



WRITING IN SAND

This novel research library in bottles consists of a collection of specimens of sand from areas all over America and some foreign countries indexed according to geographical location.

ASTRONOMY

Age of Universe Is at Least 10,000,000,000,000 Years

NEW evidence that the universe is at least 10,000 billion years old was reported by Sir James Jeans, noted British astronomer and cosmologist. (*Nature*, Sept. 14).

To Prof. Robert Grant Aitken, veteran director of Lick Observatory, Mt. Hamilton, Calif., goes the credit for what may be the astronomical measurements which will help decide the long-continued controversy on the age of the universe, Sir James indicates.

Prof. Aitken has just published the newest edition of his famous treatise on

binary, or twin, stars which rotate about one another far out in space like balls on the ends of a dumbbell.

The orbits and the relative masses of the two parts of such binary stars can be used to calculate their age and, hence, some minimum age for the universe. New data given in Prof. Aitken's book, reports Sir James, can be used in calculations which are in good agreement with the so-called "long time" scale for the age of the universe, or 10,000 billion years.

Other estimates based on the time in which the universe has expanded to its present proportions from some central grouping yield values for the age of the universe as only 10 billion years, the "short time" scale. The large factor of 1,000 times between the short and long time scales is what Sir James hopes Prof. Aitken's data will clear up. Sir James is an advocate of the long time scale.

Science News Letter, September 21, 1935

The world's ancient letters include several on clay tablets that were sent by Crown Prince Sennacherib to his father, King Sargon.

GEOLOGY

Library in Sand Is Aid To Research on Concrete

WRITING in the sand is not as perishable as the world has been led to suppose. A sand library of more than three thousand "volumes" is an important adjunct of the research laboratory of the Portland Cement Association in Chicago. The "volumes" are bottled samples of sand from all over the American continent and some from foreign countries.

What the research specialists may read from these "volumes" is highly important to the construction industry because it aids in making more enduring concrete structures.

There are two principal kinds of sand—siliceous and calcareous. In the library, however, the sands are indexed according to geographical location, for greater convenience in referring to the adaptability of sand from a given location in making durable concrete.

The first step in investigating the quality of sand is to make a sieve analysis to determine the relative proportions of each of eight different sizes of grains which may be present.

Next comes a silt analysis to find the amount of dust present. Sand of which more than 10 per cent. will pass through a sieve with 100 meshes to the square inch gets a poor rating for the making of concrete.

The sand sample is next tested to learn whether organic matter is present. When the sand is immersed in a solution of sodium hydroxide, a change of color in the solution reveals the presence of organic matter. *(Turn to Next Page)*

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● RADIO

Tuesday, Sept. 24, 3:30 p. m., E.S.T.

THE DEPRESSION AND MENTAL DISEASE, by Dr. Carney Landis, New York State Psychiatric Institute and Hospital.

Tuesday, Oct. 1, 3:30 p. m., E.S.T.

FOSSIL FOODS, by Dr. Ralph W. Chaney, Professor of Paleontology, University of California.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.

In some instances the sand is given the sodium sulphate test to learn its ability to stand weathering. In this test crystallization of the sodium sulphate when evaporated exerts pressure within the grains of sand. If this pressure breaks up the sand particles, it is evidence that the sand would not hold up, under freezing and thawing and other weather hazards, if mixed in concrete.

Finally the sand may be subjected to strength tests by being made up into ce-

ment mortar and tested for both compression and tensile strength.

This knowledge is extremely valuable to the construction industry because it serves as a guide to the best sources of supply of sand for important building projects in which concrete is used.

It is often desirable to use local sand, and the information in the sand library tells whether such sand is suitable.

Science News Letter, September 21, 1935

PUBLIC HEALTH

Pneumonic Plague Threatens U. S., Especially West Coast

Danger Arises From Increasing Spread of Plague Among Ground Squirrels; Only One Human Case

PNEUMONIC plague is an increasing threat in the United States, particularly to the Pacific coast states.

The most extensive outbreak of plague among ground squirrels since the peak of the animal epidemic in California between 1907 and 1919 is being experienced on the west coast. Recent reports also show the presence of rodent plague in Montana.

This disturbing picture is presented by Dr. W. H. Kellogg, chief of the division of laboratories of the California State Department of Public Health, Berkeley. (*Journal, American Medical Association*, Sept. 14).

"There are two particularly disturbing aspects of the present ground squirrel epizootic," Dr. Kellogg declares. "One is the demonstration that the ground squirrel infection not only is not decreasing after thirty years, but is increasing and expanding over a much wider territory. It is now found not only in the Coast Range and the interior valleys of

California but in the Sierras. The establishment of a permanent endemic rodent focus is thus thoroughly demonstrated."

The second cause for alarm, as viewed by Dr. Kellogg, is the evidence of renewed virulence and of increasing pulmonary tendency on the part of the prevailing strain of the plague-causing organism. The pneumonic plague—more deadly to man than the bubonic—is thought to be directly related to the plague in squirrels and groundhogs.

A plague survey crew, operating with a motor truck, is busy in California. The workers find that the disease is actively spreading among rodents in widely separated areas far from any formerly known focus of infection.

Redoubled efforts are being made by the U. S. Public Health Service to protect the human population from this dreaded disease and to check its extent among rodents. Protection of the human population has been almost 100 per cent. successful. So far only one case of plague

has been reported this year and there were none in the United States last year.

Dr. C. R. Eskey, who has had an extensive experience in anti-plague work in South America and Hawaii, has been put in charge of the anti-plague operations on the West Coast. Assisting him is Dr. V. A. Haas, also of the U. S. Public Health Service. Formerly only one Service officer was assigned to this work.

The U. S. Public Health Service has been attempting to combat the extension of plague among the rodents in California ever since 1900, when its existence there was first recognized. Inadequate funds have always seriously handicapped the Service in this work, however.

Epidemics of plague among man result when the infection spreads from rat to rat or from squirrel to squirrel through the medium of the flea bite.

Pneumonic plague, in which pneumonia develops, becomes highly infectious from man to man without the mediation of rat, squirrel or flea because the bacilli are in the sputum and transfer takes place by droplet infection, it is explained.

The death rate from pneumonic plague is very high, almost 100 per cent., according to Dr. Kellogg. The illness is short—from a few hours to two or three days.

Science News Letter, September 21, 1935

SEISMOLOGY

Center of Earthquake Was Near to Northern Japan

KUNASHIRI Island, near the northern end of the Japanese chain, was close to the epicenter of an earthquake of rather marked severity on the morning of Wednesday, Sept. 11, according to calculations of the U. S. Coast and Geodetic Survey, based on data transmitted telegraphically through Science Service. There is a possibility that the disturbance may have stirred up a tidal wave.

The epicenter was located in latitude 45 degrees north, longitude 146 degrees east, approximately. The earthquake began at 9:04.1 A.M., Eastern Standard Time.

Reports were sent to Science Service by the Dominion Meteorological Observatory, Victoria, B. C.; the Seismological Laboratory, Pasadena, Calif.; the University of California, Berkeley, Calif.; St. Louis University, St. Louis, Mo.; and the stations of the U. S. Coast and Geodetic Survey at Ukiah, Calif., and Tucson, Ariz.

Science News Letter, September 21, 1935

The tulip tree was made the state tree of Indiana, in 1931.

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