PHYSIOLOGY

Test Contraceptive Pill

A PILL TO HELP control the population boom has been successfully tested.

Some 830 women in Puerto Rico and Haiti took part in the testing of the pill, an oral contraceptive that inhibits ovulation. No harmful effects on general health, the reproductive tract, fertility or sex life were reported.

There was 96% reduction in the pretreatment rate of pregnancies, a team of researchers reports in *Science* (July 10).

"Side reactions" such as nausea, headache, dizziness and vomiting similar to those found in early pregnancy were reported by some of the women. While these reactions accounted for about 30% of those who withdrew from the program, the researchers say a "sugar pill" or an antacid will relieve up to 90% of the symptoms.

There was a close relationship between the number of daily pills missed and the 16 certain and one probable pregnancies reported. Five women became pregnant after missing one to five pills; 11 became pregnant with six to 19 pills missed.

"It is clear that if the regimen is followed faithfully practically 100% contraception occurs," the scientists conclude.

There is some evidence, they say, that the daily dose of steroid, a tablet containing ten milligrams of norethynodrel plus 0.15 milligrams of ethinyl estradiol 3-methyl ether, may be reduced. No conceptions occurred when the dosage was halved. The pill is taken daily from the fifth through the 24th day of the menstrual cycle.

No impairment of fertility followed long-term use of the pill compared with short-term users. The pill has been studied for more than 18 months.

Several factors influence acceptability of this method of birth control, the researchers explain. The woman's motivation and economic situation are important influences, among others. For example, the fewest withdrawals, less than one percent, were found in a stable group of very poor women—no moving to other places and no improvement in economic conditions.

Drs. Gregory Pincus, Celso R. Garcia, John Rock, Manuel Paniagua, Adaline Pendleton, Felix Laraque, Rene Nicolas, Raymond Borno, and Vergniaud Pean report the results of the study. They are affiliated with the Worcester Foundation for Experimental Biology, Shrewsbury, Mass., the Reproductive Study Center, Brookline, Mass., the Family Planning Association of Puerto Rico, Rio Piedras, the Ryder Memorial Hospital, Humacao, P.R., and the ad hoc Research Group at Port-au-Prince, Haiti.

Science News Letter, July 25, 1959

AERODYNAMICS

Follow Baseball's Path

AN ORDINARY BASEBALL, often described as the world's most popular unguided missile, is subject to many of the factors that work on a ballistic missile.

For example, cold, dry air and increasing barometric pressure can rob long ball hitters of home runs. This happens, Dr. W. Milton Swanson of Case Institute of Technology reported, because the air is more dense on a cold, dry day than on a hot humid day.

Under otherwise identical conditions, this difference in air density alone can result in a discrepancy of 10 to 20 feet in a ball hit 400 feet.

This means that pitchers have an advantage over batters in the cool days of early spring and towards the end of the season. Batting averages should rise, on the other hand, during the hot humid days of midsummer. At that time, because of the less dense air, the pitcher has less control of the baseball.

Weight also affects a soaring baseball just as it affects any other ballistic missile, Dr. Swanson, who is assistant professor of mechanical engineering at Case, reported.

A baseball's weight causes a natural drop in its flight of three to four feet as it travels the 60 and one-half feet from the pitcher's mound to home plate at gametime speeds of 70 to 90 miles an hour. This difference is partly compensated for by placing the mound three or four feet higher than the bottom of the strike zone at home plate.

Depending on the direction of spin that it is given, a baseball can curve five to eight inches in any direction. Most pitchers can give a ball a rotation of some 1,200 to 1,800 revolutions per minute.

This spinning effect produces a strong force that causes the ball to veer off its normal path in the general direction of the rotation of the ball. When a ball rotates in a stream of air, the air moves faster over one side of the ball than over the other. Because the pressure of air is less where it moves faster, the ball is then moved in the direction of the lesser pressure.

Scientists are still not sure whether or not a curve ball can "break," Dr. Swanson said. A good deal of what appears to be a "break" may simply be due to an optical illusion similar to that seen when watching an approaching train. In the distance the train seems to be moving at a relatively slow speed as it approaches. But the closer it comes, the greater its speed appears.

During the last half of the ¾ of a second a curve ball is in the air from the pitcher's mound to the plate the path deviation is twice as much as it is during the first half. Thus, if the ball actually curves seven and a half inches during its entire flight, it will curve five inches during the last half of its trip to the plate.

The last half of this flight takes ⅜ of a second, a time span to which human reflexes are normally keyed. Therefore, a batter needs very good reflexes to be able to hit a curve ball at all. If he misjudges the flight of the ball by an inch or so, he will hit an easy pop fly or a grounder.

A knuckle ball does not rotate much and can move up and down and from side to side in a confusing manner. This erratic movement, Dr. Swanson said, is caused by the irregular pattern of seams on the non-rotating baseball.

Science News Letter, July 25, 1959

BIOCHEMISTRY

Fresh Vegetables Suffer From "Discomfort Index"

WHEN THE TEMPERATURE goes up and the humidity goes down, chances are your vitamin C intake will go down, too.

Fresh vegetables such as cabbage, spinach, snap beans and kale, provide much of city dwellers' intake of this vitamin. However, vitamin C is lost rapidly when the vegetables wilt.

Vegetables that lose moisture readily and wilt appreciably tend to be affected more by humidity and to lose vitamin C more rapidly than resistant vegetables.

Even those that wilt most easily are affected much less by humidity than by temperature. Cabbage loses less vitamin C and moisture than either spinach, collards, turnip greens or rape. Also low temperature seems to affect loss of the vitamin in snap beans more than wilting conditions. Chilling injury may cause this.

Studies with the fresh vegetables are reported in the *Journal of Agricultural and Food Chemistry* (July) by Boyce D. Ezell and Marguerite S. Wilcox of the U. S. Department of Agriculture's marketing service.

Science News Letter, July 25, 1959

CONSERVATION

Playing With Matches Causes $380,000 Fire

A CHILD PLAYING with matches in a camp ground recreation area started a $380,000 blaze in one of California's tinder box forests.

Ground tankers, bull dozers, air tankers dropping fire retardants and helicopters to ferry in fire fighters and some 1,050 men were needed to put out the fire. It was finally controlled after five days.

This Cold Creek fire was a "pretty good sized one," Guy Johnson of the U. S. Forest Service said. Some 11,000 acres were burned with a loss of 38,000,000 board feet of timber.

California's fire season is one month ahead of normal in numbers of fires this year, even though we are just getting into the dry season, Mr. Johnson said. The problem is most serious in California, Nevada and Utah where lack of rain has increased fire danger.

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