

GEOLOGY—ETHNOLOGY

Geology and Ethnology Disagree About Rock Prints

Former Sure Tracks Were Made by Animal Feet in Sand; Ethnologist Believes Them Carvings by Ancient Men

GEOLGY and ethnology seem to be at odds regarding the nature of the now famous impressions in the rocks, shaped somewhat like human footprints yet certainly not made by human feet. (See SNL, Oct. 29)

Geologists for the present are confining their attention mainly to two sets of the markings, both near Berea, Ky., which Prof. W. G. Burroughs of Berea College, is sure were made by actual animal feet, back in Coal Age days when the stuff that is now stone was soft, wet sand. He has the backing of Charles W. Gilmore of the Smithsonian Institution, who calls attention to the fact that tracks in other localities that most nearly resemble the Berea prints are in rocks of the same geological age. Mr. Gilmore has not visited the Berea site, but he has critically examined detailed photographs of the markings.

So confident is Prof. Burroughs that the tracks are real footprints that he has given the unknown animal a scientific name, *Phenanthropus mirabilis*. The name was suggested by Dr. Frank Thone, editor in biology of Science Service, with the concurrence of Mr. Gilmore. The first part of it translates as "looks human," and the second word simply means "remarkable."

Dissent is registered by David I. Bushnell, Jr., Smithsonian Institution ethnologist. Mr. Bushnell said, in a statement issued to the press, that every print he examined was undoubtedly an Indian carving. A prehistoric tribe or tribes, he believes, attached to them some symbolic meaning.

It is quite possible that the disagreement is more apparent than real. Unquestionably many, perhaps most, of the footprint-like marks in the rocks over a wide stretch of country were carved by human sculptors. Their artificial nature is manifest at a glance, especially when they are found paired, arranged in even rows, and accompanied by other symbols such as circles and three-pronged figures like great bird tracks.

It is quite a possibility that other tracks are genuine footprints, especially when they are arranged quite at random, as

the Berea tracks are, and where the prints vary greatly in size, as some of them do. It is this circumstance, in part, that has convinced Prof. Burroughs that the Berea markings are not artificial.

Dr. Alson Baker, a physician of Berea, recently wrote Science Service that he and Dr. A. F. Cornelius had made a critical examination of the tracks there, using a strong magnifier mounted on a tripod. He states:

"We examined the arrangement of the sand grains in the deepest portions of the prints, with especial attention to the heels. The sand grains in the bottoms of the prints were much more closely packed than those in the slopes, and those in the slopes were more closely packed than those in the rock an inch from the margins of the prints, or at any other point.

"Each member of the party certified and checked these findings and we all agree that the imprints were made by pressure when the sand was soft and wet.

"The fact that the sand grains in the bottoms and slopes of the imprints are of exactly the same kind as those in all other parts of the rock surface examined, seems to prove conclusively that the closer arrangement observed was not due to any possible drifting in of extraneous material."

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MATHEMATICS—AERONAUTICS

Mathematical Equations To Aid Stratosphere Flying

WITH pencil and paper John Sweer, expert of the U. S. Naval Research Laboratory, has just finished computations which will aid future stratosphere fliers traveling above 50,000-foot altitudes.

Mr. Sweer's calculations involve the bending experienced by a ray of light as it passes through the earth's atmosphere. This refraction, as it is called, must be determined and corrected for in all aerial navigation where "sights"

are taken on the horizon and on a star to determine the latter's angular altitude.

Using a more general formula than previously employed, Mr. Sweer gives methods for computing the corrections for any altitude (*Journal, Optical Society of America*, September). Actually 100,000 feet is about the limit at which aerial navigators will need to worry about the bending, he explained.

Above 100,000 feet the atmosphere is so rarefied that further increase in altitude does not increase the amount of bending of the light rays.

The corrections which must be applied even at altitudes of 30,000 feet are quite large and amount, for this height, to 27 minutes of arc. Instrumental errors of a good sextant, by comparison, are only a half minute of arc.

The large corrections must be subtracted from the observations, Mr. Sweer points out, for the star on which the sight is taken is really lower than it appears to be.

The corrections overcome the fact that the earth appears to be flatter than it really is, when observed from great heights.

Back in 1919 a British scientist, A. R. McLeod, published corrections for altitudes of 50,000 feet. The new work of Mr. Sweer uses a more general formula and extends the correction range to 100,000 feet and above.

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PSYCHIATRY

Mass Mania

● "In all ages there have been abnormal psychological states afflicting society as a whole and urgently needing the psychological physician. The genuine Crusades brought in their train a series of migration manias which affected even children, and caused whole villages and towns to take leave of their homes and their common sense. Again, the Middle Ages produced wave after wave of dancing hysteria, in which masses of respectable citizens would dance themselves into complete exhaustion, and hence we get the unpleasant echo of 'St. Vitus dance'.

"Fashions in witchcraft followed; after which mass hysteria took on the more sedate form of Stock Exchange excitement . . . Today Europe groans under a nightmare emotion of war fever and suspicion; and no one knows how to alleviate the vicious psychological circle of fear and aggression."—Raymond B. Cattell in *CROOKED PERSONALITIES IN CHILDHOOD AND AFTER* (*Appleton-Century*).

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