

ASTRONAUTICS

First Spaceman to See "Night" Sky in Daytime

➤ IF THE FIRST man into space takes off during the day, he will see the "night" sky full of stars and planets when his ship lifts him to 328,000 feet, calculates Dr. M. J. Koomen of the Naval Research Laboratory's micron waves branch in Washington, D. C.

Two Navy balloonists, twice carried to heights of about 85,000 feet, reported the daytime sky appeared black. But they said the impression of blackness may have been partly subjective owing to the fact that their view of the sky was framed by clouds below and the balloon above, both brightly illuminated. They reported seeing no stars or planets.

Dr. Koomen has calculated, however, that Venus, Jupiter, the star Sirius, and Mars, in its brighter phases, should be visible to the naked eye at 100,000 feet, but only if the observer knows where to look for them. Under "rare and favorable circumstances," Saturn and Canopus may be seen also.

But for a spaceman to see the planets and stars during the day as clearly as at night from the surface of the earth, he must climb to 328,000 feet, or roughly 62 miles, Dr. Koomen calculated. His figures do not take into consideration effects of air-glow—light emitted by excited and ionized atmospheric gases. Dr. Koomen's calculations are presented in *Research Reviews* (Feb.) by the Office of Naval Research.

Science News Letter, February 14, 1959

ICHTHYOLOGY

Stonefish Venom Causes Low Blood Pressure

➤ EXTREMELY LOW blood pressure is apparently what kills the victim of a stonefish, a California researcher reports.

Using rabbits as "guinea pigs," Dr. Paul R. Saunders of the University of Southern California School of Medicine reports that the stonefish's venom acts on the animal's heart and circulatory system and, in larger doses, is associated with injury to the muscular part of the heart wall.

Death in a human may occur within a few hours after being stung by the fish's venomous spines—there are two large venom sacs on each of 13 back spines.

The stonefish or scorpion fish is colored like the coral rocks among which it lives. A fairly large fish, it tips the scales at about four pounds and is about one foot long. It is found in shallow water over wide areas of the tropical Indian and Pacific Oceans.

Wounds usually occur on the hand or foot as a result of punctures by the dorsal spines. Extreme pain follows which spreads over the entire area. A local anemia and swelling soon appear. Weakness, sweating, respiratory distress and convulsions may follow and complete recovery from the local effects can take as long as weeks.

About 0.05 milliliter of undiluted venom was taken per spine in his experiments,

Dr. Saunders reports. It is a clear, colorless fluid with about two percent nitrogen, 13% protein content, and 14% total solids. Moderate doses of both fresh venom preparations and samples kept in storage for a year were equally potent.

Electrocardiographic tracings were obtained from 12 rabbits given the venom, in addition to recordings of respiration and blood pressure from a carotid or neck artery.

Small doses produced a slight fall in blood pressure and an increase in respiratory rate, Dr. Saunders reports in *Science* (Jan. 30). Larger doses caused a marked fall in blood pressure with evidence of heart injury.

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DERMATOLOGY

Bald Bird Aids Man's Study of Hair Loss

➤ A BIRD that not only molts but actually can become bald is now being studied in an effort to determine what causes baldness in man.

The adult male wattled starling frequently loses the feathers from the top of its head in a manner similar to the balding process in man. Dr. James B. Hamilton, department of anatomy at the State University of New York, Brooklyn, reported this discovery at a conference on "Hair Growth and Hair Regeneration" sponsored by the New York Academy of Sciences in New York.

This bird may provide the first opportunity for controlled laboratory experiments with natural baldness in an animal, he speculated.

Scientists still do not know what causes baldness, but some patients with the relatively unusual spotty baldness have responded favorably to corticosteroid treatment. Dr. Irwin I. Lubowe of the department of dermatology at New York Medical College reported some success with 60 patients receiving this therapy.

These persons were not completely bald, but had bald spots. Careful long-term therapy with corticosteroids apparently corrected disturbances that contributed to hair loss in some patients and stimulated complete new growth.

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ENGINEERING

Better Communications Needed For Jet Age

➤ THE JET AGE has increased the need for faster, more efficient communications.

C. H. Stewart II of Bell & Gossett Co., Morton Grove, Ill., told the American Institute of Electrical Engineers meeting in New York, that, while commercial air carriers are fulfilling their communications needs largely by voice circuits, operating personnel of jet aircraft are convinced that a more efficient means of transferring data is an "absolute necessity."

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IN SCIENCE

TECHNOLOGY

Air Force Atlas ICBM's In Production Line

See Front Cover

➤ THE FIRST PRODUCTION line photograph of the U. S. Air Force Atlas intercontinental ballistic missile shows how the vehicles are assembled and checked out in the San Diego, Calif., plant of Convair (Astronautics) Division of General Dynamics Corporation.

The photo on the cover of this week's SCIENCE NEWS LETTER shows the huge stainless steel missiles nested in elevated docks. Atlas is 10 feet in diameter and 75 feet long.

The first operational missiles are slated to be delivered to Vandenburg Air Force Base, Calif.

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MEDICINE

Paraplegics Use Remote Control Typewriter

➤ SOME PARAPLEGICS will now be able to communicate by means of a remote control typewriter, operated with a beam from a small lamp attached to the patient's head.

The leg, arm, and other muscles of these persons are usually unable to function. However, the neck and head muscles normally can be controlled to some extent. Hence, patients can usually learn to operate the typewriter by controlling the beam of light, Dr. Alan Ziskind of the Boston City Hospital and Richard L. Ziskind of Boston report in the *Journal of the American Medical Association* (Jan. 31).

The typewriter works like this:

The patient, by slight movement of the head, directs the beam of light onto a desired letter from an entire alphabet mounted on a photoelectric cell panel board. When the light strikes the letter, it triggers the corresponding letter on an electric typewriter coupled to the board.

A small switch that completes the circuit will be used by beginners, since it requires practice to avoid unintentionally sweeping over many letters in the process of selecting one. After the person becomes experienced at using the machine, he can forego the use of this microswitch, the developers said.

The switch can be controlled by an elbow, finger or other area of the body that can provide a small amount of muscle control and movement.

Some paralyzed persons were able to type about 30 words per minute. The machine is important because it helps rehabilitate many persons who must rely on the written word for communication.

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THE FIELDS

CARDIOLOGY

Various Chest Pains Can Mock Heart Disease

► THE ASSUMPTION that a severe chest pain is due to a heart condition can cause serious damage to the patient, a cardiologist warns.

Pain over the chest is a common complaint and a diagnosis implying that all is not well with the heart has become a common custom, Dr. William Evans, physician to the cardiac department of the London Hospital and National Heart Hospital, reports in the *British Medical Journal* (Jan. 31).

During a period when 1,000 consecutive cardiac cases were being assembled, 370 others were found to have chest pain indistinguishable from true cardiac pain. These patients reported pain of the same character in the same places, and responded to rest and proper exercise, as did those of true cardiac cases.

Some causes of these cardiac-like pains are indigestion, muscular rheumatism, pericarditis, or inflammation of the sac that contains the heart, nerves, or an imaginary pain caused by neurosis. Indigestion mocks cardiac pain so closely that it can be considered the biggest deceiver, the cardiologist says.

Very close attention should be paid to the past history of the patient, numerous electrocardiograms should be taken, and the physician should observe the nature of the pain.

Otherwise, countless patients can have the burden of an imaginary heart condition that will cast a veil of gloom into their lives. Customary hobbies and even occupations are frequently shifted to accommodate a heart condition. Unless the diagnosis leaves no doubt that the pain is caused by a heart condition these worries are an unnecessary burden for any patient.

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GENERAL SCIENCE

New Agency Proposed For U.S. Science Programs

► FORMATION of a new agency to promote coordinated policy planning and more effective management of Federal science programs has been recommended by the President's Science Advisory Committee, headed by Dr. James R. Killian Jr.

The President has approved establishment of such a group and has asked that an executive order be prepared for bringing it into existence without delay.

It will be known as the Federal Council for Science and Technology and will be comprised of representatives from each governmental department or agency with sub-

stantial responsibilities in these two broad fields.

The recommendation specified that the chairman of the new council should be the Special Assistant to the President for Science and Technology, a post now held by Dr. Killian.

Suggested initial membership should include the following: the director of the National Science Foundation, a commissioner of the Atomic Energy Commission, the administrator of the National Aeronautics and Space Administration, the director of Defense Department Research and Engineering, and representatives from the Department of Health, Education and Welfare, and the Departments of Interior, Commerce and Agriculture.

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METALLURGY

Plastics Combine Metals Previously Incompatible

► PLASTICS MAY be used to unite previously incompatible elements, opening new vistas of industrial applications for reinforced plastics.

John Delmonte, general manager of Furane Plastics, Inc., Los Angeles, told the Society of the Plastics Industry, Inc., meeting in Chicago that certain combinations of metallic elements previously considered metallurgically impossible may now be accomplished in a matrix of liquid epoxy resin.

Such metals, he said, would join with the plastic to form a "filled" system, not a true alloy.

Mr. Delmonte mentioned graphite, lead, copper, zinc and tin alloys as materials that can be united in numerous combinations in a matrix of plastic. Metals used can be chosen for properties wanted, such as surface friction, density, and specific heat.

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FOOD TECHNOLOGY

Improved Dehydrator Developed for Foods

► A NEW DEHYDRATOR that features fast, uniform food drying has been developed, the U.S. Department of Agriculture announced.

It promises to save hours in drying time in addition to turning out a better product. The new dryer also solves the problem of time-consuming removal of the wood splinters that sometimes contaminate foods dried on wooden trays, USDA scientists said.

Consisting mainly of a broad, endless, moving wire-mesh belt that forms a trough, the dehydrator is expected to contribute to commercial use of two new processes—dehydrofreezing and dehydrocanning. It assures rapid as well as uniform drying of the food. A product that is uniformly dried will regain its shape uniformly when water or moisture is added, USDA scientists said.

Several companies have adopted the dryer which was developed at the USDA's Western Utilization Research and Development Division in Albany, Calif.

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AGRICULTURE

Imported Insect Enemies Fight Citrus Pest

► TWO IMPORTED WASPS may soon be helping citrus fruit growers in California combat red scale, a pest that costs growers millions of dollars annually in preventive sprays.

The two species of *Aphytis* wasps collected in the Far East several years ago and brought to this country appear to be thriving, Paul DeBach, entomologist at the University of California's Citrus Experiment Station at Riverside said. In the Orient, California red scale is under good biological control largely because of these wasps.

The parasitic insect lays its eggs on the scale body. The hatching larvae then devour the scale. If the University's introduced species show they can survive cold and heat extremes, they may add greatly to the effectiveness of other natural enemies of the citrus pest.

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MEDICINE

Scientists Gain Ground On Infectious Hepatitis

► THREE SCIENTISTS are in swift pursuit of a diagnostic method and preventive immunization against infectious hepatitis.

These men have developed a procedure by which a preventive vaccine may someday be produced. They are Drs. Murray Sanders and Manuel G. Soret, department of microbiology, University of Miami, and Dr. Eloy Padron, department of experimental pathology, University of Havana, Cuba.

The doctors say that they have been administering, by mouth, a hepatitis-causing serum to ten volunteer human patients. Currently, these volunteers are continually being checked to ascertain whether the antibodies, or germ fighters, being produced will reach a level sufficient to ward off future infections. Results so far look very promising, Dr. Sanders reported.

Investigators in this field have not been able to transfer the human infectious hepatitis virus to an animal. These three men were able to transfer one type of virus to mice. The mice, in turn, reacted similarly to humans infected with hepatitis.

Serum from these mice is now being given to the volunteers. They appear to be successfully building up a satisfactory level of virus-fighting antibodies.

Infectious hepatitis attacks any sex at any age. Symptoms include fever, chills, abdominal pain, nausea, headache and vomiting. It can cause serious permanent damage to the liver, and even death.

This virus-caused disease strikes between 50,000 and 100,000 persons annually in the United States alone. Unfortunately, to date, scientists have been unable to diagnose the disease before it caused widespread damage. Furthermore, there is as yet no known preventive measure against infectious hepatitis.

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