

## MEDICINE

## Sell Birth Control Pill

Chemicals now on the market or available soon can be used as pills for birth control, although they are too experimental and expensive to be considered "the" pill.

► A MEDICINE already on the market and another expected soon can be used as pills for birth control and will also in some cases help childless women become pregnant when they stop taking the medicine.

The two-way results with the medicines are reported in *Science* (Nov. 2).

The scientific report calls the medicines 19-nor steroids and refers to results with Compounds I, II and III. Compound III is the one already on the market, under the name of Nilevar. It is sold as an anabolic agent, meaning a tissue-building agent, for burns, injuries, before and after operations, and some other conditions in which tissue building would be desirable.

Clue to its effect on the female reproductive system is the statement that withdrawal bleeding may come when the medicine is stopped.

This and the other two compounds, all 19-nor steroids, are synthetic chemicals related to the female hormone, progesterone.

They are not considered "the" birth control pill, but are believed by scientists working with them to be nearer to that than anything else ever has been.

Before they can be considered "the" pill, scientists must have experience with longer use of them, the effects on the egg cells in the ovary and other long-term effects on the female reproductive tract.

Cost is another matter to be considered. At present the one on the market sells on prescription for about 60 cents a pill. One would have to be taken every day for 20 days each month. From the standpoint of its use as a contraceptive in over-populated areas of the world, this cost would seem prohibitive.

The compounds achieve their birth control effect by stopping ovulation, that is, production and release of the egg cell from the ovary. The effect, however, is only temporary. It does not continue after the woman stops taking the pills.

Signs that the pills helped fertility came when 50 women who had been unable to have children were given them. Within five months of the last treated cycle, seven of the women became pregnant. Of these, five had tried unsuccessfully for three to six years to have children. Why the pills had this effect is not known.

The report on animal studies with the compounds is from Drs. Gregory Pincus, M. C. Chang, E. S. E. Hafez, M. X. Zarrow and Anne Merrill of the Worcester Foundation for Experimental Biology, Shrewsbury, Mass. That on trials in women is from Dr. Pincus, and Drs. John Rock and Celso Ramon Garcia of the Free Hospital for Women, Brookline, Mass.

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**STUDY REACTOR STRESSES** — *This glowing model enables scientists at Westinghouse Research Laboratories to study the stresses deep inside the pressure vessel of a full-scale nuclear reactor. The exact-scale model is made of a special plastic into which the simulated stresses are "frozen," then examined under polarized light in thin sections.*

## ENGINEERING

## Computer Tested by Geological Survey

► THE FIRST ENGINEERING model of a computer that will automatically process vital streamflow information is being tested by the U. S. Geological Survey.

Called SURWAC, the Surface Water Automatic Computer is an important step toward automatic processing of records from approximately 7,000 streamflow gaging stations in the United States and its possessions.

The instrument will keep track of streamflow on all the nation's principal rivers as well as on typical smaller streams in most watersheds. The daily figures will be used to analyze flood frequencies, low flow durations and average flows, and to compare flows of nearby rivers.

This information is necessary in flood control, irrigation, city water supply projects, and bridge and highway construction.

SURWAC is expected to free professional men for other analytical and research work but, until the machine is fully operational, about 250 employees will be required.

The instrument is a special-purpose, data-processing machine rather than a giant "brain" type of computer. It will scan gage-height charts photoelectrically, add up the values of 100 daily readings, divide the sum by 100 and punch out on tape the daily mean gage height.

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## PHYSICS

## Test Einstein's Relativity

► AN ARTIFICIAL EARTH SATELLITE could be used to test Einstein's general theory of relativity.

Dr. S. F. Singer, University of Maryland physics professor, proposes putting an atomic clock, which runs on the billions of vibrations made each second by atoms, in an earth-circling satellite, then comparing its rate of ticking with that of an earth-bound atomic clock.

Einstein's concept of general relativity brought a revolutionary change in people's ideas about the world. He showed that time and space were not separate, but joined in a framework, and this mesh of space and time is warped by mass.

Dr. Singer's idea is to discover whether a clock in an object whirling freely around the earth would show any changes in rate.

Atomic clocks using cesium atoms are considerably more accurate than one second in a billion. If the number of times the satellite's atomic clock ticked were counted and transmitted to earth every 30 hours

for a week or more, any change in rate resulting from Einstein's general theory of relativity could be detected.

There are "very strong" arguments for additional tests of this theory, Dr. Singer said. It can now be verified only by certain astronomical measurements: a change in Mercury's orbital path that amounts to a very small amount over a century, the deflection of light rays by gravity, and the gravitational displacement of spectral lines.

With respect to an earth clock, a satellite clock should tick more slowly when it is circling at low altitudes. If the satellite circled at a distance of one-half the earth's radius, or 2,000 miles, clocks in it and on the earth should tick at the same rate.

At higher altitudes, Dr. Singer calculates, the satellite clock should tick faster than the earth clock.

An elliptical, or elongated, orbit would have certain advantages over a circular path for the satellite in showing the rate change.

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