



**PILE OF HUMAN BONES**—Two of today's monks at the monastery add to the great pile of bones left by departed members of the community; the skulls go to another stack.

but the nomads could not get over the wall, and they were not equipped with siege engines to breach it. That the wall is really old is attested by marks made on it by visiting western knights during the Crusades.

St. Catherine's Monastery is known to the learned world chiefly as a repository of a

great mass of ancient manuscripts, including some of the oldest known texts of the Bible. Most of these of course are in Greek, but there are hundreds in Syrian, Arabic, Coptic and other languages. Even yet there are thousands of pages that no modern scholar's eye has ever seen.

Science News Letter, September 4, 1948

#### RADIO-PHYSICS

## "Cosmic Noise" Studied

► "COSMIC NOISE" which left a region in outer space about 3,000 years ago is interfering with television, radar and FM and short-wave radio communication today. These mysterious energy waves have been recorded and studied by Australian scientists.

This radio frequency radiation comes from a mysterious space in the group of stars which forms the constellation Cygnus, the swan. It is a region where there are very few stars and little visible light.

J. G. Bolton and G. J. Stanley of the Division of Radiophysics of the Council for Scientific and Industrial Research have reported their investigation in the first issue of the new AUSTRALIAN JOURNAL OF SCIENTIFIC RESEARCH (March) published in Melbourne.

The radiation source in Cygnus, they explained, produces the second loudest "cosmic noise" of any place in our galaxy, the Milky Way. A place in the constellation

Sagittarius, the archer, in the center of our Milky Way produces the loudest "cosmic noise" while "solar noise" from the sun produces even greater effects on communications since the sun is so much nearer.

The point in Cygnus which "broadcasts" to earth is unusual because it sends out two kinds of signals. One signal is of constant intensity at about 100 megacycles frequency and above; the other is of varying intensity and uses frequencies below 100 megacycles.

The Australian scientists found that this spot in Cygnus sends 1,500 times more energy to the earth than any point in the surrounding area. The source is probably some 3,000 light years from the earth.

Maps of the sky showing the different frequencies of radiation coming from various spots in the heavens have been made by Grote Reber of the U. S. National Bureau of Standards.

The source of the energy waves is not associated with any stars or nebulae. The

*"There are no problem children, only problem environments and parents."*

## EMOTIONAL MATURITY

by LEON SAUL, M.D.

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## Do You Know?

In what is called cold cathode *fluorescent lighting*, the lamp has a similar appearance to other fluorescent lighting but the cathode operates relatively cool and no pre-heating is required; when the switch is pressed it lights immediately.

The wily *crow* will abandon a tree formerly used as a roost if he detects any changes made in the vicinity of the roost; he is quick to detect such things as a dynamite bomb installed to destroy him and his flock.

The so-called "*Boston Stone*," recently rededicated in Massachusetts, is a stone two-barrel trough brought from England late in the 17th century and used for grinding oil and pigments for paint by means of large stone ball.

*Wheat* was practically the only raw material available in large quantities during the war for the production of alcohol, an essential for making munitions and synthetic rubber; corn and molasses, normal sources of industrial alcohol, were scarce.



### Measure Current Precisely With K-2 Potentiometer

Scientists at Institute for Atomic Research, Iowa State College, Ames, Iowa, chose this K-2 potentiometer for its precision and facility of use. They determine current in the magnetic coil of a Beta-Ray Spectrometer by measuring voltage across a standard 0.01 ohm shunt.

Catalog EH22(1), free on request, describes Type K Potentiometers.



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energy probably comes from ionized particles in outer space.

Scientists now believe that the energy comes from protons, positively charged particles which are part of the core of atoms, and negatively charged particles, electrons, in outer space. Radio frequency energy is sent out to earth when an elec-

tron, which has been attracted by a proton until it circles around and around the tiny particle as a comet circles around the sun, finally manages to pull away. When this happens, energy of radio wave frequency is released. This process is called free-free electron transition.

Science News Letter, September 4, 1948

#### ASTRONOMY

## Stars Eject Cosmic Rays

► COSMIC RAYS, created in the atmospheres of certain stars whose magnetic field fluctuates violently, are shot forth periodically from these stars.

This latest theory of the birth of cosmic rays is advanced by Dr. Horace W. Babcock of Mount Wilson Observatory of the Carnegie Institution of Washington.

The random directions from which cosmic rays approach the earth would thus be explained, Dr. Babcock points out. Full details concerning his new theory appear in the *PHYSICAL REVIEW* (August 15).

The number and distribution of magnetically active stars is not yet definitely known, but they are probably fairly numerous throughout the disk-shaped galaxy.

It was Dr. Babcock's continued study of the peculiar star HD 125248 that led him to picture such stars as ejecting cosmic rays. In this star, the polar magnetic field regularly changes from plus 7,800 gauss to minus 6,500 gauss, and back, in 9.295 days.

The star's alternating magnetic field sug-

gests that at certain phases the suppressing effect of space charge that tends to keep cosmic rays close to the star will be eliminated. Periodically positive ions and electrons, Dr. Babcock reasons, are ejected alternately from the polar regions of the star at certain phases of each magnetic cycle.

Lines in the star's spectrum change in intensity as indicators of the changing magnetic cycle. The width of the europium lines, for instance, is greatest when the star's magnetic field reaches maximum; the chromium lines are widest when the greatest negative magnetic intensity is attained.

About a score of these peculiar variable stars, brighter than the sixth magnitude and thus visible to the naked eye, are known. All are suspected to have varying magnetic fields. But these magnetic variations are more fundamental than the mere changes in line intensity would indicate, the Mount Wilson astronomer says.

Science News Letter, September 4, 1948

#### ASTRONOMY

## Satellite Missile Needed

► DEVELOPMENT of a satellite missile which, like a moon, will continuously circle around the earth—600 miles or so above the surface—is being seriously considered by American scientists.

This was revealed to the Association of Terrestrial Magnitude, affiliate of the International Union of Geodesy and Geophysics, Oslo, Norway, in a communication from Dr. James A. Van Allen of the Applied Physics Laboratory of Johns Hopkins University.

Such a missile would carry scientific instruments needed to collect data about the rarefied atmosphere surrounding the earth. Once started, no fuel would be needed to keep the missile circling around our planet.

In the even dimmer future is the prospect of astronomical flights into space Dr. Van Allen's statement said.

Today rockets enable scientists to explore the upper atmosphere by carrying apparatus high above the earth. Many missing links in the physics of the upper air will be filled in through the help of these instruments.

Since this rocket research began two years ago, scientists have:

1. Measured the cosmic ray intensity above the atmosphere.
2. Captured samples of air 35 miles above the earth's surface.
3. Produced smoke puffs and smoke trails at high altitudes to study wind velocities.
4. Measured the atmospheric temperature and pressure up to 40 miles.
5. Extended the solar spectrum far into the ultraviolet.

Up to July 1, some 31 V-2's had been fired with upper atmosphere equipment as the primary payload. Twenty-one of these flights have been successful, attaining summit altitudes ranging from 62 to 114 miles, with an average of 84 miles.

Data obtained through rockets have been captured by two principal methods:

1. By radio from a suitable multi-channel transmitter in the rocket to a system of receiving and recording stations on the ground. This is called telemetering.
2. By actually recovering the records produced within the rocket during flight.

It was soon realized, Dr. Van Allen continued, that captured German V-2's, converted from war to peacetime use, would provide at best a series of high altitude