GEOLOGY

Southern High Plains Due For Change in Climate

THE SOUTHERN High Plains region of Texas, Oklahoma and Kansas will grow gradually drier over a long period of years and eventually shift to a climate of milder winters, cooler summers and increased precipitation.

This climate prediction was made by Dr. Claude W. Hibbard, professor of geology at the University of Michigan and president of the Michigan Academy of Science, Arts and Letters. He told an Academy meeting in Ann Arbor, Mich., that subtropical conditions existed in part of the plains region during periods between glacial advances.

Such warmer-than-present conditions existed as far north as central Nebraska during the first interglacial period, he said, and again as far north as southwestern Kansas during the second and third interglacial periods.

Dr. Hibbard said subtropical conditions in the West were followed by a semi-arid climate, succeeded in turn by a return to a "more equable subhumid climate" before the next glaciation.

Paleontologists have been able to determine the climatic shifts, he said, by uncovering fossil remains of animals whose presence in an area strongly suggest certain temperature ranges and other environmental conditions.

Science News Letter, April 23, 1960

PSYCHIATRY

G.P.s Should Not Practice Psychiatry

THE FACT that general practitioners are being encouraged to learn and practice psychiatry on their patients has brought a verbal shudder from a psychiatrist.

The pitfalls of such a training program for physicians are many. Past experience has shown that persons who exercise psychotherapy without an extensive background in the subject can do a great deal of harm. Usually, these persons are not aware of the implied assumptions that play a significant role in dynamic therapy, Dr. N. McConaghy of the Royal Melbourne Hospital, Melbourne, Australia, reports in *Lancet,* 1:641, 1960.

For example, it was recently the fashion to believe that a great deal of a person's problems stemmed from his or her early childhood experiences. The idea caught on. Emphasis of the positive role was minimized. Thus, children were encouraged to indulge and parents followed the harmful concept of "permissive" upbringing, he reports.

Now, Dr. McConaghy says, the danger exists that a potentially harmful form of psychiatry will become available to general practitioners. He refers here to the "dynamic psychotherapeutic" methods which emphasize that the patient talk out his problems but receive no advice from the doctor.

The British psychiatrist expresses the fear that general practitioners will be discouraged from using "directive psychotherapy." This type of therapy requires the doctor to suggest steps the patient can take and offer advice. The implication is that the dynamic is more gentle than the directive approach, but Dr. McConaghy maintains that the inexperienced can cause more harm than good with this technique. Therefore, he concludes, it would appear to be better to reserve the dynamic approach for carefully chosen patients, and retain the old patient-doctor relationship for the majority.

Science News Letter, April 23, 1960

ROCKETS AND MISSILES

Satellite Radio Device Revealed in Patent Grant

THE LONG-SECRET device by which data are radioed from satellites and space probes to earth was finally published as it received patent No. 2,931,897, assigned to the U. S. Government through the Secretary of the Navy. The inventors have familiar names: Dr. Merle A. Tuve, an expert in geophysics who directs the Department of Terrestrial Magnetism at the Carnegie Institution of Washington, and Dr. James A. Van Allen of State University of Iowa, discoverer of the natural radiation belts around the earth.

Drs. Tuve and Van Allen developed the device in 1943 while working with the wartime Office of Scientific Research and Development at the Applied Physics Laboratory of Johns Hopkins University.

The device was first used to radio air drag, pressure and flight data on the five-inch, 38-caliber shell used by Navy destroyers, Dr. Tuve reported. It was also used on the 105mm howitzer shell.

Then in 1944 and 1945 it was used on test missiles that later became the Navy's Aerobee and Terrier.

The device converts pressure and other mechanical signals into radio signals that can be received at ground stations. It is housed in a rugged cone. The spinning of the projectile flips out two antennas.

Although an application for a patent was filed in 1943, the granting of the patent, which involves publication, was held up until details of the device were declassified.

Science News Letter, April 23, 1960

GEOLOGY

New Observatory Part of Seismological Network

CONSTRUCTION of a seismological observatory designed to report earthquakes will begin in April at Rensselaer Polytechnic Institute, Troy, N. Y. The observatory will be part of the nation-wide earthquake warning network reporting to the U.S. Coast and Geodetic Survey. The seismographs will be located in bedrock 10 feet underground. Recordings of data on earthquakes, blasts and other natural and artificial ground motions will be used for research on the structure of the earth's interior.

Science News Letter, April 23, 1960

IN SCIEN

MEDICINE

Scientists Synthesize Super Sex Hormones

SEX HORMONES that pack a bigger punch than those brewed by nature have been synthesized by a team of Dutch and Swedish scientists.

By changing atoms on the outside edges, rather than in the center, of a known steroid hormone molecule, the scientists were able to produce substances five to 25 times as active as progesterone, a female sex hormone that prepares the uterus for pregnancy. In clinical trials there were no adverse side effects.

A third artificial substance related to testosterone, a male sex hormone, showed no similar activity, and a fourth substance acted against the steroids that produce maleness.

Details of the research are reported in Nature, 186:168, 1960. The researchers were E. H. Reerink, H. F. L. Scholer, P. Westerhof of the Philips-Duphar N. V. Laboratories, Weesp, Holland; A. Querido and A. A. H. Kassenaar of the University of Leyden, Holland; and E. Diczfalusy and K. C. Tillinger of Karolinska Hospital, Stockholm, Sweden.

Science News Letter, April 23, 1960

MEDICINE

Aspirin Wrongly Accused British Scientists Say

REPORTS that aspirin causes bleeding of the stomach and intestine, peptic ulcers and anemia have been greatly exaggerated.

For 22 years British medical journals have printed the pros and cons of whether aspirin, a frequent, regular medication in illnesses such as rheumatoid arthritis, could eventually cause the patient to develop a stomach or intestinal condition.

In an attempt to settle the controversy, Dr. F. D. Bargar and J. J. R. Duthie of Northern General Hospital, Edinburgh, Scotland, studied 244 rheumatoid arthritis patients, most of whom were taking regular doses of aspirin.

During a six-year period, the group showed a significant increase in hemoglobin level, which drops in cases of anemia, bleeding and ulcer. The amount of increase was about the same as for a smaller group not on regular aspirin, the researchers report in the British Medical Journal, April 9, 1960.

Only three patients (1.2%) developed evidence of peptic ulcer while on aspirin. This is about the same incidence of peptic ulcer as in the general population, indicating these few patients might have developed peptic ulcers whether they had taken aspirin or not.

Science News Letter, April 23, 1960

CE FIELDS

BOTANY

Twigs Reported Growing After Extreme Freezing

RUSSIAN SCIENTISTS have reported success in freezing birch and black currant twigs to minus 423 degrees Fahrenheit and making them grow afterwards.

Dr. I. I. Tumanov, a botanist and member of the Soviet Academy of Sciences, reports in the journal Doklady—Botanical Sciences Section, that twigs of the two common plants have been frost-hardened at temperatures only 36.7 degrees above absolute zero.

Dr. Tumanov and his colleagues placed freshly cut twigs wrapped in cellophane into a cold box at 23 degrees Fahrenheit, then gradually reduced the temperature to minus 76 degrees.

After this hardening process the twigs were immersed in liquid nitrogen, then in liquid hydrogen for two hours and then again in liquid nitrogen. The temperature of liquid hydrogen is 423 degrees below zero Fahrenheit. At absolute zero, minus 459.7 degrees Fahrenheit, all life is believed to cease.

When the twigs were later observed, they appeared normal and grew buds and new roots. Other twigs of similar stock, which had not been gradually hardened, died at minus 40 degrees. The black currant stock can generally survive natural temperatures down to about minus 22 degrees, Dr. Tumanov reports.

Washington scientists said that the application of this hardening method to cold of southern fruit trees, such as peach and the various citrus, so the crops will not be threatened, cannot be predicted without further information available from experimentation. Experiments similar to the Russian ones were undertaken in Japan in 1956.

Science News Letter, April 23, 1960

VIROLOGY

Studies Show Hardiness Of Foot-and-Mouth Virus

THE VIRUS that causes foot-and-mouth disease in cattle, swine and goats is a hardier bug than previously believed.

Recent studies have shown that the ribonucleic acid core of the virus, the part that produces the disease, may be more resistant to destruction by heat than scientists had thought, the U.S. Department of Agriculture reports.

Earlier experiments had indicated that the ability of foot-and-mouth virus to produce disease was destroyed by heating the virus to 140 degrees Fahrenheit or higher.

Now Dr. Howard L. Bachrach, biochemist of USDA's Agricultural Research Service, has found that such heat treatment only seals the infectious core within the protein covering of the virus and blocks its ability to infect susceptible animal cells. The sealed-in cores were found to be infectious once the protein covering was chemically removed.

Thus, Dr. Bachrach concludes, the foot-and-mouth virus may be more dangerous than previously considered because nature may have ways of matching his chemical method of releasing the locked-in infectious core of the heat-treated virus.

Other studies have shown that meat from animals infected with foot-and-mouth disease is not rendered free of the virus by the usual procedure of ripening (which inactivates virus in muscle tissue), boning, salting and storage. The virus may survive in residual blood or lymph nodes of boned, salt-cured meat for at least 50 days, and in the bone marrow in refrigerated carcasses for at least 73 days.

Science News Letter, April 23, 1960

PHYSICS

Discovery of Element 103 Expected in Near Future

SCIENTISTS hope to be able to create element 103 before the end of April.

Dr. Albert Ghiorso of the Lawrence Radiation Laboratory, Berkeley, Calif., reported that discovery of the new element was only "a question of time." The University of California scientists who have discovered many of the transuranium elements of the atomic age believe they will succeed shortly in making another one, which will then be the heaviest known.

He said the California team had been trying to make element 103 for the past few months, and hope to announce its discovery at a meeting in Gatlinburg, Tenn., the first week in May. The method consists in bombarding a target element in such atom smashers as the Berkeley HILAC.

Science News Letter, April 23, 1960

FOOD TECHNOLOGY

Meat Flavor Isolated; May Make Algae Edible

TWO U.S. Department of Agriculture scientists have isolated and freeze-dried substances that give beef and pork their flavor and aroma.

The substances could add flavor to the unappetizing algae that may be grown in interplanetary manned space ships as food for astronauts.

The research was done by Irwin Hornstein and Patrick F. Crowe who work in the Department's Eastern Utilization Research and Development Division at Beltsville, Md.

They used cold water to extract the flavor substances and then freeze-dried the extract into a powder. When heated, the powder produced the rich aroma of roast meat.

The studies showed the main meaty flavor of meats is in their lean parts. But the crucial flavor elements that give pork and beef their distinctiveness are found in the fatty portions.

Science News Letter, April 23, 1960

PSYCHOLOGY

Alligators and Crocodiles Respond to Dinner Call

ALLIGATORS and crocodiles will learn to come when called at mealtimes, but snakes will not. The first two reptiles can hear, but the snake cannot, a psychologist reported.

Dr. Thomas E. McGill of Williams College, Williamstown, Mass., reports in the Psychological Bulletin, 57:165, 1960, that alligators roared, turned toward the sound or snapped when they heard a certain tone. By opening their eyes at the sound of a whistle, lizards indicated that they could hear.

Among the amphibians, head raising, snapping and restless movements indicated that salamanders responded to sounds from tuning forks and organ pipes. Sounds of whistles and bells increased the respiration of frogs.

The hearing of turtles and tortoises has been claimed but is doubted, and snakes are apparently deaf. Dr. McGill refers to J. S. Huxley's statement on the evolution of snakes: " . . . evidence makes it reasonably certain that the ancestors of the group had to pass through a stage of existence underground as deaf, half-blind and legless burrowing lizards." After re-emerging, the snake has, according to Huxley, reacquired much of its sight but not its hearing.

Science News Letter, April 23, 1960

CHEMISTRY

Gold-Plated Bricks Around the Corner

GOLD-PLATED metals, plastics, and glazed bricks and tiles may soon become a common sight in all walks of life. Gold-plated lead bricks have, of course, been available through the "confidence industry" for many years.

Hanovia Liquid Gold Division, Engelhard Industries, Inc., East Newark, N. J., has developed four new gold-bearing organic compounds which decompose at lower temperatures than those previously available. These are gold tertiary butyl, tertiary dodecyl, tertiary octyl, and tertiary hexadecyl mercaptides, and are already industrially available in various formulations.

The solution is applied to the prepared surface and the object is then heated in an oven, or under infrared lamps, to decompose the organic matter. The required temperatures range from about 450 degrees Fahrenheit in the case of plastics, to as high as 1,500 degrees for some enamels on stainless steel. There remains on cooling a thin film of gold, perhaps only a millionth of an inch in thickness. The cost of the process giving a film of this thickness is about 10¢ a square foot.

Not only will this process be used for decorative purposes, but, due to the excellent heat-reflecting properties of gold, it will also be used in protecting some metal components of missiles and high speed jet planes.

Science News Letter, April 23, 1960