ASTRONOMY

Brilliant Supernova Flares in Southern Sky

➤ A RARE astronomical event, a brilliant supernova, 200,000,000 times as bright as the sun, has blazed forth in the southern sky.

These unusual heavenly displays occur at an average rate of about one in each galaxy every 300 years. Galaxies are huge pinwheels of hundreds of millions of stars like the Milky Way galaxy in which the sun, earth and other planets are located.

The brilliantly flaring star was discovered by Enrique Chavira, astronomer of the University of Mexico. Although intrinsically so brilliant, it was barely visible in a six-inch telescope (13th visual magnitude). The galaxy in which it was found on June 28 is so inconspicuous that it has neither name nor number.

Dr. Guillermo Haro, director of Mexico's National Observatory, reported the discovery to Harvard College Observatory, Cambridge, Mass., clearing house for astronomical information in the Western Hemisphere. He said it was "unusual" to detect a supernova at the critical stage of highest brilliance.

The supernova is located in the constellation of Virgo, the virgin, which is visible low in the southwestern sky shortly after dark. Its astronomical coordinates are 13 hours, 21 minutes, 42 seconds in right ascension and minus 20 degrees, 52 minutes in declination, which is not far west from the galaxy known as NGC 5134.

• Science News Letter, 82:40 July 21, 1962

GEOPHYSICS

Moon May Tell Story of Origin of Solar System

➤ LOCKED BELOW the surface of the moon are many clues unaltered by time which may tell us of the origin of the solar system.

Dr. Gordon MacDonald, a noted geophysicist of the University of California at Los Angeles Institute of Geophysics and Planetary Physics, believes that when we are able to dig below the lunar surface to determine its density and heat content, a positive theory on how the earth-moon system was formed will be pieced together.

Chemical analysis of the moon's composition could also determine whether it is typical of our entire solar system. The low amount of iron in the sun and the low density of the moon suggest to Dr. MacDonald that the lunar material may have a composition similar to the sun's.

One of the questions raised by Dr. MacDonald is whether the earth has always had a moon. Modern astronomical observations agree with similar ones made by the Babylonians thousands of years ago indicating that the earth is gradually slowing down and that the moon is moving away from the earth.

If this process has taken place at a constant rate, then the moon was fairly close to the earth a billion years ago. However, the earth is nearly 5 billion years old. Did the earth possess a moon during the first 4 billion years?

The answer to that question may come when we are able to examine the moon's subsurface on the side which always faces the earth. There, a land tide, like a huge plateau on the lunar surface, has been formed from the constant pull of the earth's gravitational field. When examined, this area of the moon's geography may complete the picture of the puzzling earth-moon relationship.

• Science News Letter, 82:40 July 21, 1962

HOME ECONOMICS

Children Studied for Effects of Three Cultures

➤ DIFFERENCES IN PERSONALITY and behavior among children in three cultures will be studied for four years at the New York State College of Home Economics at Cornell University by Profs. Urie Bronfenbrenner, Edward C. Devereux Jr. and George J. Suci.

The hypothesis to be tested is that there are differences between children reared in the family compared with those reared collectively as in cooperative nurseries and boarding schools. The aim is to determine whether the different socialization processes affect the child's relation to other persons, his tendency to conform, and his capacity for autonomous, self-motivated action.

The study will be carried out in the United States where children are raised in a parent-oriented culture, in Switzerland where there is a combination of parent-oriented and boarding school atmosphere, and in Russia, which has a system of collective socialization where the child may enter nursery school at three months and be exposed henceforward to the disciplines and rewards administered by his peers.

The National Science Foundation is supporting the study.

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HEALTH

U.S. Air Force Adopts Canadian Gymnastics

➤ THE U.S. AIR FORCE is borrowing training for physical fitness from Canada.

The Air Force has invested $100,000 in 2,000,000 Canadian military physical fitness bulletins to be distributed to all Air Force military personnel in July. Physical fitness efforts by the Air Force are now limited to encouraging troops to use gymnastic equipment, such as parallel bars and bar bells, with which most bases are equipped, and to take part in group sports. Under the Canadian program, American Air Force personnel will be doing push-ups, body-bends, touching their toes and other similar exercises.

No equipment of any kind is needed for these "dynamic tension" type exercises that can be done in the barracks, on the field or at home. They are designed for all age groups. Age may limit the number of exercises to be performed daily but not the kind. Women will have special exercises.

• Science News Letter, 82:40 July 21, 1962

IN SCIENC

OCEANOGRAPHY

Small "Cubmarine" to Be Used to Study Ocean Life

➤ A TWO-MAN submarine called the "Cubmarine," is now being readied for ocean exploitation in Annapolis, Md.

Sharks are one form of marine life that will be studied from the small submarine, particularly to find out how they react to various repellents.

The boat is 18 feet long and only 5 feet, 7½ inches high. Being a two-seater, a trained operator can occupy one of the seats, leaving the scientist-passenger free to make observations. The Cubmarine's 12 portholes, all but one of which are seven inches in diameter, provide good visibility.

Its range is 20 miles and it can submerge to depths up to 230 feet. The Cubmarine's speed is five knots submerged and six knots on the surface. It can stay out as long as eight hours.

The boat was designed and built by the Perry Submarine Builders, Inc., West Palm Beach, Fla., and has been leased for operation to Geraldines, Ltd., Annapolis, it is reported in Naval Research Reviews, June, 1962.

• Science News Letter, 82:40 July 21, 1962

DENTISTRY

Water Without Fluoride Increases Teeth Problems

➤ CROOKED TEETH occur two and one half times more frequently among children drinking water without fluoride.

In a study in Newburgh and Kingston, N. Y., it was shown that more than 22% of Kingston children, aged 13 and 14, had handicapping malocclusions (bad position of the teeth so as to interfere with chewing) whereas in Newburgh the rate was about 9%. Kingston does not have fluoridated water; Newburgh does. The study was conducted by the New York State Department of Health.

The lower incidence is supposedly due to the lower rate of tooth decay and tooth loss among children who drink fluoridated water.

The rate of decayed, missing and filled teeth per child was nearly four times greater for Kingston children, who do not drink fluoridated water, than for children in Newburgh. Only 13% of the Kingston children had normal tooth relationships, as compared with 35% of the Newburgh children.

Handicapping malocclusions, if not corrected, often result in disfigurement or speech defects that may be a serious obstacle to normal development, education and employment in later life.

Newburgh and Kingston each have a population of about 20,000.

• Science News Letter, 82:40 July 21, 1962

E FIELDS

MEDICINE

New Drug for Shock And Vascular Collapse

➤ A NEW LIFESAVING drug to treat shock and vascular collapse in which the blood pressure of a patient must be restored immediately has been developed by CIBA Pharmaceutical Company.

The drug, called Hypertensin-CIBA (angiotensin amide), will be used primarily by surgeons, internists and anesthetists to treat shock, the vascular collapse seen in a variety of medical and surgical emergencies. It has been tested in the treatment of shock and circulatory collapse caused by blood poisoning, severe allergic reactions, drug reactions, burns, hemorrhage, and anesthesia.

The basic physiological problem of shock is a reduction in the effective volume of circulating blood. This can occur as a result of loss of blood, or when stress (pain, cold, fear, asphyxia) upsets the regulatory mechanisms governing flow and pressure.

The drug which took research scientists in Basle, Switzerland, five years to develop, is a polypeptide normally present in man and is one of the most potent agents for increasing blood pressure known to science.

It is administered by intravenous infusion and a dose as small as three micrograms per minute will produce a sharp rise in blood pressure. Its use will be limited almost entirely to hospitals.

• Science News Letter, 82:41 July 21, 1962

MEDICINE

Medicare Conflict Could Happen in U.S.A.

➤ IN THE CANADIAN prairie province of Saskatchewan the drama of conflict in doctoring the public, in some respects, is a preview of what could happen in the United States. It is also in a sense an extension of the British medicare situation.

Since some striking physicians and surgeons have so far been on holiday only for a few days, the public has not suffered in a major way. British medical practitioners are beginning to arrive for service to the provincial government. Hospitals are being manned for emergencies. Some doctors will not join the work stoppage which is encouraged by the Saskatchewan College of Physicians and Surgeons, the regional equivalent to a state medical association allied with the American Medical Association.

The College, a professional organization and not a teaching institution, has opposed the medical care act in effect since July 1, which is financed by a five percent tax on wages, like social security, and also other new taxes.

The medical men object to fixed fees for service being paid by the government, even if there is free choice of physicians. They see this as governmental control over medical practice and compulsion and coercion of doctors.

Fundamentally, the average man resents the large earnings of some doctors, especially surgeons. They know that the training of M.D.s is longer and more expensive than most professions, but envy colors their feelings as to medical economics when they incur obligations for medical services without any good idea of the bill to be rendered. The wheat farmer would like to sell his service on the same basis. This is, of course, as true in the United States as in Canada.

The American Medical Association and the members of Congress considering American medical care programs are watching the present Canadian experience, just as they have considered British and other foreign experience.

• Science News Letter, 82:41 July 21, 1962

ENGINEERING

Handbook Helps Design Of Fallout Shelters

➤ A HANDBOOK to help in the design of fallout shelters is now available. With the current apathy surrounding the fallout shelter program, it is unlikely to become a best-seller.

The handbook can also be used in analyzing existing buildings to see what capabilities they have for providing shelter and in assessing the possibilities for improvising shelters.

"Structure Shielding Against Fallout Radiation From Nuclear Weapons" was prepared at the National Bureau of Standards and can be ordered from the Government Printing Office, Washington 25, D. C., for 75 cents.

A large number of engineering charts and graphs are included, and most of such information was obtained from computer calculations. L. V. Spencer of the Bureau, who wrote the handbook, compares estimating radiation levels at different locations in a building to the problem of determining the levels of light in a similar structure on a cloudy day, but with all partitions and walls having varying degrees of transparency rather than being opaque.

• Science News Letter, 82:41 July 21, 1962

TECHNOLOGY

Strontium-90 to Power Communications Satellite

➤ CANCER-CAUSING strontium-90 can be safely used to provide continuous power for communications satellites for 20 years.

Dr. Jerome G. Morse, atomic expert, Martin Company, Baltimore, told the British Planetary Society that generators powered by the atomic by-product can now compete with solar cells for low power. Power systems of between 50 and 350 watts would be adequate for radio and TV relay satellites. A 60-watt generator would weigh about 120 pounds.

Two nuclear generators using plutonium were placed in orbit last year and performed satisfactorily.

• Science News Letter, 82:41 July 21, 1962

ECOLOGY

Study Radiated Animals In Natural Habitat

➤ THE EFFECTS of continuous, low-level radiation on animals in their natural habitat may be found from a study at the Atomic Energy Commission's Nevada Test Site.

The study is necessary because it is impossible to learn the effects of such radiation on an animal population from laboratory studies of individual animals. Mortality and fertility rates of the irradiated population in successive generations may help determine how much radiation the animals can tolerate in addition to the other day-to-day hazards in their lives.

Animal populations, including kangaroo rats, pocket mice and reptiles, will be fenced in four circular 20-acre study areas. Radiation sources of cesium-137 will be placed 50 feet above ground in the center of the enclosures. These can be lowered by pulleys and cables into special shielding devices to protect investigating biologists.

Rodents in the area will be individually marked and periodically counted for several generations. Similar studies of the reptile population are planned.

Radiation effects on vegetation in the area will also be studied by scientists from the University of California at Los Angeles Laboratory of Nuclear Medicine and Radiation Biology, who are supported by the Atomic Energy Commission. Drs. Norman R. French, Frederick B. Turner and William Martin are associated in the study.

• Science News Letter, 82:41 July 21, 1962

OCEANOGRAPHY

Hydrophones Pick Up Deep-Sea Sounds

➤ A MECHANICAL "EAR" is eavesdropping on the mysterious sounds of deep-sea creatures.

Hydrophones, resting on the ocean floor in the Florida Straits, are being used by University of Miami scientists to obtain information on marine animals that interfere with the operation of sonar equipment by causing confusing noise.

Many animals, such as snapping shrimp and barnacles, make sounds that greatly increase the sound level. Others make sounds that may be confused with those produced by surface or underwater vehicles, possibly enemy craft. Submarine detection uses underwater sound.

Later studies will attempt to identify and analyze individual sounds emitted by particular animals under natural conditions and to lure them into areas being photographed.

The hydrophones are connected by cable to the Lerner Marine Laboratory on Bimini Island in the Bahamas. An underwater television camera may be added eventually to the system, it was reported in Naval Research Reviews, June, 1962. The study, conducted by the University of Miami Institute of Marine Science, is supported by the Office of Naval Research.

• Science News Letter, 82:41 July 21, 1962