

# life science notes

## MICROBIOLOGY

### Organisms Love Heat

Heat-loving bacteria—possibly relicts of primitive life forms that existed two billion years ago when the earth was in the early stages of cooling—thrive in water near the boiling point (212 degrees F.).

Dr. Thomas D. Brock of Indiana University finds that microorganisms living in the hot springs of Yellowstone National Park closely resemble fossils of bacteria identified in the Gunflint chert rock formation which is believed to be about two billion years old. "The upper temperature for life as we know it has not yet been defined," Dr. Brock observes. "There seems to be no reason why bacteria could not live in nature at any temperature where there is liquid water." Given enough pressure, water could remain liquid up to 705.2 degrees F.

In addition to thermophilic bacteria, Dr. Brock reports finding several examples of algae or one-celled plants that also thrive at high temperatures because their simple life processes are not particularly susceptible to heat and because their cell membranes are extremely durable. According to Dr. Brock, hot springs provide an ideal environment for the study of life at high temperature because "they are natural environments of great antiquity and relative constancy, where organisms have evolved to meet the environmental challenges of high temperatures."

## TERATOGENESIS

### Sleeping Pills and Infant Cataracts

Common sleeping tablets have been accused of causing cataracts in the eyes of infants whose mothers took the drugs during pregnancy.

Two Australian researchers put forth this hypothesis to account for formerly inexplicable cataracts in children. Dr. R. F. Hertzberg of the Royal Alexandra Hospital for Children and Dr. J. S. Harley of the Children's Medical Research Foundation, Sydney, began their investigations in 1964 with studies of 59 children. Although genetic factors, nutrition, infections and exposure to drugs are all possible agents, Dr. Hertzberg says that in some cases cataracts could have been avoided had the mothers not taken barbiturates during pregnancy.

## GENETICS

### Haplont Tobacco Plant

A tobacco plant produced by Japanese scientists has only half the usual number of chromosomes. It holds promise for quicker development of new varieties of tobacco as well as other plants.

The researchers suggest a new, low-nicotine tobacco could be developed within two or three years, instead of the anticipated six. Success in producing a haplont—a plant with half the usual number of chromosomes—eluded researchers until last year when Indian scientists grew a haplont morning glory.

The tobacco haplont was developed by Drs. Masao Tanaka and Kazuo Nakata of the Hatano Tobacco Experiment Station of the Government's Japan Monopoly Corporation which controls production and sale of tobacco in Japan.

They used pollen at the cellular stage of its develop-

ment rather than mature pollen that botanists have used in previous attempts to produce a haplont. After removing developing pollen from an immature bud, it was transferred to a medium of coconut milk in which growth, differentiation and formation of a root and vegetative bud occurred.

The problem with low-nicotine tobacco, according to U.S. scientists who also have low-nicotine tobacco that is almost ready for commercial use, is that smokers are not likely to want it. People smoke tobacco rather than other plants precisely because tobacco contains nicotine.

## BIOCHEMISTRY

### Excess Chromosomes Tied to Cancer

A change in the number of chromosomes in a cell nucleus may be the basic reason cancer cells divide uncontrollably. Studying nine different kinds of human cells that were either cancerous or had malignant properties, scientists at the Lawrence Radiation Laboratory, Livermore, Calif., found a 50 to 300 percent excess of one type of chromosome in all the cells. The chromosome, called E-16, is one of the 46 chromosomes normally found in a cell.

According to Dr. John W. Gofman, an excess in the total number of chromosomes has been commonly associated with human cancer cells, but he finds that the level of E-16 chromosomes is strikingly high even after allowing for the expected chromosome excess in malignant cells.

Injury to a cell from chemicals, radiation or viruses causes an imbalance in chromosome number. Dr. Gofman and his co-workers suggest that the E-16 excess is the contributing factor to malignancy. However, they caution that their hypothesis is not yet proved. Additional types of cancer cells must be studied, they reported to a symposium on "Man and Molecule: Biological Regulation" at the Oklahoma Research Foundation, to see if this particular eccentricity is characteristic of all rapidly dividing cancers.

## NARCOTICS

### UN Calls For Improved Narcotics Tests

A United Nations committee has requested that the UN's Narcotics Commission conduct and coordinate international research to find new, simple ways of measuring the levels of dependence-producing drugs in body fluids. Police and forensic medical experts reportedly need new methodology in order to prosecute court cases.

The Commission has told its 84 scientists in 29 nations already collaborating that there is a great need for tests to detect marijuana users, particularly in the case of automobile accidents. Dr. O. J. Braenden, Norwegian director of the UN narcotics laboratory, says "this is one of the weakest areas in pharmacology and related sciences."

Concern that some Olympic athletes will rely on drugs while participating in the 1968 games in Mexico City has dramatized the need for new testing techniques. The International Olympics Committee will announce—perhaps in February—what tests it will use to deter athletes from cheating. Although illegal doping of athletes is anticipated, there is no medical evidence to support the view that it improves performance (SN: 12/16).

6 january 1968/vol. 93/science news/11