

IF OUR LITTLE WARRING WORLD IS TOO MUCH WITH YOU, PONDER ON TWO BILLION YEARS OF THE WHOLE UNIVERSE

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Not all research based on specimens in Field Museum's study collections is conducted by members of the staff. Sometimes specimens from the collections preserved in large museums are essential to important research conducted in other institutions. One such research, based on specimens from Field Museum, may be of general interest.

Researches that not so many years ago would have been laughed at as visionary, and that are still in progress, have led to estimates, widely accepted, as to how many years have passed since the material substance of the earth was created. Naturally this discovery leads to another problem: Was all the substance of the universe created at the same time, or may the substance of the earth be younger or older than that of some other parts of the universe?

It has already been discovered, through study of the radio-active content of the rocks and their disintegration products, that the atoms composing terrestrial rocks were formed about two billion years ago. No one knows whether they were actually created then, or whether profound changes in their nature were made by the influence of some universal force of a character we cannot even imagine; but it is generally accepted that they were all formed at that distant time. It is, of course, impossible to break off a piece of star or planet and bring it into our laboratory to test its age, but we have in meteorites, which may well be fragments of broken up celestial bodies, actual material substance from extra-terrestrial space. Although earlier studies have demonstrated similarities in a number of meteoritic and terrestrial atoms, leading to the inference that they were of the same age, further research for confirmation is nevertheless needed.

NEW RESEARCH METHODS

Dr. Robley D. Evans and his colleagues in the research laboratories of the Massachusetts Institute of Technology devised methods more accurate than those hitherto employed for comparing the age of certain atoms from different sources. They believed that if they could apply these methods to the study of material that came from beyond the solar system the results would be of great interest. The Pultusk meteorite, which fell in Poland as a shower of small stones in 1868, appeared to be such a meteorite, as a calculation of its orbit made by Galle in that year indicated that it came from without the solar system. Field Museum was able to supply a sufficient quantity of this meteorite for the research by Dr. Evans and his associates.

Calculation of meteorite orbits is based upon observation of the path of a meteorite as it passes through the air in the shape of

a fireball. As a meteorite fall is a startling event, coming without warning, and finished in a few seconds, and since most of those who see it are not skilled observers, these observations cannot have a high degree of scientific accuracy and the orbits deduced from them cannot be more dependable than the observations. In recent years it has been found that observations of falling meteorites are subject to psychological errors. These to a large extent can be evaluated, and allowance made for them.

After Dr. Evans' work was under way, revised calculations gave an orbit for the Pultusk meteorite entirely within the solar system so that Dr. Evans' work shows the age only of matter within our solar system and not of any from the outer spaces beyond. Dr. Evans attacked his problem by determining, through methods too complex to be detailed here, certain properties of the minute quantity of radio-active matter in the meteorites.

EXPLANATION OF "ISOTOPES"

Most chemical elements are not, as was once believed, made up of identical atoms—they are really mixtures of two or more kinds called isotopes, so nearly alike that they cannot be distinguished by ordinary means, but only by special treatments devised for the purpose. The radio-active element uranium contains two such isotopes, one of which is much more active than the other. As there is reason to believe that all uranium when first formed was made up of the two kinds in identical proportions, and as the more radio-active kind is destroyed by its radio-activity more rapidly than the other, there will be, as time passes, less and less of the more active kind present and thus, when uranium from different sources contains the same relative quantities of these, the two uraniums must be of the same age.

Dr. Evans determined the relative proportions of the two kinds of uranium in the Pultusk meteorite and in the older terrestrial rocks and found them the same, indicating that the atoms in the meteorite and in terrestrial rocks were of the same age. This research is described in detail in a Field Museum Publication (Geological Series, Volume VII, No. 5). In order to make certain that his results were correct, Dr. Evans repeated his work, using the common element potassium from the meteorite and from terrestrial rock.

Potassium, although not usually regarded as radio-active, consists of two kinds of atoms—isotopes, one of which is slightly radio-active and hence slowly disappears in time. Dr. Evans found that the proportion of radio-active to ordinary potassium is the same in the Pultusk meteorite as in terrestrial rock. These results show that some, if not all, matter in the solar system was created at the same time as that of the

earth. The question of whether some of the matter in the more distant parts of the universe may be older or younger must await the time, which may never come, when the orbit of some meteorite from without the solar system may be determined with sufficient accuracy.

Trustee Albert B. Dick Jr., Elected Museum's 3rd Vice-President

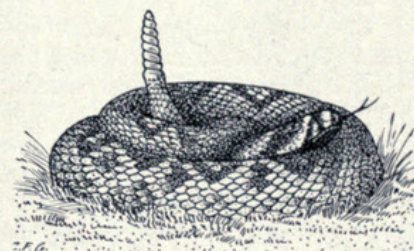
At the Annual Meeting of the Board of Trustees of Field Museum, held January 19, Mr. Albert B. Dick, Jr., was elected Third Vice-President, filling the vacancy caused by the recent resignation of Mr. Albert W. Harris. Mr. Dick has been a member of the Board since December 21, 1936.

Mr. Stanley Field was re-elected President, and in 1942 will serve his thirty-fourth consecutive year in that office. Other officers who served in 1941 were re-elected. They are: Colonel Albert A. Sprague, First-President; Mr. Silas H. Strawn, Second Vice-President; Major Clifford C. Gregg, Director and Secretary, and Mr. Solomon A. Smith, Treasurer and Assistant Secretary.

"Scepter of Good Luck"

In all times, and among all peoples, superstition has endowed various objects as harbingers of good luck. While its power to bring felicity is doubted, a beautiful example of such an object is the Chinese scepter of good luck, carved from sandalwood, on exhibition in Stanley Field Hall, Case 12.

KNOW YOUR SNAKES EVEN IF YOU SHUN THEM



A conspicuous gap in Putnam's famous series of pocket nature guides is closed with publication of *The Field Book of Snakes of the United States and Canada*, by Karl P. Schmidt and D. Dwight Davis, Chief Curator and Curator of Anatomy respectively at Field Museum. "Few handbooks are written with such care and thoroughness, and few are so profusely illustrated," says Clifford H. Pope, Curator of Reptiles. "It has already taken its place as a standard work, indispensable to scientists, amateurs, and laymen interested in snakes."

On sale at THE BOOK SHOP of FIELD MUSEUM—\$3.50. Mail orders accepted.



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