

BACTERIOLOGY

Deadly Bacterium in Silage

► THE DEADLY bacterium *Listeria monocytogenes* has been isolated from oat silage by a Montana researcher. This backs up findings in Iceland where the relationship is so striking that listeriosis is known as silage sickness.

For 20 years, puzzlement as to the ultimate source of listeriosis infections has plagued veterinary and medical researchers. In cattle and sheep the listeria organism is held responsible for abortions. In man it is linked with purulent meningitis and an infectious mononucleosis-like syndrome.

The present evidence of a link between silage and listeriosis came to light when 16 sheep showed signs of listeric encephalitis one week after the entire flock of 900 had eaten oat silage. Several of the sheep died and *L. monocytogenes* was isolated from the autopsied brain of one.

Dr. M. L. Gray of Montana State College's Veterinary Research Laboratory in

Bozeman, Mont., fed portions of the silage to mice. All the mice died within 14 days, but the listeria organism was not found in any of them.

However, when a silage-water solution was injected into 35 mice, the bacterium was found in each of the 32 that died, and in the three that retained a healthy appearance.

These findings suggest, Dr. Gray reported in *Science*, 132:1767, 1960, that silage-fed animals may contract listeriosis by inhaling the organism rather than by eating the silage.

As yet no one has found out how the bacterium gets into the silage. It is possible, Dr. Gray suggests, that *L. monocytogenes* is a soil bacterium or even a common inhabitant of some plant life. The silage also could be contaminated by ground game or birds, known to be potential carriers.

• Science News Letter, 78:422 December 24, 1960



DRS. HARUAKI YAJIMA AND KLAUS HOFMANN CHECK ACTH

BIOCHEMISTRY

ACTH: 100 Percent Active

► THE FIRST SUCCESSFUL synthesis of ACTH, a hormone used to treat arthritis, was reported by University of Pittsburgh scientists after a seven-year study.

The new man-made hormone, which has all the properties of natural ACTH, is the largest protein-like molecule yet reproduced in the laboratory.

Dr. C. H. Li of the University of California reported in November that he had synthesized a 19-unit molecule with 20% to 25% the activity of natural ACTH in a highly purified sample. The Pittsburgh biochemists have obtained 100% biological ac-

tivity with a molecule containing 23 amino acids.

The tedious chemical procedures used by the scientists are paving the way for synthesizing even more complex protein-like molecules. Their research is expected to help clarify the functions of the pea-sized pituitary gland.

The laboratory synthesis will allow scientists to work with pure ACTH. This could lead to an understanding of how the pituitary gland at the base of the brain, where ACTH is produced naturally, stimulates the adrenal gland's cortex to produce

cortisone and other important steroid hormones. The techniques developed can now be used to modify the natural structure of ACTH in hopes of achieving medically important results.

Members of the Pittsburgh group, led by Dr. Klaus Hofmann, chairman of the biochemistry department, include Dr. Haruaki Yajima, Dr. and Mrs. Noboru Yanai-hara, Teh-Yung Liu, Saul Lande and John L. Humes.

• Science News Letter, 78:422 December 24, 1960

GENERAL SCIENCE

Increased Employment of Scientists and Engineers

► EMPLOYMENT of scientists and engineers rose nearly seven percent during 1959, a two percent increase in growth from the previous year.

The National Science Foundation reported in Washington that more than 800,000 scientists and engineers were employed in United States business firms in January, 1960. The figures were compiled for the Foundation from a survey conducted by the Bureau of Labor Statistics of the U. S. Department of Labor. The data will be used to help the Foundation develop programs for strengthening the country's scientific manpower resources.

• Science News Letter, 78:422 December 24, 1960

GENETICS

Chromosome Mosaicism Found in Hermaphrodite

► THE FIRST demonstration of mosaicism in a true hermaphrodite, an individual possessing both male and female characteristics, was reported in the *New England Journal of Medicine*, 263:1044, 1960. Mosaicism is the appearance of genetically different tissues in the same individual.

Drs. Kurt Hirschhorn, Wayne H. Decker and Herbert L. Cooper of New York University described a hitherto unreported type of mosaicism in which an infant's bone-marrow cells showed a mixture of XY and XO sex-chromosome constitution.

The body cells have an XX sex-chromosome constitution in females, whereas in males, they have an XY chromosome constitution. The XO configuration occurs when the body cells have only a single sex chromosome instead of the usual pair.

The scientists said the mosaicism is probably due to the accidental loss of the Y chromosome during a stage of cell division called anaphase. This would result, they said, in a normal XY cell and an XO cell, both of which might continue to develop, forming parts of the resultant individual.

If the loss of the Y chromosome occurred at the very first division of the zygote (fertilized egg), they said one would expect at most 50% of the individual to consist of abnormal cells.

In the case of the hermaphrodite, plastic surgery is planned for the future, at which time genital tissue will be obtained for more enlightening chromosomal analysis.

• Science News Letter, 78:422 December 24, 1960