ASTRONOMY

Stars Found in All Ages, Sizes and Colors

ALL THE KINDS of stars now known can be found in each of the two main stellar groups, Dr. Wilhelmina Iwanowska of Perkins Observatory, Delaware, Ohio, reported to the American Astronomical Society meeting in Pittsburgh.

The Polish astronomer, who is on leave from the Observatory of Copernicus University, Torun, Poland, said that stars can be assigned to one of two large groups known as population I or II, depending on their origin in a galaxy. This division has been accepted by astronomers for several years.

Dr. Iwanowska's new suggestion is that the different kinds of stars—red or blue giants, dwarfs, white dwarfs, planetary nebulae, novae or other kinds of variable stars—should not be assigned to one population type but can occur in both.

This arrangement would allow for considerable range of ages with the possibility of present star formation in both population types. Astronomers have found stars as young as 300,000 years and more than three billion years. The present classification of a star, Dr. Iwanowska reported, results from its population type and age, with its its life history being governed by its mass.

Science News Letter, April 30, 1960

PSYCHIATRY

Older Persons May Cause Increase in Suicide Rate

MORE senior citizens commit suicide than do persons in any other age group. With more persons living to age 60 or more, the suicide rate will rise unless the medical profession does something about it, a Welsh doctor believes.

Of 881 suicides in Wales between 1951 and 1955, Dr. Alan Capstick of Whitchurch Hospital, Cardiff, Wales, found that nearly 40% of the persons who took their own lives were more than 60 years old. This is a disproportionately high percentage, since the over-60 age group does not make up 40% of the population.

Dr. Capstick checked suicide notes and statements by persons who last saw the victims alive to see if there was any clue that doctors could use to identify potential suicides.

He found that 39% of the suicides appeared depressed during their last hours. Such depression was reported most commonly in suicides aged 60 or more. Notes left by older victims usually included complaints of physical illness, references to the hereafter and a concern for relatives.

About 35% of all suicides studied appeared normal immediately before death but most of them had been depressed previously. These suicides occurred most frequently below age 30. Dr. Capstick reports that the normal appearance might be due to the victim's giving up the struggle and finding some peace in the belief that it was almost finished.

Notes left by those who appeared normal or emotionally disturbed—irritable, angry, worried, afraid or suspicious—more often indicated that the suicide was intended to hurt or take revenge on another person, in contrast to the "complaint type" of note left by the severely depressed.

Dr. Capstick also learned that nearly 80% had been under a doctor's care during the months before death. This factor indicates that the doctors could prevent some of the suicides if they could recognize the danger signals.

However, Dr. Capstick reports in the British Medical Journal, April 16, 1960, psychiatric treatment cannot prevent all suicides. The person who decides on death and then acts quickly probably cannot be stopped. And it is doubtful that medical intervention can save a really determined would-be suicide. Ninety-two of the persons studied committed suicide despite treatment in a mental hospital.

Science News Letter, April 30, 1960

GEOLOGY

New Zealand Sea Level Rising 8 Inches a Century

THE SEA LEVEL along the coast of northeastern New Zealand is rising at the rate of eight or nine inches every hundred years, it is reported.

This rise was determined from a study of the sea-level fluctuations along the coast of the Firth of Thames during the past 4,000 years. Whether it is part of an extended rise in sea level over many centuries or a comparatively minor fluctuation in an otherwise stable sea is not known.

The study, reported by J. C. Schofield of the New Zealand Geological Survey in Nature, 185:836, 1960, indicates that the sea level fell seven feet from 2,000 B.C. to about the beginning of the Christian era. Since then it has remained relatively stable.

The long-term fluctuations were determined by radiocarbon dating of seven shell samples and structural studies of storm ridges, high-spring-tide wash benches, and tidal stream flats.

Periods of sea-level highs were found to correlate well with periods of transgression recorded along the coast of Europe.

Science News Letter, April 30, 1960

ASTRONOMY

Faint Comet Found In Southern Sky

A FAINT comet, the second new one to be discovered this year, has been spotted in the southern sky.

A telescope equipped to take photographs is needed to see this new celestial object, which is traveling southward in the sky and is now in the constellation of Leo, the lion. News of the discovery of Comet Wild was sent to astronomers by Harvard College Observatory, clearing house for astronomical information in the Western Hemisphere.

Science News Letter, April 30, 1960

IN SCIEN

METEOROLOGY

Rain Making Still Puzzle After Three-Year Survey

A SURVEY of three years of rain making efforts in California has left unanswered the question of whether seeding clouds with silver iodide thrown into the air from the ground actually produces more rainfall than would have occurred naturally.

The scientific survey shows that further experiments are needed to solve the puzzle of why some clouds produce rain and others do not, and of whether man's interference can affect rainfall amounts.

Drs. Jerzy Neyman, Elizabeth L. Scott and Marija Vasilevskis of the University of California, Berkeley, report on the effectiveness of a scientific cloud seeding program during the period from 1957 through 1959 in Science, 131:1073, 1960. The Santa Barbara project they studied is rare in weather control projects because the determination of whether or not to seed at any time was decided, in effect, as by the flip of a coin.

Science News Letter, April 30, 1960

TECHNOLOGY

New Radar Takes Detailed Pictures

A REVOLUTIONARY radar system announced by the U.S. Army takes sharp pictures of distant terrain through an antenna.

A plane flying in friendly territory can take pictures of an enemy area far away. The picture that is produced has great detail. It looks as if it were taken from directly over the enemy area.

The radar antenna is mounted on the underside of observer planes. The system sends out radar pulses and records their return on film. The film contains signals that are processed into a detailed picture.

The detail is as good for distant areas as for close ones.

The radar was produced by scientists and engineers at the University of Michigan's Willow Run Laboratories. The Laboratories' director, Dr. J. A. Boyd, said, "The Army commander will have an airborne device that can observe enemy territory both day and night, during all kinds of weather.

"The operating ranges are such that the system can provide valuable information for the Army's long-range missiles."

The radar system in the airplane weighs 700 pounds. Its detailed pictures result from the narrowness of the new radar's beam. But the final picture is a wide strip map produced by joining together the small beam's signals.

The cost of developing a complete unit was $1,200,000. The Army reports future units will cost about $600,000 each.

Science News Letter, April 30, 1960

CE FIELDS

ANTHROPOLOGY

Christmas Wrappings for Volcano Goddess Pele

DURING volcanic eruptions in Hawaii, persons from all walks of life make repeated offerings to the volcano goddess Pele.

This custom is mainly of local origin, but Western influence can be seen in the Christmas wrappings and ribbons around the offerings of breadfruit, banana, pork and tobacco, two scientists report in Science, 131:1095, 1960.

A questionnaire is now being circulated among evacuees from the village of Kapoho, which was covered by lava this year, report Drs. Roy Lachman and William J. Bonk, both of the University of Hawaii.

One aim of the questionnaire is to establish the relationship between the Hawaiian people's "security seeking" behavior during volcanic eruptions and various cultural patterns, level of education and earlier experiences in time of stress.

The inquiry is conducted in English, local pidgin English, Japanese, Korean and three Filipino dialects.

The scientists report that the sacrifices to Pele were not confined to one religious or ethnic group, or educational level.

Among the believers in Pele are highly educated and prominent citizens of the islands. The gifts to Pele are thrown on the lava flow, and often a song is chanted or read during or after the offering is made.

Science News Letter, April 30, 1960

Trout Protector Measures Lamprey Killing Poisons

CONCENTRATIONS of the chemical used to poison fish-killing lampreys may now be measured quickly and accurately, making it easier to ensure that concentrations of the poison, called TFM, do not become great enough to harm trout and other fish.

The lamprey is an eel-like parasite that attaches itself to other fish and, by sucking out their body-juices, eventually kills them. Some years ago they were mostly found in the St. Lawrence River; however, since then, they have migrated as far as the Great Lakes where they have played havoc with the fishing industry. Between 1946 and 1955, for example, the trout harvest from Lake Michigan alone dropped from 6,500,000 pounds to a mere 34,000 pounds.

Prof. M. A. Smith of Bucknell University, Lewisburg, Pa., reported at the American Chemical Society meeting in Cleveland, Ohio, that TFM (3-tri-fluoromethyl-4-nitrophenol), has been found effective in killing lamprey larvae, while leaving other fish unharmed, providing the TFM concentration does not rise above eight parts per million.

An instrument called a photoelectric colorimeter determines the quantity of TFM, at these low concentrations, with an accuracy better than 0.2 parts per million. Prof. Smith said that the instrument registers a vivid yellow color when the concentration becomes too high. The new technique has been developed to give rapid, accurate results in the field. The water sample to be tested is passed through a fine screen and treated with alkali, in the presence of which TFM gives the brilliant yellow color, the intensity of which is measured with the photoelectric colorimeter.

Dr. Vernon C. Applegate of the U.S. Bureau of Commercial Fisheries, Rogers City, Mich., and B. G. Herbert Johnson of the Fisheries Research Board of Canada, London, Ontario, were co-authors of the report.

Science News Letter, April 30, 1960

MATHEMATICS

Electronic "Brains" Chat Via Telephone Lines

ELECTRONIC "brains" are talking to each other over telephone lines and microwave radio. They are helping to manage the development of some of America's big rocket engines.

Rocketdyne Division of North American Aviation, Inc., has linked its engineering labs and test stands in California, Texas and Missouri by leased wire to two big "brains" at headquarters in Canoga Park, Calif. Then the "brains" talk by radio with North American Aviation, Inc., "brains" in Los Angeles.

These computers talk about missiles being developed. They chat about whether a program is on schedule or not, what parts are in short supply, how the production line is performing and whether the project is within the budget.

They have a language of their own. They converse in this mathematical language at a rate of 75,000 "words" a minute.

By keeping track of all the details of building missiles like Thor and Atlas, the machines are expected to save $50,000 a month.

Science News Letter, April 30, 1960

CIVIL ENGINEERING

Asbestos Improves Roads When Added to Asphalt

TOUGHER ROAD SURFACES result from the addition of two percent or three percent asbestos fiber to asphalt, a research project of the Johns-Manville Corporation indicates. In practice, this might reduce road maintenance costs, estimated at nearly $2.5 billion for 1960, by hundreds of millions of dollars. Tests have demonstrated that asbestos-asphalt paving mixes give a tougher road surface with increased resistance to indentation under heavy load and high temperatures, less brittleness under low temperatures, increased flexibility and resiliency, and increased resistance to cracks resulting from exposure to all kinds of weather.

Science News Letter, April 30, 1960

CHEMISTRY

Chemists Switch Atoms, Find Antihistamines

A CLASS of highly active antihistamine drugs has been found.

Miss Ellen Donoghue, a chemist for CIBA Pharmaceutical Products Inc., told a meeting of the American Chemical Society in Cleveland, Ohio, that she and her colleagues have been working on a chemical group of substances called isoindolines. They believed they could make a substance with antihistaminic activity by pulling an atom out of the isoindoline molecule's nucleus and putting a different atom in the empty space.

It worked. The new compound was a fairly good antihistamine, but the chemists were not satisfied. They began knocking atoms out of the sides, top, bottom, middle, front and back of the new molecule. Each time they substituted an atom, they got a new compound.

There were hundreds of compounds, some not so active, and others quite powerful. The one that packs the biggest punch is pyrindene, which has a carbon atom in place of nitrogen atom in the nucleus. It is more than twice as potent as the best antihistamine known.

In two years of clinical testing, 2,500 patients took three to four milligrams of pyrindene per day. The new drug was "very effective," Miss Donaghue said, and there were few side reactions.

Coauthors of the paper were Miss Patricia Wenk and Drs. C. F. Huebner, E. Sury and J. A. Nelson.

Science News Letter, April 30, 1960

CHEMISTRY

Chemical Process Bonds Polyethylene to Copper

A CHEMICAL METHOD of coating copper with plastic—of particular value for sealing transoceanic cables—has been reported.

The bonding method forms chemical grippers on polyethylene plastic that cling to the copper, eliminating the need for adhesives, Dr. Arthur T. Spencer of the Bell Telephone Laboratories, Murray Hill, N.J., told the American Chemical Society meeting in Cleveland, Ohio.

The method, which also may be used in flexible printed circuits and microwave devices, makes use of the oxidation of the polyethylene in contact with an oxide film on the metal in a short-time, high-temperature molding operation. There is no intermediate adhesive layer.

High and reproducible bond strengths are achieved by the process between a wide range of polyethylenes and copper alloys bearing at least 85% copper. Bonds formed by this method failed through tearing in the polyethylene rather than by a lack of adhesion at strength values at least several times those obtained by methods now in commercial use.

Coauthor of the paper was Richard G. Baker, also of the Laboratories.

Science News Letter, April 30, 1960