the sterilization. Also, infection sometimes occurs a few days after the operation. During the first week after the operation, women should watch for symptoms such as nausea, vomiting, loss of appetite, crampy lower abdominal pain, abdominal tenderness or fever. If such symptoms appear the woman should consult her doctor immediately. In some cases, another operation or antibiotics are required to eliminate complications.

Of the two sterilization operations for women, laparoscopy is clearly better than tubal ligation, for it is faster, involves less blood loss, does not require a large abdominal incision nor any significant recovery time and causes little discomfort; however, laparoscopy is not an easy procedure to perform. The surgeon needs considerable experience and skill if complications are to be avoided. At the moment, most laparoscopic sterilizations are performed in major teaching hospitals of large cities.

Sterilization for men

Sterilization of the male can be accomplished by **castration** or **vasectomy**. Castration, which is the removal of both testicles, is not done on healthy individuals because in addition to producing sperm, the testicles produce important hormones. Without these hormones the man may lose sexual desire and become impotent. Castration is done only in cases of serious disease such as cancer of the testicles.

Vasectomy is a minor surgical operation that interrupts the vas deferens which is the tube through which sperm travel up from each testicle to the prostate gland and then to the penis. After vasectomy, sperm are still produced but they remain in the testicles where they die and break up. Since the testicles continue to produce hormones normally, the operation does not affect a man's sexual desire nor his ability to have an erection or an orgasm.

Vasectomy is such a simple operation that it can be performed in a doctor's office with just a local anesthetic. Each vas deferens tube can be felt easily just under the skin of the upper, outer side of the scrotum. Starting on one side, the doctor holds the vas between thumb and forefinger and injects a local anesthetic drug ("freezing") into the overlying skin and into the vas itself. The doctor makes a small cut in the skin of the scrotum, exposing the vas. A small part of the vas is cut out and the cut ends are tied closed. The doctor repeats the procedure on the other side. The two small incisions are closed with a few stitches and a dressing is applied. The operation usually takes less than 15 minutes. The man can leave the doctor's office after resting a short while. He can resume normal activities immediately, but should avoid heavy lifting for a few days. Until the two small wounds are healed, the man should wear jockey-type underwear or a jockstrap so that the weight of the testicles does not pull down painfully on the stitches.

Sperm cells make up only 10% of the fluid released from the penis during a man's orgasm (sexual climax); the rest of the fluid comes from the prostate and other glands. (The fluid is called semen and the process of releasing semen during orgasm is called ejaculation.) In a man who has had a vasectomy, only the sperm are missing from semen; therefore, the total volume of semen that is ejaculated is not noticeably reduced.

Actually, sperm do not disappear from the semen right after vasectomy. There are many sperm stored in the vas deferens tubes above the site of the operation. Some of the sperm leave the tubes with each ejaculation. Therefore, another birth control method must be used for some time after vasectomy. Once the man has had 20 ejaculations after his vasectomy, a sample of his semen should be examined under a microscope to check for remaining sperm. For this test, the man masturbates into a clean glass container and brings the sample to his doctor's office. If the test shows that there are no remaining sperm in the semen, the man can consider himself sterilized and all other birth control methods can be discarded.

Complications of vasectomy

Post-vasectomy discomfort: Some men have bruising and swelling at the site of the operation. If this does not disappear within a few days, the man should return to his doctor. In some cases the wounds become infected and antibiotics are required.

Regrowth of the vas tube(s): In about 1 case out of 100, one or both vas tubes grow back together and the man regains fertility. Such cases are usually detected by the microscopic examination of the man's semen which reveals live sperm, but in some cases the man's reestablished fertility is not realized until

his sexual partner becomes pregnant.

Long term risks: Vasectomy appears to be a simple, harmless operation; however, there has not been a single scientific study to determine whether or not men experience ill effects years after having a vasectomy. Large scale studies, such as those conducted on the birth control pill, are needed to test the safety of vasectomy. Since more than one million vasectomies are performed each year in the U.S. alone, the need for such studies is urgent.

abortion

Abortion is the removal of the fetus from a pregnant woman's uterus at a point early in pregnancy, when the fetus cannot survive on its own. Thus, abortion is the destruction of the fetus early in pregnancy.

No other surgical operation has provoked as much moral, social or legal controversy. People have long disagreed as to whether or not the fetus has a spiritual existence independent of its mother; is the fetus a real, existing "person" or is it only a potential human life without independent existence before birth? If a society accepts that a fetus is an independent person, then the destruction of the fetus by abortion is the same as the murder of an adult; however, if a society accepts that the fetus is not a person until its birth, then the decision to have an abortion should be completely up to the pregnant woman who has the human right to control her own body.

The ancient Greek and Roman philosophers debated the nature of the fetus. Aristotle believed that the fetus becomes "human" 40 days after conception if it is a male and 90 days after conception if it is a female. The ancient Hebrews believed that the fetus does not have a human existence independent of its mother before its birth and that abortion at any stage of pregnancy is permissible if performed to preserve the life or health of the pregnant woman. In contrast, the early Christians condemned abortion. The Christian Council of Elvira in about the year 300 A.D. pronounced that abortion at any stage of pregnancy is a sin and many early Christian writers described abortion as "murder of the innocent". However, later Catholic philosophers such as St. Thomas Aquinas (13th century) believed that the fetus is "infused" with its "soul" after conception, at the point of "quickening", that is, when the fetus first moves within its mother's body (at about the 3rd to 4th month). Most medieval Catholic philosophers believed that abortion was permissible before "quickening", yet this opinion was officially rejected by the Holy Office of Pope Leo XIII in the late 1800s. In a series of Papal decrees, Pope Leo declared any destruction of the fetus sinful, even if performed to save the mother's life.

During the 1800s most countries of the world, in-

cluding Canada and the United States, passed laws making abortion illegal except in cases where the pregnant woman's life was endangered by the pregnancy. Most women who wanted an abortion could not get a legal operation, and many women were forced to resort to illegal doctors and quacks who often performed dangerous and harmful operations.

Through the ages the morality and legality of abortion have been debated by men - philosophers, priests and politicians - who are, by biological fact, not directly effected by the availability of abortion. In the late 1960s women in Canada and the U.S. began to actively reject the dominance by men over the abortion debate. Many women argued that the decision to have an abortion is a personal one: if a woman believes that abortion is immoral, then no one has the right to force her to have this operation; however, women who believe that abortion is an acceptable procedure should have the freedom to have an unwanted pregnancy ended safely and legally. Many women's liberation groups in Canada and the U.S. organized, educated and demonstrated in favour of "free abortion on demand". This slogan means that medically safe, legal, free abortion should be available to any pregnant woman who wants this operation.

The governments of Canada and the U.S. were slow to respond to the growing pressure for abortion law reform. In 1968 the Canadian government passed a minor reform in the Criminal Code, permitting abortion if the pregnant woman's life or health is endangered by the pregnancy. According to this law, which is still in effect, all abortions must be performed in government-recognized hospitals and must be approved by a committee of three hospital doctors. Several states in the U.S. passed similar laws. Hospitals were very conservative in their interpretation of these laws and most women who wanted abortions were not able to get them. Women's liberation groups in many North American cities established illegal abortion referral agencies which directed women to safe, although clandestine, medical operators who would perform abortion for a large fee. Finally, in 1970, the State of New York passed a law that made abortion during the first 24 weeks of pregnancy a matter strictly between the pregnant woman and her doctor. Similar but slightly more restrictive laws were passed in 1970 by three other states, Alaska, Hawaii and Washington.

Abortion became a large scale, money-making business in New York City and women found little sympathy or gentleness in the "abortion mills" which were established to handle the tremendous load. New York had to provide most of the abortion service for the entire United States. In Canada there was, and continues to be, a similar unequal distribution of abortion services. In some large Canadian cities such as Toronto, abortion is quite readily available, while in others such as Montréal where most of the hospitals are Catholic, legal abortion is difficult to obtain. Also, women living in rural Canada, where the closest hospital may be too small to be officially recognized by the government, have great difficulty obtaining a safe, legal abortion.

On January 22, 1973 the U.S. Supreme Court decided that according to all existing U.S. laws and according to the spirit of the U.S. Constitution and its Amend-



ments, the fetus is potential life and not a "person". The Court decided that the fetus does not have a constitutional right to protection against injury. The Court also decided that the Constitution of the United States clearly gives all American women the right to have an abortion: the Court wrote, the "right of privacy... is broad enough to encompass a woman's decision whether or not to terminate her pregnancy." The Court also stated that "the state may properly assert important interests in safeguarding health, in maintaining medical standards, and in protecting potential life"; however, the Court placed restrictions on the States in favour of personal freedom: in the first 3 months of pregnancy a woman may obtain an abortion performed by a licensed doctor without any interference whatsoever from the state. From the 3rd month to the 6th month, the decision to have an abortion is still completely up to the pregnant woman and her doctor; however, because abortion at this later stage of pregnancy is more dangerous, the state may specifically control the conditions under which a late abortion is performed. From the 6th month until the end of pregnancy, the state may, if it wishes, restrict abortion to those cases where the life or health of the mother is in danger. Since all of the pre-existing state laws did not correspond to the Supreme Court decision, all state laws on abortion were unconstitutional as of January 22, 1973. Within a few weeks of the Court decision, abortion became widely available throughout the United States.

The Supreme Court decision did not eliminate all problems relating to abortion in the U.S. Abortion is still a costly operation and poor women have more difficulty obtaining the operation than do rich women. Abortion will not be available equally to all American women until all medical services are covered by a national health insurance plan similar to existing medicare programs in Canada and many other countries.

Canadian women are still awaiting an abortion law reform or repeal similar to what has occurred in the U.S. The Canadian law is being challenged in the courts by the case of Dr. Henry Morgentaler who has been charged with performing illegal abortions in his clinic in Montréal. Dr. Morgentaler, a well-known Canadian doctor and a leading advocate for abortion law repeal, has stated publicly that he performs safe abortions in his clinic. In contrast to government allegations, Dr. Morgentaler has stated that the operations he performs are legal within the spirit of the Canadian law. Canadian women's liberation groups and many other concerned Canadians and Québécois are strongly supporting Dr. Morgentaler's case in the courts.

We believe that abortion should be a strictly personal matter. A pregnant woman has the right to decide for herself whether or not to have an abortion because she has the unquestionable human right to control her own body. A pregnant woman has the right to obtain support and advice from trusted individuals such as husband or lover, parents, doctor or priest; but the final decision about abortion must remain up to the woman herself. Pregnant women who want an abortion should not be subjected to any interference from the State, Church or any other self-appointed guardian of public morality. Pregnant women have the right to easy access to

qualified doctors who are expert at performing abortion. Abortions, like all medical services, must be equally available to all women regardless of their ability to pay.

Abortion is the destruction of potential human life and as such, it presents an emotional challenge for any pregnant woman. The prevention of pregnancy is always preferable to the interruption of pregnancy. Abortion should be avoided as much as possible.

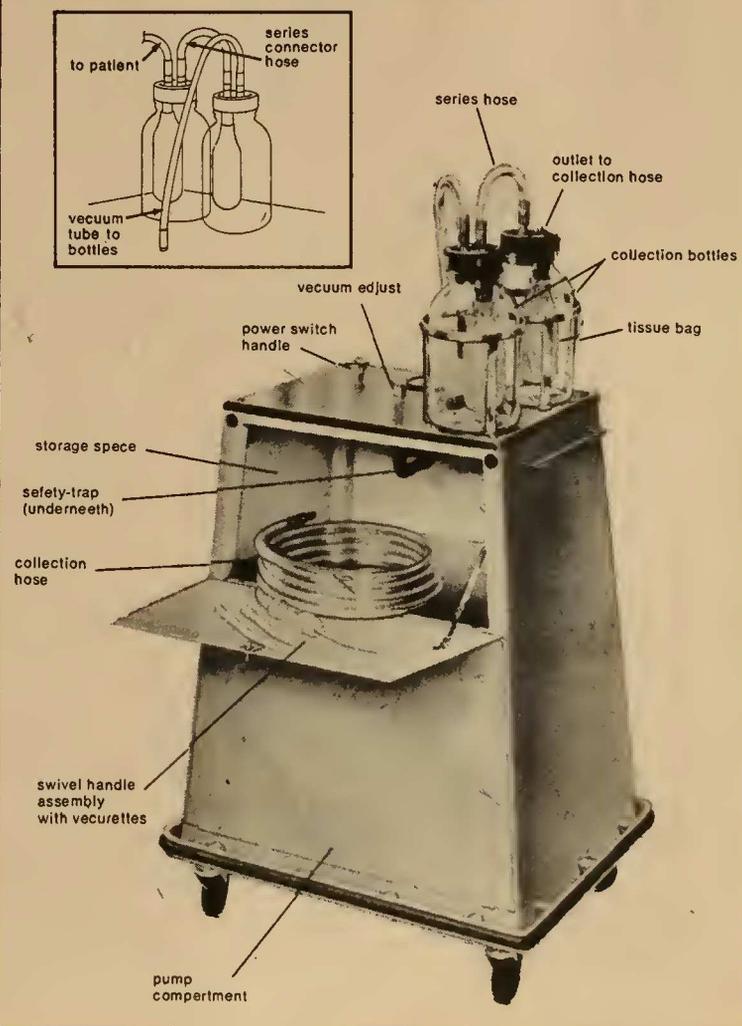
Methods of abortion

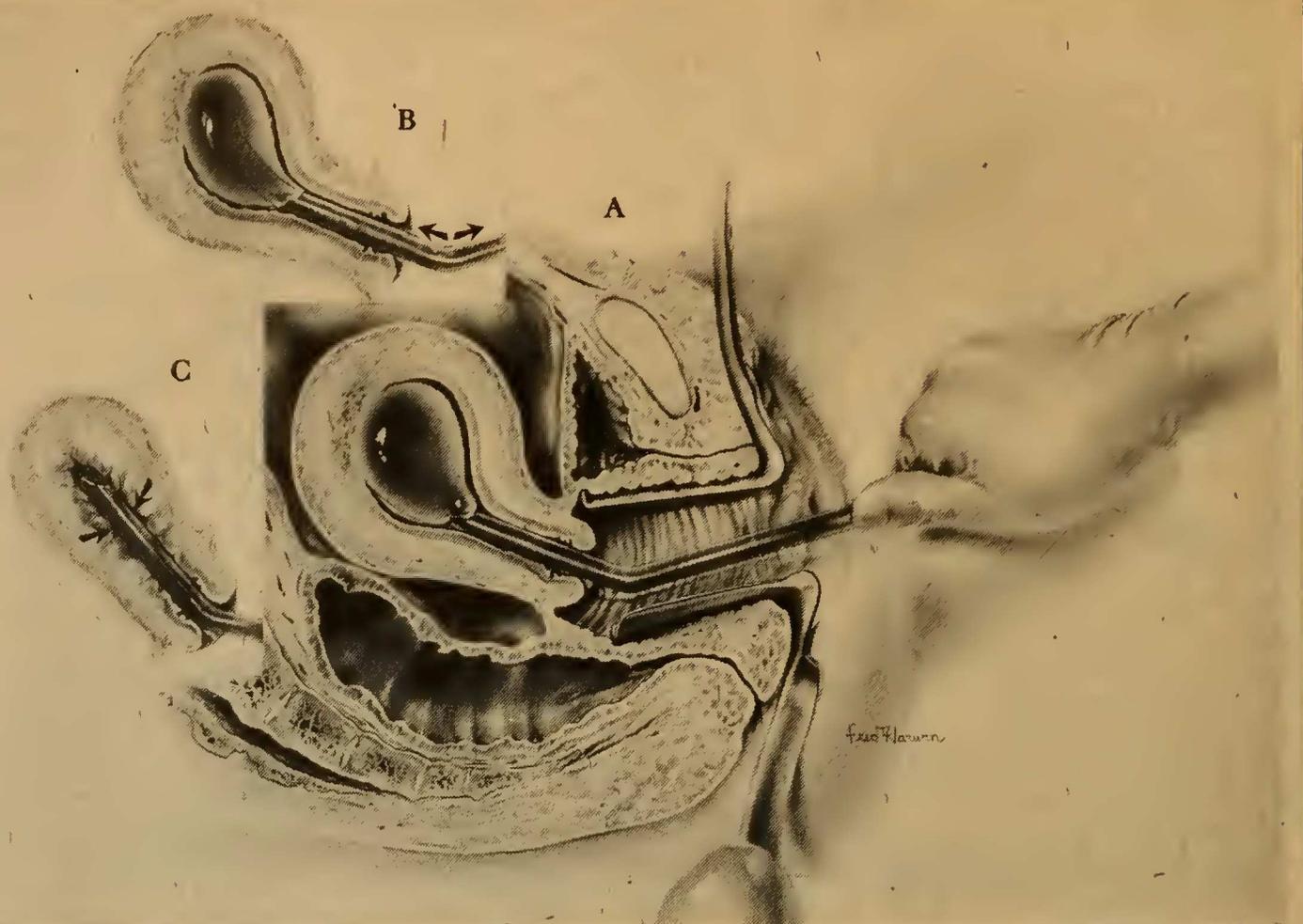
There are several different medical methods of abortion. The choice of which method to use is determined mainly by the length of the pregnancy that is to be interrupted.

Suction abortion

Suction abortion, also called vacuum curettage, is a simple technique for sucking the fetus out of the uterus through a narrow tube which is inserted into the cavity of the uterus through the cervix. Suction abortion can be performed quickly and easily, with little blood loss and a very low risk of complications. It can be performed in an outpatient clinic since the full facilities of a hospital operating room are not needed.

Operating unit for vacuum curettage.





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.

Originally developed in China in 1958, suction abortion has since replaced the older method of dilatation and curettage for abortions performed up to the 12th week of pregnancy, and has become the most widely used method of abortion.

Very little special preparation is needed for suction abortion. The woman must have her blood type determined. To prevent vomiting, the woman should not eat for three hours before the operation. The woman should bathe the day of the operation. Shaving the pubic hair is not necessary.

Before beginning the abortion the doctor should perform an internal gynecological examination to determine the size and position of the uterus. As the fetus grows, the uterus becomes progressively larger and softer. An experienced doctor can determine the age of the pregnancy by determining the size of the uterus. Once the woman has been pregnant for more than 12 weeks, the fetus becomes too large and the uterus becomes too soft for suction abortion to be performed safely. In most cases, suction abortion should not be performed after the 12th week of pregnancy.

Having performed the internal examination, the doctor inserts a speculum into the woman's vagina. The speculum is an instrument that holds the vaginal walls apart so that the doctor can see the cervix (opening of the uterus).

If the operation is performed gently, a local anesthetic ("freezing") is enough to prevent pain. The technique of local anesthetic commonly used for abor-

tion is called the paracervical block which "blocks" pain coming from the cervical canal and uterus. To establish the "block" the doctor injects a small amount of an anesthetic drug into the back walls of the vagina, next to the cervix. The injections themselves are not painful since the deep end of the vagina has few nerve endings. Some doctors also give their patient a small amount of nitrous oxide gas ("laughing gas") which has harmless, temporary and pleasant effects. In almost all cases of suction abortion performed early in pregnancy, local anesthetic is sufficient and general anesthetic should not be used. In contrast to local anesthetic which is quite harmless, general anesthetic can have side effects which are considerably more dangerous than the abortion itself.

Once the local anesthetic drug is injected, the cervical canal is dilated (widened) so that surgical instruments can be passed through the cervical canal and into the uterus. To dilate the cervical canal the doctor inserts a series of increasingly larger polished metal rods into the canal. The first rod is about the width of a soda straw and the last rod is about the width of a finger. The canal becomes a little wider as each rod is inserted and removed. The muscles around the cervical canal stretch more easily in women who have had children. Although the local anesthetic prevents severe pain, some women, especially those who have never given birth, experience menstrual-like cramps during dilatation of the cervical canal.

Once the cervical canal is dilated, the doctor inserts a suction curette into the uterus until it touches the fetus. The suction curette is a rigid, hollow, plastic tube 8 mm (about 1/3 of an inch) wide, which is connected by transparent plastic tubing to a vacuum bottle. (There is also a narrower, flexible suction curette which can be used for very early abortions, up to the 9th week of pregnancy). With the suction curette within the cavity of the uterus, the vacuum pressure is turned on for 20 to 40 seconds. This breaks up the fetus and pulls it into the vacuum bottle. Once the uterus is emptied, the doctor inserts a small spoon-like instrument called a curette, and gently scrapes the inner lining of the uterus to make sure that none of the fetus or placenta ("afterbirth") is left behind. This scraping is the same as in a dilatation and curettage operation (D and C).

The whole suction abortion takes 5 to 10 minutes. The woman should rest for 15 to 30 minutes after the operation. The woman should get up slowly from the operating table, to prevent fainting. Recuperation after suction abortion is rapid. Although most women have menstrual-like cramps after the operation, these cramps are usually not severe and can be controlled with pain killers such as aspirin with codeine. The woman should take it easy for a day or two after the abortion.

After an abortion a woman will have menstrual-like bleeding for a day to a week. The woman may use either pads or tampons to absorb the flow. Some doctors forbid the use of tampons immediately after abortion, claiming that they can cause infection in the immediate post-abortion period; however, there is no evidence to show that tampons can cause infection.

Ovulation (release of an egg from an ovary) usually occurs 10 to 35 days after abortion. The first menstrual period usually begins 3 to 6 weeks after abortion. The woman should consider herself fertile immediately after the operation and she should start using a birth control method if she plans to have sexual intercourse. If the woman wants to start using the birth control pill, she can take the first pill of a package within 5 days of the abortion; if more than 5 days go by after the operation, the woman must wait until her first normal period before starting the Pill. If the woman wants to use an IUD, she must wait for at least 8 weeks before having the device inserted since IUD insertion too soon after abortion can cause infection and other complications.

After suction abortion, a woman can have sexual intercourse as soon as she likes. A woman must not douche after an abortion. The cervix remains slightly dilated for several days and a douche can force water and air into the uterine cavity; this can cause complications. The woman can take a tub bath, or shower which does not force fluid into the vagina or uterus.

Some doctors give antibiotics such as penicillin to all women who have an abortion in an attempt to prevent post-abortion infections; such routine use of antibiotics is neither effective nor wise. Antibiotics work best when used to cure an existing infection; however, antibiotics are not good at preventing infections. When suction abortion is properly performed, infection is an uncommon complication.

Abortion for women who have Rh negative blood

Blood is not exactly the same in every human being. Human blood can be classified into different types, according to the exact chemical make-up of the surface of the red blood cells. Two important classification systems for human blood are the ABO and the Rh systems. According to the ABO system, a person's blood is type A, B, AB or O; according to the Rh system, a person's blood is either Rh positive or Rh negative. Most people are Rh positive: 13% to 17% of white people and about 5% of black people are Rh negative. Blood type, like other body characteristics such as eye or hair colour, is inherited in a complicated way from a person's mother and father.

An Rh positive woman can have either an Rh positive or an Rh negative fetus, and an Rh negative woman can have an Rh positive or negative fetus. During every pregnancy and delivery, a few of the red blood cells from the fetus enter the mother's blood circulation. If both mother and fetus have the same Rh blood type, there is no problem; also, the entry of blood from an Rh negative fetus into an Rh positive woman does not cause any problem; however, the entry of blood from an Rh positive fetus into an Rh negative mother causes the woman's blood to develop "antibodies" against Rh positive blood. These antibodies, circulating in the woman's blood, are chemicals which can attack and destroy Rh positive blood. Such antibodies do not develop before the end of the first Rh positive pregnancy and therefore, the first Rh positive baby that an Rh negative woman has is not affected by the antibodies; but the second and every other Rh positive baby that the Rh negative woman has may be attacked and even killed by the antibodies in the mother's blood.

A special blood product called **Rh immune globulin** can be injected into an Rh negative woman after pregnancy to prevent her from developing antibodies against Rh positive blood. All Rh negative women should receive this drug after every pregnancy in which the baby is Rh positive. Since the blood type of an aborted fetus cannot be determined easily, **all Rh negative women who have an abortion should receive Rh immune globulin.**

In the United States, Rh immune globulin is manufactured and sold by Ortho Pharmaceuticals Inc. and other private drug companies under Ortho's license. Ortho charges about \$40.00 for one injection's worth of the drug. Many clinics and private doctors charge women undergoing abortion as much as \$75.00 for the same drug. In Canada, Rh immune globulin is manufactured by a nationalized drug company for about \$3.00 per injection and is provided to patients for free by the Canadian Red Cross.

Complications of suction abortion

Suction abortion is one of the safest of all surgical operations. It is considerably safer than normal childbirth; however, suction abortion occasionally does cause complications.

Post-abortion pain: Most women experience some discomfort and menstrual-like cramping after abortion. Normally, such cramps are not severe and disappear within several hours. If the pain is severe it

should be reported to the doctor who performed the operation.

Infection: In about 15 cases out of every 1000 abortions, an infection of the uterus and fallopian tubes develops soon after the operation. The symptoms of such an infection are fever, lower abdominal pain and possibly nausea and vomiting. If a woman develops such symptoms after having an abortion, she should see a doctor immediately. Post-abortion infections are usually cured easily with antibiotics.

Perforation of the uterus: In about 1 to 2 cases in 1000 abortions, the doctor accidentally pushes one of the surgical instruments right through the wall of the uterus. This can injure the abdominal organs such as the intestines or tear blood vessels, causing internal bleeding. In about half of the cases of perforation, an abdominal operation is necessary to repair the damage and stop the bleeding.

Incomplete abortion: In about 3 to 4 cases out of 1000, the operation is not complete and small parts of the fetus or placenta ("afterbirth") are left behind. This causes continuous bleeding and cramping. In such cases the suction operation is repeated.

Heavy bleeding: In about 2 to 10 cases out of 1000 abortions, the woman bleeds heavily from her uterus after the operation. In some cases blood transfusions are necessary.

Death: In extremely rare cases, one of the above complications causes death after suction abortion. In New York City between July 1970 and July 1972 there were 4 deaths out of 261,700 suction abortions, that is, a death rate of 1.5 per 100,000 abortions. In contrast, childbirth causes the death of the mother in about 23 cases out of 100,000 pregnancies.

Dilatation and curettage (D and C)

Before the development of suction abortion, dilatation and curettage was the standard method of abortion in early pregnancy. The D and C is still used for the diagnosis and treatment of diseases of the inner lining of the uterus.

To perform a D and C the doctor first dilates the cervical canal and then inserts a curette into the cavity of the uterus. The curette is a long surgical instrument with a spoon-like tip. Using the curette, the doctor scrapes loose the fetus and placenta and removes the fragments with forceps.

The D and C abortion is more difficult to perform, takes longer, is more painful and is considerably more dangerous than suction abortion. The D and C should no longer be used for early abortion.

Saline abortion

After the 12th or 13th week of pregnancy, the fetus is too large to be removed safely by suction abortion. The safest way to perform a late abortion is to stimulate the uterus to push the fetus out, that is, to stimulate a miscarriage. If a fetus dies, the uterus contracts and forces it out. It is possible to stimulate a miscarriage by killing the fetus within the uterus. In the saline method of abortion, the fetus is killed by an injection of a concentrated salt solution.

A local anesthetic ("freezing") is injected into a small area of skin on the lower abdomen several inches

below the navel. A long needle is inserted through the abdominal and uterine walls, into the cavity of the uterus. The fetus is surrounded by a protective sac called the amniotic sac which is full of fluid. When the needle is in the right place in the uterine cavity, the amniotic fluid can be withdrawn through the needle. About 50 ml (about 2 fluid ounces) of amniotic fluid is withdrawn and about 200 ml of concentrated salt solution (saline) is injected into the amniotic sac. This procedure must be performed slowly and carefully. A misdirected injection of the salt solution into the woman's bloodstream instead of into the amniotic sac of the fetus can seriously harm the woman. If the salt solution is accidentally injected into the woman's bloodstream, it immediately causes symptoms of tingling, numbness, headache, pain and faintness. If such symptoms develop, the injection is stopped immediately, thus preventing serious harm to the woman.

The salt solution kills the fetus and stops production of pregnancy-supporting hormones. Contractions of the uterus usually begin 6 to 48 hours after the injection. The cervical canal gradually dilates open. Eventually the amniotic sac breaks open, releasing the salty fluid out through the vagina. The uterine contractions become harder and occur closer together until the fetus is pushed out of the uterus and through the vagina. In most cases the woman is given injections or pills of pain-killing drugs to reduce the pain of the uterine contractions. In some hospitals the woman is taken to an operating room when the fetus is coming out of the vagina; however, in most hospitals the woman miscarries in her bed and the dead fetus is taken away as soon as it is out of the woman's vagina. In 25% to 50% of cases the placenta ("afterbirth") does not come out of the uterus by itself and has to be removed by a gentle tug on the umbilical cord of the dead fetus. In about 10% of cases a vacuum curettage or a D and C has to be performed to remove parts of the placenta which are stuck within the uterus.

Throughout the saline abortion procedure the woman must remain in the hospital. Some hospitals have discharged women after they have received the salt injection, with instructions to return to hospital when uterine contractions begin. This is extremely dangerous for during the time between the injection and the beginning of uterine contractions, complications can develop which require immediate in-hospital attention. Women who are having saline abortion should refuse to leave the hospital before the entire operation is completed.

After saline abortion the woman will have menstrual-like bleeding and cramps for several days. Care after saline abortion is similar to that after suction abortion, although greater caution is the rule. Douching is forbidden and it is best not to have sexual intercourse until the menstrual-like bleeding has stopped. Symptoms such as severe menstrual cramps or lower abdominal pain, fever, heavy bleeding, nausea or vomiting should be reported immediately to the doctor who performed the abortion.

Because of possible complications related to the use of the concentrated salt solution, women who have severe high blood pressure or severe heart or kidney disease, must not have a saline abortion.

Complications of saline abortion

The risks of saline abortion are about as high as the risks of normal childbirth. The safety of the saline abortion is greatly affected by the skill of the doctor and by the conditions of the hospital. Saline abortion is a significant surgical procedure and must be carried out with great caution.

Complications after saline abortion include infection, incomplete abortion with some of the placenta remaining within the uterus, heavy blood loss from the uterus, injuries to the uterus which sometimes occur during miscarriage, and whole-body complications such as blood clotting problems. In most cases, such complications are detected and cured easily while the woman is still in hospital. Antibiotic drugs and blood transfusions are sometimes required.

In rare cases, complications after saline abortion kill the woman. In New York City between July 1970 and July 1972 there were 10 deaths out of 53,300 saline abortions, that is, a death rate of about 19 per 100,000 saline abortions. In comparison, normal pregnancy and delivery is the cause of death in about 23 cases out of 100,000 pregnancies.

For the woman's safety, abortions should be performed before the 12th week of pregnancy so that suction abortion can be used and saline abortion avoided. The similarity of the salt-induced miscarriage to normal childbirth makes the saline abortion an unpleasant experience both for the pregnant woman and the medical personnel taking care of her. The medical profession has the responsibility to make early abortion easily available to any woman who wants the operation so that the saline abortion becomes a rarely needed procedure.

Hysterotomy

Hysterotomy is similar to a cesarean section delivery and involves major surgery with a hospital stay of about one week. An incision is made in the abdominal wall just above the pubic bone and a second incision is made in the uterine wall. The fetus and placenta are removed and both incisions are sewed closed. Hysterotomy is sometimes necessary when an injection of salt solution fails to start a miscarriage; otherwise, hysterotomy must not be used.

Prostaglandins

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

Two kinds of prostaglandins, E2 and F2-alpha, are being used experimentally to stimulate miscarriage. The prostaglandin can be given to the pregnant woman by mouth, by injection into the bloodstream or by injection into the cavity of the uterus. The prostaglandin causes miscarriage in most cases; however, unpleasant side effects of nausea, vomiting and diarrhea often occur. Side effects are more common with the high dosages necessary when the drug is given by mouth or by injection into the blood. More favourable results with fewer side effects have been obtained with the direct application of prostaglandins into the uterus. When perfected, prostaglandins may replace the saline method for abortions past the 12th week of pregnancy.



