



#### BEAUTY FLAUNTED AGAINST DEATH

*Lovely as the houris of Arabian desert legend, are the flowers of many species of cactus. They need not wait for kindly weather, but can open in the midst of desolation, for their needs are supplied from the stubbornly hoarded water in the thick, succulent joints of the stem.*

soil conditions. Thus, when a thicket of mesquite bushes was discovered in the midst of a desert plain, they dug into the ground to find out why.

They discovered that the soil consisted of a fine alluvial clay, and that several streamways poured their water over the entire plain in the violent rains that come at intervals in summer. These mesquite bushes stood at a point where such water was concentrated underground from a wide area, and the moisture on which they thrive so well remained nearly constant and wholly adequate to their needs at a depth of five to ten feet, no matter how dry and hot it was on the surface.

*Science News Letter, July 14, 1934*

A new rubber cement for tree wounds is said to retain its plasticity, so that it does not crack nor shrink away as the tree grows.

Calendar reform advocates are interested to find the government preferring the four-week month, thirteen-months-year system as the time unit for measuring industrial progress.

RADIO

## To Make Survey of Delayed Echoes of Radio Signals

### Owners of Short Wave Sets are Asked to Cooperate With National Bureau of Standards in Project

**R**ADIO engineers are setting up the framework of a world-wide plan to trace the mystery of puzzling long radio echoes. The round-the-world echo is a well known phenomenon occurring one-seventh of a second after the original signal. This echo represents the time for the wireless wave to circle the earth. Long-delay echoes, however, may occur as much as three seconds after the primary signal.

Dr. J. H. Dellinger, chief of the radio section of the National Bureau of Standards, has asked Science Service to acquaint owners of short-wave sets with the plan for investigating these long-delay echoes, and thus aid the solution of the mystery of their origin.

The British Broadcasting Corporation is coordinating the survey on a world-wide scale. Ten thousand listeners in Great Britain are already entered in the project.

Two high-power high-frequency stations are transmitting special signals to facilitate observations by anyone who cares to listen with a short-wave receiving set. They are: GSB, Daventry, England, and HBL, Geneva, Switzerland (the League of Nations station).

GSB transmits a 1,000 cycle note on a frequency of 9510 kilocycles each Sunday, Tuesday and Thursday, from 3:25 to 3:55 a. m., Eastern Standard Time.

HBL transmits on 6675 kilocycles each Sunday, Wednesday and Friday from 6:00 to 6:30 a. m., E.S.T.

Each transmission, Dr. Dellinger explains, consists of a five-minute adjusting period, followed by the letters of the alphabet in Morse code at one-minute intervals. During the interval between signals observers are asked to listen for echoes and check the elapsed time with a watch having a second hand.

GSB can be picked up on an ordinary short-wave broadcast program receiver, but HBL requires an oscillating receiving set.

"In recording observations," Dr. Dellinger says, "listeners should give the identifying letter of the signal observed,

the time to the nearest second at which the direct signal was heard, and the time to the nearest second at which the echo was heard. In addition an estimate of the relative intensity of the direct and echo signal, a description of the sharpness or apparent shape of the echo, and any pertinent information on interference, fading of signals, or other conditions of observations will be helpful in the survey."

It is hoped that data collected from thousands of individuals will help clear up the controversy over the cause of the long-delay echoes.

Dr. C. Störmer of Norway believes that there are streams of charged electric particles, the electrons, out in space some hundreds of thousands of miles from the earth's equator. These electrons, converging on the earth's magnetic poles, account for the northern lights. The long-delay echoes, by Störmer's theory, are reflections from such electron streams in space.

The other theory of long-delay echoes, advanced by Dr. B. Van der Pol of Holland and others, suggests that the echoes are due to a slowing up and a reflection of the radio signals from a peculiar distribution of ionization occurring in the ionosphere. The ionosphere is that portion of the earth's atmosphere 65 miles and more above the surface of the earth which is responsible for all long-distance radio transmission.

*Science News Letter, July 14, 1934*

GEOLOGY

## High British Award Comes To American Geologist

**D**R. DAVID WHITE, eminent scientist of the U. S. Geological Survey, has been awarded the Boverton Redwood medal by the Institution of Petroleum Technologists in London, according to word just received in Washington. This is the first time that the medal, highest award of the institution, has been given to an American.

*Science News Letter, July 14, 1934*