

## New hope for infertile couples

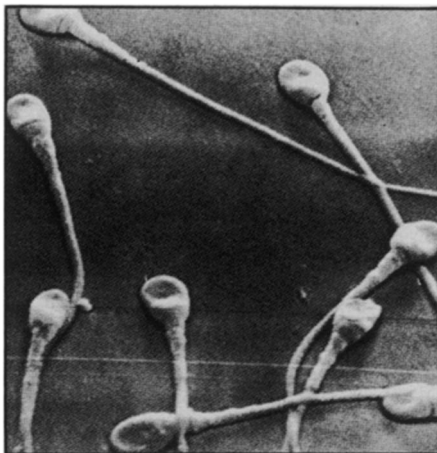
The process of human reproduction could be the most natural, basic and primeval drive in the species, but one-fifth of all couples who try to reproduce are not successful at it. Artificial insemination has helped some of these couples but its success has been limited; artificially depositing enough viable sperm in the uterus is difficult. A few of the side effects common in the past that have kept artificial insemination from being the panacea for unsuccessful but willing potential parents, are cramping and nausea in the woman because semen is rich in prostaglandins and because far more semen is deposited in the uterus artificially than through intercourse. Uterine infections due to bacteria in the artificially deposited semen have also been a problem.

Now artificial insemination for infertile couples promises to be more effective and safer than before and also totally painless, thanks to a technique devised two years ago in the test tube—culling the strongest, most viable sperm from semen—and using these sperm only for insemination.

The principal investigator, then of the A.G. Schering Co. in Berlin, and now of Gametrics Ltd. in Sausalito, Calif., is Ronald J. Ericsson. He is training physicians and medical technologists throughout the United States and in other countries in how to perform the technique for artificial insemination. The technique has already been used for artificial insemination in a handful of cases and has led to pregnancy. Ericsson will also market the technique to any interested physicians 18 months from now. He estimates that the technique should be able to induce conception in about one-fourth of all infertile couples.

Aside from helping couples with fertility problems, the technique will undoubtedly have several other profound effects on society. For one, it separates out only sperm that are the strongest swimmers, and these sperm happen to be those carrying the Y chromosome. That means that any babies conceived with the technique will be male. As a result, couples who have no fertility problem but who simply want a boy may also request the technique. (Ericsson is not trying to discriminate against girl babies, he simply has not yet figured out how to cull sperm carrying the X chromosome.) And then, because the technique selects only the strongest, most genetically fit Y sperm in semen, it will give nature a boost in choosing the most fit sperm to conceive. In other words, it should help reduce genetic defects, an effect that will please many people, but disturb others because of its eugenic connotations.

In the technique that Ericsson and his colleagues devised two years ago, sperm



Fast-moving Y sperm: Selectively sorted.

are spun out of a semen sample and placed in a special solution. This solution is dense and resists sperm swimming in it. Y sperm, those that confer the male sex on the eggs they fertilize, are able to swim through the solution faster than X sperm, those sperm that confer the female sex. As a result, the sperm collected at the bottom of the solution are mostly Y sperm. What's more, of the Y sperm in semen, those collected are the most vigorous and hence, the healthiest. Samples of the isolated sperm have been shown to be free of up to 90 percent of morphological abnormalities. Then the solution, rich in Y sperm, is reprocessed until some 90 percent of the sperm obtained are of the Y variety (SN: 1/12/74, p. 21). Six other groups of investigators in the United States, Europe and Mexico have since confirmed the technique.

Sperm collected by this method, Ericsson explained to SCIENCE NEWS, are then ready to be squeezed with a syringe into a plastic tube with a tiny diameter up into a woman's uterus. The procedure, he says, "doesn't hurt at all."

Ericsson foresees the technique benefiting couples with certain types of fertility problems, but not all. For instance, it should benefit couples when a male does not produce enough sperm in his semen or enough mobile sperm in his semen, because ample numbers of vigorous sperm can be culled from his semen for artificial insemination purposes. About half the difficulties couples have in conceiving stem from problems involving the sperm. The technique should be of benefit when the cervical mucus is hostile to sperm and when the sperm are not vigorous or numerous enough to penetrate this barrier, since enough vigorous sperm can be concentrated and injected past this barrier. The technique should also benefit couples where the male has a urinary tract infection that causes cells to collect in semen and crowd sperm, since the sperm can be isolated from this flotsam and therefore no longer be inhibited in their actions. If a woman does not ovulate, or if a man does not produce sperm or only dead sperm, however, the technique cannot help conception.

The extremely vigorous sperm isolated by the technique also survive the stress of freezing about twice as well as do regular sperm, Ericsson and colleagues will be reporting in the November FERTILITY AND STERILITY. Livestock insemination with the technique is being carried out at Louisiana State University and Cornell University. □

## Gallup polls the world: How people feel

Galloping feedback, as it has been called, will soon be with us. The pollsters already let us know what we think on an almost day-to-day basis, and attempts are even being made to get instant feedback during (not after) the presidential debates. Considering the technology available and the value of a well-conducted poll, it is not surprising that poll-taking is becoming increasingly sophisticated and popular. Considering the growing realization that third-, and fourth- and fifth-world nations also have a stake in international affairs, it is not surprising that attempts are now being made to conduct worldwide polls.

Pollster George Gallup, with funding from the Charles F. Kettering Foundation, has recently completed one of the first large-scale attempts at international pulse taking. One-hour interviews with 10,000 persons at all economic levels in almost 70 nations fill an 18-volume report. Among the findings:

- Nearly half the people in the world are engaged in a serious struggle for survival, but as bad as things may be, people in poorer countries tend to believe that

things will improve for them in the future.

- The high cost of living, unemployment and shortages of vital goods, including food, are the top concerns of people, at all levels, in all nations.

- Warm climates do not necessarily produce happier people, but South Americans and Africans are more optimistic about the future than people in more advanced nations.

- The less-well-developed nations are increasingly interested in rapid economic growth through industrialization. Those in industrialized countries tend to favor less industrialization and growth.

- Attitudes toward women are changing in developing countries.

- Family life still provides the greatest satisfaction.

- Rural residents still want to move to the cities.

- Large majorities (up to 93 percent in Africa) still believe in God or a universal spirit.

Gallup's findings are not overly dramatic, but they will provide a valuable baseline for future studies. This first sur-