

BIOLOGY

Lamb in Germfree Lab

A PREGNANT EWE from a southern Michigan farm will soon travel to Notre Dame, Ind., to have her "baby."

This will be no ordinary birth, and the baby lamb will be no ordinary lamb. It will be taken from the ewe, uterus intact, through a germicidal bath to guarantee that the lamb will be completely "germ-free," Dr. Philip Trexler of the Lobund Laboratories, University of Notre Dame, said.

The "immaculately clean" lamb will be raised in a sterile room at the laboratory. When the lamb reaches the age of three months, it will have a perfectly developed rumen.

The rumen is a "stomach" peculiar to those animals that chew a cud. Vegetation partially chewed by these animals passes to the rumen where it is stored until the animal can regurgitate the food. The animal can, at rest, rechew the food and mix it with more saliva before it is swallowed.

When the germfree lamb is three months old, it will be fed a special diet that scientists expect will be identical to the food the lamb normally would process with the aid of naturally occurring bacteria in the rumen.

Scientists will observe the growth pattern of this lamb when fed food exactly matching the food the animal would produce in a conventional stomach. It is not yet known whether or not the lamb will be nourished sufficiently on this diet.

Presently, Dr. Trexler is observing a 60-day-old germfree lamb. This animal will

be killed when it is 90 days old and its rumen is fully developed. Since the rumen of this animal will be bacteria-free at that time, the lamb will not be able to ferment its food. It will not be fed the special diet food its successor will receive.

So far, scientists have learned from this animal that, in the germfree environment, the lamb is capable of utilizing protein at nearly 100% efficiency.

They also suspect that bile is decomposed by bacteria present in the animal, since bile produced by this lamb turns up in the animal's experiments.

Dr. Trexler said that there are between 1,500 and 2,000 animals in the Lobund germfree division. They include chickens, mice, rats, rabbits, guinea pigs and sheep.

Science News Letter, February 20, 1960

TECHNOLOGY

Fuel Cell Report Is Gone Again

THE EXCITING potential of fuel cells, which soon may give birth to exhaust-free electric cars, is reflected by the speed at which industry is snapping up a Government report on these promising sources of electricity.

The Office of Technical Services, operated by the U. S. Department of Commerce, said that a "Status Report on Fuel Cells" is the Office's present best seller. Since the report first appeared in June, 1959, it has sold 1,500 copies, making the report one of the best-sellers for the last five years.

The 116-page report has now sold out for the second time since June and has gone into its third printing.

Prepared by B. R. Stein for the Army Research Office, the report is the first of a projected series aimed at collecting and reviewing "all available information in this field."

It covers all of the Army's fuel cell research now proposed or in the hopper, and attempts to compile similar data involving other agencies.

In addition to surveying recent advances, the report describes and discusses known fuel cell systems, heat considerations, production, storage and handling of fuels, and summarizes Government research contracts.

The fuel cell report, No. PB 151804, is priced at \$1.25 under the Office of Technical Services' policy of breaking even by recovering printing costs.

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BIOLOGY

Slime Mold Studies Show DNA Increases

DNA, one of the basic life compounds and the protein that makes up the chromosome, is not the "trigger" that sets off cell division.

Actually, there is an increase in the synthesis of DNA, or deoxyribonucleic acid, immediately after the nucleus divides, a team of University of Wisconsin researchers reported. Since each daughter cell contains chromosomal material equal in quantity to what the parent nucleus contained, the DNA in cell nuclei must double, Dr. Harold P. Rusch said.

This doubling had been thought to be the mechanism that started cell division. Now it appears that the cytoplasm, the material surrounding the nucleus, must influence cell division.

Dr. Rusch and his associates, Oddvaar F. Nygaard and Sophia Guttus, also of the University, used a slime mold called *Physarum* in their experiments.

Mr. Nygaard is now at the Western Reserve University.

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MEDICINE

Cancer Called Next to Worst Child Killer

CANCER is responsible for the deaths of more American children than any other cause except accidents. At present, 12% of all deaths occurring in children between the ages of one and 14 are caused by various forms of cancer, including leukemia.

An article in *Therapeutic Notes* states that a significant number of malignant tumors are present at or before birth. However, far greater numbers of cancer are detected clinically in children under the age of five years. More than one-half of all cases of childhood leukemia occur before five years of age.

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NEW SAC BOMBER—This newest member of the Boeing B-52 family, the B-52 H missile bomber, is being built for the Air Force for use by the Strategic Air Command. The first completed aircraft will roll out at the Boeing Wichita, Kans., Division early next year.