METEOROLOGY

Warmer Climate for U. S.

THE CLIMATE of the continental United States has grown warmer since the beginning of the 20th century, a Weather Bureau meteorologist reports.

Dr. H. E. Landsberg compared the monthly seasonal and annual temperature means at 48 locations for the two 25-year periods from 1906 to 1930 and 1931 to 1955. His preliminary analysis is based on temperature records from rural stations, since those from cities are not as reliable for this purpose due to the heat they generated in cities.

The temperatures in most places show "significant rises," Dr. Landsberg reports in the Journal of Geophysical Research, 65:1519, 1960. Annual rises of one and a half degrees Fahrenheit were found over the Great Lakes region and in the Rocky Mountain states.

The average of 48 stations showed an annual rise of eight-tenths of a degree between the two time intervals. Forty of the 48 stations showed an increase in temperature, which Dr. Landsberg calls "overwhelming evidence of a tendency toward warming."

When the values of annual temperature change are averaged by zones, Dr. Landsberg found that the higher latitudes have the larger change. This agrees with previous findings in other regions of the Northern Hemisphere that the climactic warming has been most pronounced in the higher latitudes.

Dr. Landsberg also compared precipitation totals from the 48 stations for the two 25-year periods. For the most part, he found, precipitation changes are probably not significant. However, there was a tendency toward lower totals over the Rocky Mountain states, parts of the Great Plains and in an area west of the Appalachian Mountains.

On the basis of present knowledge, Dr. Landsberg concluded, there is no indication of a major trend in the rainfall patterns of the contiguous 48 states.

Science News Letter, June 4, 1960

VIROLOGY

Heredity Breakthrough

TWO VIROLOGISTS announced that they have pinpointed, in a virus, the exact spot affected by a mutation, or change in heredity. This observation is a major step toward understanding and possibly controlling the heredity of living things.

With this discovery, Drs. A. Tsugita and Heinz L. Fraenkel-Conrat of the University of California's Virus Laboratory, Berkeley, Calif., added another link to the growing chain of facts unearthed by studies of tobacco mosaic virus.

It is already known that a virus can be separated into two major parts, the nucleic acid "core" and the outer coat made of protein. In the tobacco mosaic virus and some other viruses, the nucleic acid is ribonucleic acid, RNA. This is the part that controls the reproduction, growth, appearance and other characteristics of these viruses.

The discovery by Drs. Tsugita and Fraenkel-Conrat was made in the protein coat of the virus. The change in the coat means that a change has occurred in the core part of the virus, where the control of heredity changes is centered, they believe.

They took the tobacco mosaic virus apart, separated the coat from the core and treated the naked core with nitrous acid to induce the artificial mutation. Then they put the pieces back together again and let the virus grow and reproduce. The mutant offspring were then put on tobacco plants and were allowed to cause disease.

The disease symptoms they produced were a bit different than those produced by regular tobacco mosaic virus, and the mutant virus even preferred a different type of tobacco plant.

The protein coats of the mutant offspring were chemically analyzed. In three of the 158 parts of the characteristic protein molecule, there had been a change. Three amino acid components had been displaced and three different ones had been substituted.

To determine exactly where one of these changes was located along the 158-link protein chain, the virologists subjected the molecules to enzyme analysis. The change had occurred exactly three links up from the end of the normal protein chain.

Dr. Wendell Stanley, Nobelist director of the Virus Laboratory, said that finding this landmark may furnish scientists "a Rosetta Stone for the language of life," a key to the language of genetic transfer of characteristics.

Dr. Fraenkel-Conrat was asked if it will eventually be possible chemically to change the part of the RNA that causes the disease-producing character of the virus and thus render it a harmless organism.

"Yes," he said, "sometime far, far in the future it should be possible to do so. But we are a long way from it at this point."

Science News Letter, June 4, 1960

EDUCATION

Tend to Get Lower Grades When Starting College

COLLEGE students tend to get grades that are half a grade point lower than grades they received in high school, a six-year study in Corvallis, Ore., reveals. This means, for example, that students with B averages in high school make about B minus or C plus averages during their first year of college. Dr. D. T. Ordeman, registrar at Oregon State College, arrived at these findings after carefully charting the classroom performances of freshmen and comparing them against their high school records. Averages "go out the window" in many cases, however, Dr. Ordeman noted. This year, 323 of 1,935 freshmen had grades that were better than their high school averages.

Science News Letter, June 4, 1960

CONSERVATION

Chemical Method Saves Shellfish From Killers

A CHEMICAL method to keep oysters and clams from being killed by their enemies has been found by three Government scientists.

Heavy oils mixed with sand can be used to surround shellfish beds to control the snails, starfish and, in some cases, crabs that kill oysters and clams. The chemical control method is still in the experimental stage and is not yet recommended for commercial application.

However, the chances are good that the basic principles of the method will solve the age-old problem of protecting shellfish from predators. Some control over shellfish enemies has been needed since oysters and clams were first harvested for food, the researchers report in Science, 131:1522, 1960.

Drs. V. L. Loosanoff, C. L. MacKenzie Jr. and L. W. Shearer of the U. S. Fish and Wildlife Service's Biological Laboratory in Milford, Conn., developed the method for chemical control using such heavy oils as orthodichlorobenzene mixed with dry sand or other inert material to hold them in place on shellfish beds.

Effects of the treatment, they report, can be increased by adding other chemicals, such as the insecticide Sevin, to the heavy oils.

The method prevents boring gastropods, starfish, crabs and other enemies of bivalves from invading shellfish beds, and also makes the beds unsuitable for their continued existence.

Science News Letter, June 4, 1960

ZOOLOGY

Rain Triggers Duck Breeding

NOMADIC WILD DUCKS inhabiting the arid interior of Australia breed only when sporadic rains fill the dry creek beds and backwaters or cause a sharp rise in water level in running streams, H. J. Frith of Australia's Wildlife Survey Section found.

When breeding is finished and the water evaporates, the duck population moves elsewhere. The inland rains are rarely seasonal and floods or heavy rains at any time of the year initiate breeding.

In the Australian pink-eared duck, the process of adaptation is carried a step further. Breeding begins only when flooding of adjacent low-lying land occurs because the rising water level leads to an increase in insect food for ducklings. Breeding of the insects is also stimulated by the water.

Science News Letter, June 4, 1960