cy, public or private, has been able to fill. Most contraceptive development is conducted by private industry and is necessarily product- and profit-oriented, Corfman says, whereas fully effective family planning programs are likely to require a variety of low-cost contraceptive methods, some of which may involve no product at all. The Population Council, the agency largely responsible for bringing the intrauterine device (IUD) into widespread use, is not concerned with profits and is continuing important work in contraceptive development; but, though it supports some fundamental research, the council must devote its limited resources primarily to research offering promise of early application, Corfman says. Accordingly, he adds, his center, uninfluenced by considerations of profit and drawing on the financial resources of the federal government, can contribute significantly by pursuing all promising ideas, from the most basic animal investigations on through the development of a contraceptive method or product (awarding contracts to industry for this final stage of the work).

"There is a great deal of information of a fundamental nature which must be obtained," Corfman says. "For instance, the hormonal relationships which control the normal menstrual cycle are incompletely understood. This is astounding considering that oral contraceptives currently in use by over 8 million American women work by interfering with this process." In his view, however, the field of reproductive biology has progressed sufficiently in recent years to lend itself to organized programs of research directed at the development of new contraceptive methods.

The center has identified four aspects of the reproductive process which it will investigate, though the areas of investigation are expected to change as research progresses, new insights are gained, and new ideas are presented. As described by Corfman, the four areas of research are as follows.

1) Maturation and fertilization of spermatozoa. The goal of this inquiry is the development of modern contraceptives administered to men or women which alter normal sperm development in the male reproductive tract or in the uterus of the female. This latter process, termed capacitation, is known to occur in certain animals and is the poorly understood obligatory change which occurs in sperm exposed to uterine fluids, making them capable of fertilizing the ovum. It is not known with certainty if this process occurs in primates, but, if it does, agents interfering with it may provide new methods of contraception.

2) Oviduct function and gamete transport. Important early events in the reproductive process, such as sperm penetration of the ovum, occur in the oviduct. For example, the oviduct has some differential effect on the sperm and ovum, which permits sperm to ascend the tube and ova to descend. It seems likely that means can be developed to interfere with the ductal musculature, the cilia which line the tube, or the normal composition of ductal fluid and thus prevent fertilization from occurring.

3) Corpus luteum function and implantation. The corpus luteum is a progesterone-producing structure which forms on the ovary shortly after fertilization and, in a number of animals, is known to be essential to the continuation of the reproductive process. There are now leads to several means of interrupting the function of the corpus luteum, either through the use of normally occurring leuteolytic agents derived from the uterus of certain animals or through the use of antiprogestational agents and other drugs. This approach is particularly attractive to organizers of family planning programs since it would require a woman to take a pill only once a month, at the time of her expected period.

4) The biology of the pre-implantation ovum. The fertilized ovum remains free in the uterine cavity for several days before it lodges in the wall of the uterus, and it seems particularly susceptible to treatment during this period. One method may be to interfere with the means by which this structure, the blastocyst, escapes from its surrounding membrane, the zona pellucida, which in many species is composed of highly polymerized neutral or weakly acid mucoproteins.

If a simple and reliable means of detecting ovulation were found, couples could practice periodic abstinence—thus following the rhythm method, the one contraceptive practice acceptable to the Catholic Church. The center believes, however, that much fundamental research will be necessary before progress in discovering such a method becomes possible. Though research in this area is not now being emphasized, the center indicates that, if promising new leads should develop, it will follow them up.

In the field of the behavioral sciences, the center also has selected four research areas in which it expects to concentrate its efforts. It will investigate contraceptive practices (for example, how many American women are using the pill? the IUD?) and fertility trends. It will also examine the processes and consequences of population change, investigating the social costs (overburdened schools, high unemployment among young people, and housing and city planning problems, to name a few) associated with inflated fertility trends such as the postwar "baby boom" in the United States.

Another area of investigation is that of the effects on fertility of family structure and patterns of sexual behavior. For instance, does the high U.S. divorce rate lead to greater fertility or to less? In other words, do divorced women usually remarry, and do those that do tend to have more or fewer children than women who marry and are never divorced?

Finally, the center plans to investigate the effects of government policies which, explicitly or implicitly, may encourage families to have more or fewer children. For example, does the $600-per-person exemption allowed under the federal income tax law have any effect on family size? What effect does the aid-to-dependent-children program have? And what new incentives or sanctions would lead families to have fewer children?—LUTHER J. CARTER

APPOINTMENTS

H. W. Riecken

B. H. Ketchum

Henry W. Riecken, vice president of the Social Sciences Research Council and head of the council's Washington office, to president of the council. . . . **Bostwick H. Ketchum**, associate director of the Woods Hole Oceanographic Institution, will take a year's leave of absence to become head of the Environmental and Systematic Biology Section, Division of Biological and Medical Sciences of the National Science Foundation; also at NSF, **Richard F. Johnston**, professor of zoology and curator of birds in the Museum of Natural History of the University of Kansas, will take a year's leave of absence to become program director of the Systematic Biology Program in the Environmental and Systematic Biology Section. . . . **John F. O'Leary**, chief of the Bureau of Natural Gas of the Federal Power Commission and former deputy assistant secretary of mineral resources of the Department of the Interior, to director of the Federal Bureau of Mines in the Interior Department.