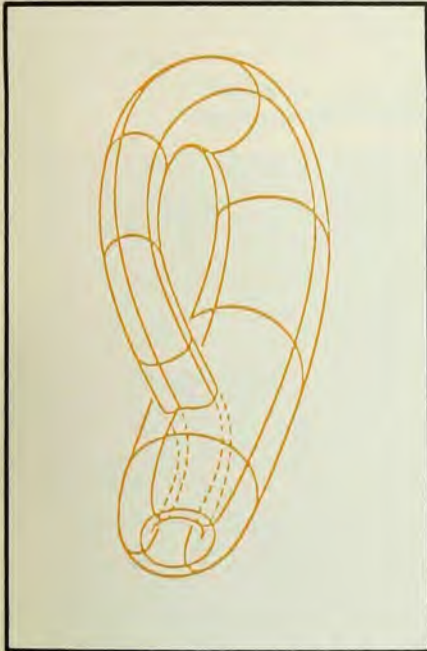


Klein bottle as crucible

Recent published descriptions of a stellar system being drawn into a "black hole" bring to mind the possibility that the Einstein cosmos is not everywhere smooth and continuous but presents structural singularities, which in this instance is known in topology as the Klein bottle.¹

The extension of the black-hole concept to the bottle means that all geodesics form closed loops on the one-sided surface; thus the interior part of the surface cannot transmit any electromagnetic radiation. The 180-degree bending of space at the entrance of the bottle would be accompanied by an intense gravitational field that would not only attract an errant stellar system but would also hurl it into the bottle.

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If the system captured is in mild fusion, such as the solar system where the energy generated is in equilibrium with the energy radiated, adiabatic conditions will favor a rapid rise in temperature to bring about (with further temperature increases) the fusion of all elements down to the minimum of the mass-deficiency curve. Enough energy will be left over for conversion to mass and to bring about the formation of the elements on the rising portion of the curve to uranium and perhaps beyond. Expansion would force the "white-hot" system through the unsubstantial wall and cause it to appear as a bright Nova, which would now be able to radiate its energy rapidly. Thus the Klein-bottle structure may be Nature's

crucible for the formation of the elements through a continuing series of "small bangs."

The fact that the crust of the Earth contains all 273 stable isotopes plus valuable unstable ones, few of them from the Sun, indicates that some previous solar system went through the crucible to emerge as a Nova.

Reference

1. D. Hilbert S. Cohn-Vossen, *Geometry and the Imagination*, Chelsea Publishing Co., New York, N.Y., 1956, page 308.

B. A. LANDRY
Columbus, Ohio

Conflicts of interest

President Panofsky's plan, authorizing APS officials to give advice to the federal government (April, page 119), raises profound questions about the propriety of one person, or a handful of persons, using the prestige of the entire physics profession to influence national policy. (We certainly have come a long way from the modest suggestion of the "Schwartz Amendment," voted down in 1968, that the APS membership as a whole might express its collective opinion on matters of broad concern.)

One issue that must be faced squarely by any organization claiming to speak "in the public interest" is the possibility of conflicts of interest. It is a fact that many officials of the APS are not only "physicists" but also have private professional relationships with certain industries, government agencies, non-profit institutions and other organizations that may have a vested interest in many issues that overlap physics and public policy.

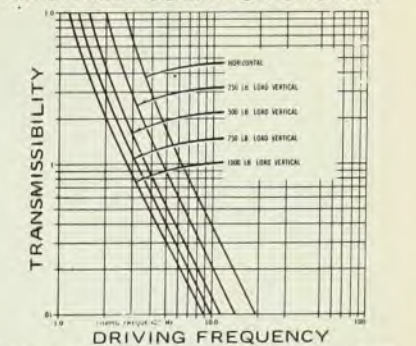
I suggest that the APS institute a policy of regular public disclosure of all professional affiliations for all APS officials and members having any involvement with government in the name of or under the sponsorship of the APS. Such a policy implies no slur upon the integrity of any individual; it is simply the logical means of building and maintaining public confidence. (Remember the Watergate.)

This is not a new proposal; it was first presented to the APS Council five years ago (see Bull. Am. Phys. Soc. 14, pages 715 and 774, 1969). The council rejected this idea and simply reaffirmed the old practice of letting candidates for election write their own bibliographies for circulation with the APS ballot. I assert that this system for informing the APS electorate about the affiliations of its officials is highly suspect, since it encourages candidates to disclose or to conceal information so as to create the most advantageous image.

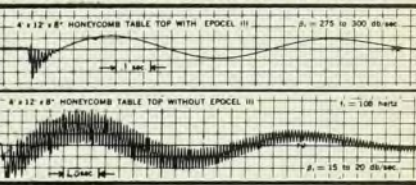
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