

Nat. Sciences of Phila., August, 1916; "Further Notes on Meteor Crater in Northern Central Arizona (No. 2)," *Proc. Acad. Nat. Sciences of Phila.*, 1924.

These thorough studies prove beyond the slightest doubt the meteor-impact origin of the crater. No feature is wanting that might reasonably be expected under the impact theory. And, on the contrary, not the slightest suggestion of any volcanic action has ever been found. The impact origin of the crater must be accepted as fact, no longer as theory. But this does not determine the fate or disposition of the colliding body or its mass.

In the *Scientific American* for July, August and September, 1927, is an interesting summary of the discoveries at Meteor Crater by D. M. Barringer, Jr.

From 1893 to the present time the U. S. Geological Survey has by its silence tacitly held to the volcanic or steam explosion hypothesis, by entirely ignoring all the work of geologists since Mr. Gilbert's report, while the negative attitude of some members of the survey toward the impact origin is well known.

This attitude of the survey deserves criticism. The scientific evidence is before the court of scientific men. The writer as mutual friend of all the parties, and especially as a close friend of Dr. Gilbert, will now assume the unsolicited and delicate task of summing the case and of pronouncing verdict.

The cause or reason for the unscientific and unfair attitude of the Geological Survey is probably of a personal nature. It is possible that Mr. Barringer is *persona non grata* to some on the survey. Also it may be that the personal ownership of Meteor Crater by Mr. Barringer and its exploration as a quasi-commercial enterprise is made an excuse for not recognizing and publishing the dramatic truth. Of course that would advertise the property. But the survey gives attention to mines and other exploitations which are wholly commercial and in private ownership.

Another reason, and perhaps the chief one, for the survey's silence is that the history and the facts show that a mistake was made by an eminent and beloved member of the survey. Dr. Gilbert certainly did form an erroneous opinion. Such a reason for the attitude of the survey implies either that the workers on the survey are considered infallible, or if fallible, that the survey never admits an error.

The writer had intimate personal and scientific relations with Dr. Gilbert and yields place to no one in regard and admiration for him as a man and geologist. It is difficult to understand how he came to favor volcanism as the cause of Meteor Crater. Most certainly he later knew his mistake. During the years following the publications by Barringer and myself he never questioned the impact theory, as he surely would have done had there been any doubt in his

mind. Subsequent to his report on the crater he made a study of the moon's craters and found evidence of their origin by impact.

No luster is added to Gilbert's fame by neglecting to admit the evident truth. Nor would admission of this error hurt his reputation. It is human to err. After twenty-three years of implied acceptance of Gilbert's findings by official silence, confession by the survey will of course be painful. The public as father-confessor is waiting. And, really, a little evidence of humility and admission of fallibility by a great bureau of the government would be something new. It might awaken more generous feeling on the part of the public.

As a great bureau of the people's government, and supported by public money, the survey has no ethical or legal right to suppress or withhold any geologic truth, for personal or any other reason. The silence of the survey on the important feature works an injustice against (1) Mr. Barringer, who has made sacrifices to discover and publish the facts; (2) the scientific world, which looks to the survey for geologic information, and (3) the general public, which is morally and legally entitled to the latest and best information on all scientific matters considered by the survey.

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SCIENTIFIC EVENTS

AGRICULTURAL RESEARCH BUREAUS IN GREAT BRITAIN

PROGRESS has been made in bringing into effect the scheme submitted last December to the governments of the empire to establish eight bureaus for the collection and interchange of information in eight branches of agricultural science. It was then announced, according to the *London Times*, that, as a result of a representative conference held in London, detailed proposals had been made for attaching these bureaus to recognized research institutes and for financing them from a common fund formed by contributions from governments of the empire and controlled by an executive council representative of the governments.

The governing bodies of the institutes which were approached have all accepted the scheme. The proposals have received the wide approval of the governments of the empire. The executive council at a meeting held at the end of March was thus able to authorize the opening of three bureaus from April 1, of a fourth from May 1, and to contemplate the opening of the remaining four during the summer months.

Those already opened are the Bureau of Animal Nutrition (attached to the Rowett Research Institute at Aberdeen), the Bureau of Animal Genetics (at the Animal Breeding Research Institute, Edinburgh University), and the Bureau of Fruit Production and Storage (at the East Malling Research Station, Kent). These three bureaus are respectively under the direction of Dr. J. B. Orr, Professor F. E. Crew and Mr. R. G. Hatton. From May 1 the Bureau of Soil Science at Rothamsted (under the direction of Dr. Sir John Russell) will be open.

It is contemplated opening during the summer the Bureau of Animal Health (at the Veterinary Research Laboratory, Weybridge), the Bureau of Plant Genetics (other than herbage plants) at the Plant Breeding Institute, University of Cambridge, the Bureau of Plant Genetics (herbage plants) at the Welsh Plant Breeding Institute, Aberystwyth, and the Bureau of Agricultural Parasitology at the Institute of Agricultural Parasitology, St. Albans. These bureaus will be respectively under the direction of Dr. W. H. Andrews, Sir Rowland Biffen, Professor F. E. Stapledon and Dr. W. Leiper.

U. S. BIOLOGICAL SURVEY

THE U. S. Department of Agriculture has authorized the creation of a new unit of the U. S. Biological Survey. Its purpose is to meet more effectively the obligations of the United States under the Migratory-Bird Treaty with Great Britain by lessening the dangers threatening wild fowl from drainage and other causes, through the provision of areas of land and of water to furnish in perpetuity reservations for their adequate protection through acquisition by purchase, gift or lease. The field of work will extend throughout the United States, including Alaska.

"In order to carry out the purpose of the act," it was explained by Paul C. Redington, Chief of the Biological Survey, "it is necessary to ascertain by examination of the numerous potential areas to be found throughout the United States those that are best adapted for refuges, to make appraisals in order to determine their character and value, and to conduct other activities incident to their acquisition with the funds made available by Congress from time to time.

The units selected for migratory-bird protection will be more or less extensive areas of lowland, comprising marsh and woodland contiguous to or embracing water areas, or they may be areas that were formerly well suited as feeding and nesting grounds for migratory birds, but now useless by reason of drainage developments or evaporation and subject to restoration to their natural conditions. The Migratory-Bird Conservation Commission created by the act will

consider and pass upon all lands recommended by the Biological Survey for acquisition for refuge purposes. The Secretary of Agriculture is chairman of the commission.

"In addition to having charge of the land acquisition under the Migratory-Bird Conservation Act, the new division will supervise all other land acquisition and cadastral survey activities of the Bureau of Biological Survey, including the Upper Mississippi River Wild Life and Fish Refuge and Bear River (Utah) Migratory Bird Refuge."

THE NATIONAL ARBORETUM

THE Secretary of Agriculture has appointed a committee of the department to confer with the National Arboretum Advisory Council as required by the Act establishing the Arboretum.

The members are: Dr. A. F. Woods, director of scientific work; Dr. W. A. Taylor, chief of the bureau of plant industry; Major R. Y. Stuart, chief of the forest service, and Dr. F. V. Coville, and Dr. W. T. Swingle, of the bureau of plant industry.

Members of the National Arboretum Advisory Council are: Frederic A. Delano, member, National Capital Park and Planning Commission, Washington, D. C., chairman; Dr. L. H. Bailey, author and botanist, Ithaca, N. Y.; Dr. John C. Merriam, president of the Carnegie Institution, Washington, D. C.; Mrs. Frank B. Noyes, Garden Club of America, Washington, D. C.; Mrs. Harold R. Pratt, secretary of the Garden Club of America, Glen Cove, Long Island; Harlan P. Kelsey, nurseryman, Salem, Mass.; Frederick Law Olmsted, landscape architect, Brookline, Mass.; Robert Pyle, chairman of the Botanical Gardens and Arboreta Committee of the American Association of Nurserymen, West Grove, Pennsylvania, and Professor Henry S. Graves, Yale Forest School, New Haven, Conn.

The National Arboretum, as authorized by the Congress, will be developed on a large tract of land in the District of Columbia, including reclaimed land near the Anacostia River above the Benning Bridge. It will be both an educational and recreational center, and an important adjunct to the scientific activities of the government, particularly of the Department of Agriculture.

To the fullest degree possible, it is expected, the management of the National Arboretum will collect plants and trees from all the regions of the world for cultivation, study and breeding in the grounds of the arboretum. Dr. Coville, one of the members of the departmental committee, has suggested the function of the arboretum in such phrases as a "living library of the plants of the world," and as "a five-foot shelf of the more important plants."