acceleration even though at rest relatively to the earth.

Professor Huntington objects to the definition "force of gravity = attraction of the earth" on account of "complications connected with the spheroidal shape of the earth, the influence of the earth's rotation, etc." From what has been said above it is quite evident, however, that if the complications[9] connected with the earth's rotation are evaded by his definition it is only by a sacrifice of clearness in the force concept.

Clear thinking about the concept of force would seem to be promoted by the more usual method of distinguishing between *true* and *apparent* force of gravity; the former being the actual earth-pull on a body, the latter the pull or push exerted by a body upon its support. Each of these is a true force (a pull or push exerted by a specified body); to assume them equal is a first approximation to the truth. The reason they are not exactly equal can be explained rigorously when the student is in a position to understand the dynamics of circular motion; before that stage is reached it is sufficient to stop with the explanation which neglects the effect of the earth's rotation.

L. M. HOSKINS

THE NATURE OF THE ULTIMATE MAGNETIC PARTICLE

FOR many years scientists have agreed in ascribing the magnetic properties of bodies to the action of exceedingly small elementary magnets, but the nature of these ultimate magnetic particles has been an open question. The influence of temperature, chemical composition and other factors has received the simplest explanation on the theory that molecules, or possibly groups of molecules, are the ultimate magnetic particles. On the other hand the electron theory of magnetism, developed by Langevin, Curie, Weiss and others, seems logically sound and is the only theory which has successfully accounted for diamagnetism.

The recently developed method of determining the positions of atoms within a crystal by X-ray photography and the ferromagnetic properties of magnetite, hematite and pyrrhotite crystals suggested a direct experimental method of eliminating one or the other of these two theories. By comparing photographs taken through these crystals while magnetized and unmagnetized it can be determined with certainty whether or not the atoms have moved from their positions of equilibrium during the process of magnetization. We have obtained experimental results with magnetite and hematite which indicate that the atoms do not leave their positions of equilibrium during magnetization. These results are consistent with the electron theory of magnetism and prove conclusively that magnetism is not a molecular phenomenon.

K. T. COMPTON,
E. A. TROUSDALE

REED COLLEGE

THE NEW GLACIER PARK

TO THE EDITOR OF SCIENCE: Referring to the pleasing intelligence communicated by Dr. John M. Clarke, in SCIENCE for March 12, relative to the new glacier park near Syracuse, a further note on the history of its investigation may well be added. It would seem that the earliest clear interpretation of the glacial stream channels about Jamesville came from a master of physiographic study who has strewn many seed thoughts by the way during the past forty years—Mr. G. K. Gilbert. The record is in "Old Tracks of Erian Drainage in Western New York," an abstract published in the *Bulletin* of the Geological Society of America, Vol. 8, 1897, pp. 285–286. Dr. Quereau's paper, which appeared in the *Bulletin* of the following year, cites Mr. Gilbert's interpretation by way of acknowledgment, and both papers have been followed by the full expositions of Professor Fairchild in the publications of the Geological Survey of New York.

ALBERT PERRY BRIGHAM
COLGATE UNIVERSITY

[9] The spheroidal shape of the earth introduces no complication whatever as regards the definition "force of gravity = attraction of the earth." It is not necessary to be able to compute the attraction in order to understand the definition.