

AERONAUTICS

Alaskan Flying as Bad As in Rocky Mountains

► FLYING IN Alaska, scene of four Air Force disasters recently, is much like flying in the Rocky Mountain region of the United States.

But the beguiling Arctic poses a number of problems that can lure the uninitiated pilot to his destruction.

Formerly stationed in the Arctic, a seasoned Air Force pilot told SCIENCE SERVICE that mountain ranges can twist radio beams dangerously. The beams carry coded letters to help pilots figure out their positions on a map. When the beams are twisted, the pilot might make a mistake that could mean disaster.

Weather along the Seattle-Anchorage route is "pretty rugged" at times. It is even worse along the Aleutian chain. Stiff winds blow almost continually there and can reverse direction in as little as 20 minutes.

Icing problems are bad in the vicinity of Elmendorf Air Force Base at Anchorage. Moist air meets cold temperatures there. Ice can form on the planes and can overburden them.

Whether these conditions were responsible for the four recent crashes of all-weather F-94 jets remains for the investigators to determine. But Air Force officials clamped the lid on instrument flying of the F-94s in Alaska until they can tell whether instruments were at fault.

Three of the jets disappeared from Elmendorf in the week beginning March 31. A fourth crashed on the landing field.

Science News Letter, April 18, 1953

MEDICINE

Gamma Globulin Helps Fight Smallpox in India

► A BLOOD serum fraction that may provide protection against smallpox and help in treating victims of the disease is now under trial in India, where a quarter of a million cases are reported each year.

The research project is being conducted by Dr. C. Henry Kempe, of the University of California School of Medicine, with the help of Indian health authorities.

Dr. Kempe recently took with him to India the first samples of a gamma globulin preparation with antibodies to smallpox.

Gamma globulin used against polio and measles can be prepared from pooled blood, since these diseases are widely contracted in mild form in the American population. Few Americans have smallpox, however, and antibodies built up by vaccination are not ordinarily potent enough to yield a powerful gamma globulin.

Dr. Kempe's gamma globulin was prepared from blood donated by soldiers who had recently had good "takes" on smallpox vaccinations. This assured strongly active smallpox antibodies.

In India, Dr. Kempe used the gamma

globulin on individuals with severe cases of smallpox and also on members of families who had been exposed through contraction of the disease by one member of the family. Indian authorities will forward blood samples and other data to Dr. Kempe who has returned to San Francisco. Results will be known in two months.

Dr. Kempe said that eradication of the disease in India and in some other countries is not as simple as it is here. In India, undernourishment, greater virulence of the disease agent, and frequent exposure and infrequent vaccination all make for high disease incidence and mortality.

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CHEMISTRY

Billionth Part Impurity Detected by Neutrons

► A MILLIONTH or a billionth part of impurity in a metal can be detected easily by changing it into something else in the atomic pile.

A service by which the atomic pile at Oak Ridge, Tenn., may be put at the disposal of chemists for analytical work is reported by Drs. G. W. Leddicotte and S. A. Reynolds of the Oak Ridge National Laboratory. Samples of the materials to be tested are put into the pile for a short time for irradiation. The neutrons present in the pile cause radioactive changes in the material which write their own autographs on Geiger counters and similar instruments.

Because radioactivity of each substance has its own characteristic length of life, measurements taken at different times can sometimes distinguish the long-lived impurity from the short-lived metal, according to the Oak Ridge scientists.

A minute amount of manganese in irradiated aluminum continues to give out measurable rays with a half life of 2.59 hours after the radiation from the aluminum has died away. Two-thirds of the chemical elements can be determined satisfactorily by this method, the atomic scientists say.

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CHEMISTRY

Food Poisoning Chemical Makes Spores Resist Heat

► THE GERM spores that cause food spoilage and food poisoning, such as botulism, contain an enzyme chemical which enables them to resist greater heat than any other living organism.

The chemical, first such ever found in a bacterial spore, is called alanine racemase. Its existence in spores was discovered by University of Illinois microbiologist H. Orin Halvorson and his research associate, Babette Taylor Steward. The enzyme itself was discovered some years ago by another Illinois microbiologist, I. C. Gunsalus, who found it in bacteria that are unable to produce spores.

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MEDICINE

Test Biologic Products Related to Heart Disease

See Front Cover

► THE COUNTER current distribution apparatus being used for the separation and isolation of biologic products related to heart disease is shown on the cover of this week's SCIENCE NEWS LETTER.

Dr. Elwood O. Titus of the National Heart Institute, National Institutes of Health, who is shown in the picture, is conducting studies on the building up of serotonin and related compounds, involved in various aspects of heart disease.

Serotonin, a blood chemical twice as powerful as adrenalin for fighting shock, has also been made synthetically. Crystals of it were isolated from blood platelets in 1948. Serotonin acts to constrict small blood vessels, and therefore is believed to have a blood pressure-raising effect.

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GENETICS

Third Type of Twins Thought to Exist

► IN ADDITION to identical twins and fraternal twins, a third type of twins may exist.

Dr. Glen Holland, University of California at Los Angeles psychologist, states that "identical twins are thought to result from complete division of a single fertilized ovum, fraternal twins are assumed to be products of multiple ovulation, while the third type may result from fertilization of two cells of a single ovum by different sperm or fertilization of the ovum by a two-headed sperm."

Siamese twins, generally conceded to be identical twins, as a group exhibit more marked difference than non-joined identical twins, Dr. Holland says.

He also reports these oddities:

If you are left-handed or have a tendency to stutter, you are more likely to be the parents of twins than right-handed people or non-stutterers.

Racial stock and the age of mothers are related to twinning. Older mothers are more likely to have twins.

The incidence of twinning among Negroes and Scandinavians is high. It is rare among Japanese and Mediterranean peoples.

Rarity of twinning may be related to practices of certain cultures. For example, prior to the year 1400 twinning was considered as evidence of adultery in Japan, and mother and children were put to death.

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CE FIELDS

CHEMISTRY

Insecticides Hundred Times Better Are Made

► INSECTICIDES A hundred times as deadly as DDT yet non-poisonous to man and animals have been developed by applying a theory as to the working of chemical agents that control insect life processes.

Composed entirely of carbon and hydrogen, without the chlorine that in DDT causes harm to warm-blooded animals, the new insecticides resulted from research by Drs. R. C. Blinn, F. A. Gunther, G. E. Carman, and R. L. Metcalf of the University of California Citrus Experiment Station, Riverside.

An interpretation by Dr. Linus Pauling of the California Institute of Technology of the way enzymes in insects control their growth made possible the chemical building of the new powerful insecticides. Action of these enzyme chemicals can be blocked by materials whose molecules are the right size and shape to fit and hold onto them. The foreign chemical slips into a sort of cavity in the living molecule and stops it dead, as it were. Both size and shape must fit.

In the first issue of the new American Chemical Society's *Journal of Agricultural and Food Chemistry*, the Citrus Experiment Station chemists report one new hydrocarbon that is 100 times as deadly as DDT for the flour beetle, and another that equals DDT in destroying mosquito larvae but is harmless to other species.

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MEDICINE

Urge Scientists Make Slower Vaccine Tests

► DO NOT try a mass test of vaccine against poliomyelitis. Test it slowly, using human guinea pigs in Allegheny County, Pa., this year. Suspend trials during the polio season this summer to avoid interference with studies. Resume the tests with more and more persons after the polio season is over so that in the summer of 1954 it will be possible to make a controlled evaluation of the vaccine's effectiveness.

This, in effect, is the advice given to Dr. Jonas E. Salk of the University of Pittsburgh by a conference of medical and health authorities headed by Dr. Thomas M. Rivers, director of the Hospital of the Rockefeller Institute for Medical Research, New York. Dr. Salk and officers of the National Foundation for Infantile Paralysis were present at the conference.

Dr. Rivers reports the conference and the

advice it gave Dr. Salk in the *Journal of the American Medical Association* (April 4).

"There is every indication," says Dr. Rivers, "that the preparation in question is as safe as any other vaccine now widely used against diseases other than poliomyelitis."

"However, only by gradual extension in ever-increasing groups of persons and in a systematic fashion as herein indicated can this be established with the certainty required before testing the validity of the experimental vaccine against poliomyelitis under epidemic circumstances."

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PLANT PATHOLOGY

Anti-Weed Mixtures Fight Poison Oak Scourge

► MIXTURES OF the weed killers 2,4-D and 2,4,5-T give promising control over growths of poison oak, report Oliver A. Leonard and Lem Osborn of the University of California College of Agriculture.

Their experiments were begun in 1950, when test plots were sprayed with one to four pounds of weed killer mixtures per acre. These initial sprayings resulted in marked control of stands of poison oak, the scientists said, but later most of the plants developed new sprouts.

Spraying the areas again the following year, however, resulted in a high degree of permanent killing of poison oak.

Spring and early summer were the best times for weed killer treatment, the scientists said, adding that retreatment later in the season was necessary for proper control.

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TAXONOMY

Mountain Lion Names Amusin' But Confusin'

► EVERYBODY SLIPS up once in a while. Even the electronic "brains" blow a fuse now and then.

In the March 21 issue of SNL, page 179, appeared a picture of mountain lion cubs, with a caption stating that they had "a grandfather that was an Arizona puma and a grandmother that was a mountain lion." The biology writer must have been off fishing when that caption was written. Pumas and mountain lions are quite the same thing.

One of SNL's alert readers in Seattle, however, definitely was not off fishing, and wrote in this comment: "I say the other grandfather was a panther and the other grandmother a catamount. What's more, all of the cubs' kittens will be cougars."

He is right. Mountain lions are known by all these names. He might have added that the mother was a deer tiger and the father a Mexican lion. The cubs themselves are painters, too.

This is why scientists talk in Latin. They call them all *Felis concolor*.

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FOREST PATHOLOGY

Dutch Elm Disease Eradication Unlikely

► DUTCH ELM disease will never be eradicated from American trees in the opinion of Dr. David H. Marsden, botanist with the University of Massachusetts. This disease has been destroying shade elms in many communities, especially in the New England states.

So, putting aside profitless dreams of exterminating the disease, Dr. Marsden said, America must learn to live with the disease. This involves long-term programs to preserve as many elms as possible, not abandoning them to the ravages of disease, he said.

Dr. Marsden told the case histories of two New England towns, one of which abandoned attempts to control Dutch elm disease, the other which has kept up control over many years.

In the community that maintained control practices, there has been a reduction of more than 50% in the number of diseased trees as compared to the town that abandoned controls.

Emphasis in controlling Dutch elm disease should be placed on a "sustained" program, Dr. Marsden said, since figures show that the disease can spread tremendously in as short a time as two years, when control efforts are slackened.

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BIOCHEMISTRY

Cancer Cells Are Less Fussy Than Normal Ones

► A BASIC difference between normal cells and cancer cells in the chemical processes called metabolic has been discovered by Drs. Karl E. Paschkis, Abraham Cantarow and Joseph Stasney at Jefferson Medical College, Philadelphia.

Liver cancers in rats have, as a result, been prevented. But the method of doing this would be dangerous to try on humans, states the American Cancer Society which supported the research.

The development of liver cancer in rats, the scientists found, is accompanied by a change in the way the body handles one of its important chemicals, uracil.

Normal cells insist on making their own natural uracil from raw materials. They refuse to take up uracil in their environment. Cancer cells, on the other hand, take up the ready-made uracil.

Chemicals which cause liver cancer apparently combine with uracil in the process of bringing about cancer, the American Cancer Society report states. But when the animals were given a close relative of uracil, thiouracil, cancer did not develop.

However, the cancer society states that "experiments here have shown that it is dangerous to use thiouracil as a preventive of any kind of cancer."

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