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Gea, Daughter of Chaos

Geology is the study of the earth, *selenology* the study of the moon. But what shall we call the study of Mars, of Venus, of one of the moons of Jupiter? Geocentric purists would restrict *geology*, and all the other terms that begin with *geo*, to the earth, and require the coinage of a new glossary for each other planet and moon. Before we really escape the earth's atmosphere, let us consider the terms we may best use to discuss the origin of planets and moons, their histories, and the processes that molded their surfaces.

We already have 60 or 70 accepted terms beginning with *geo*, not counting variant endings: geology, geomorphology, geophysics, geochemistry, etc. It is easy to construct a parallel list for another body, say Jupiter's moon Ganymede: ganymedology, ganymedomorphology, ganymedophysics, ganymedochemistry, etc. (Where, incidentally, would we switch from one list to the other? At what point in space would a geophone become a ganymedophone?) But our work is just begun. Multiplying the *geo* glossary to describe eight other planets and their 30 moons would require some 2500 new terms, and we haven't even mentioned the asteroids or left our own solar system. Truly the vocabulary could become astronomical.

We *could* coin a new glossary for each planet and moon, but let us reject this solution. It can appeal only to one who loves neology more than geology.

Geology and the *geo* terms can be extended from their earthly meaning to cover similar processes and features of other cosmic bodies. And the extension seems reasonable, for the most profound aspect of natural phenomena is their dependence upon generally operative processes.

Wherever they occur, a caldera is a caldera, sulfur is sulfur, and a reverse fault is a reverse fault. True, gravity, the atmosphere, and other local conditions will vary from one cosmic body to another, and these variations will influence the manifestation of underlying processes. But as these differences become known, they can be described; and surely our understanding of both the differences and the underlying similarities would be blighted by an indexing system that required expansion after expansion as we become acquainted with more and more of our cosmic neighbors. The vocabulary should be a help, not a confounding nuisance.

Extending geology to other bodies is not really likely to lead to confusion, for research on extraterrestrial bodies will have to be conducted on or near specific surface areas, and these areas will have to be named. No one can now write a technical paper on "The geology of the earth"; he must at least limit it to something like "The geology of the so-and-so Quadrangle, California, U.S.A." Would not the title "The geology of the so-and-so Quadrangle, Red Blazes, Mars" be clearer than "The marsology of the . . ."? A definitive, worthwhile study will be on a particular area, and the title will specify the area, be it terrestrial or extraterrestrial. Only one new rule is necessary: agreement that *geo* terms be followed by *of* when they are applied to moons or other planets. If this is done, "The geology of Venus" will be as clear and understandable as "The geology of Patagonia."

Perhaps it is well to remember that the word *geologia* was first used, in 1473 by the Bishop of Durham, to distinguish lawyers, who study earthly things, from theologians. The word has already changed meaning; it is not sacrosanct. If, instead of recognizing a simple mutation, we coin a new glossary for each new body, it will be fitting indeed that in Greek mythology Gea, the goddess of earth, was the daughter of Chaos.—JACK GREEN, *Aero-Space Laboratories, North American Aviation, Inc., Downey, California;* DAEL WOLFLE, *AAAS*.