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COVER: Conservationists are battling to protect the wolf from extinction in the United States but they are up against stiff opposition from ranchers, hunters, and an indifferent public. See p. 109. (Photo: K. Maslowski from the National Audubon Society)

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Editor	Kendrick Frazier
Aerospace	Everly Driscoll
Behavioral Sciences	Robert J. Trotter
Medical Sciences	Joan Arehart-Treichel
Physical Sciences	Dietrick E. Thomsen
Staff Writer	John H. Douglas
Copy Editor	Nadine Clement
Assistant to the Editor	Esther Gilgoff
Production Manager	David Daemon
Books	Margit Friedrich
Circulation Manager	Lawrence Cope
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Newtonian black holes

The beginning of the article on black holes (SN: 1/13/73, p. 28) leaves one with the feeling that the existence of black holes somehow depends crucially on the correctness of general relativity. This is not true. A heuristically satisfying (though theoretically atrocious) prediction of black holes can be obtained from classical Newtonian gravitational theory with a touch of special relativity. Thus: the minimum speed (V) which a projectile must have in order that it need never return to the surface of a spherical body of mass M and radius R (i.e., the escape velocity) is given by (according to Newtonian theory): $V^2 = 2GM/R$, where G is the universal constant of gravitation. But clearly if the spherical body had a radius less than $2GM/c^2$ (which happens to be identical with the Schwarzschild radius; c is the speed of light), the escape velocity of the projectile would be greater than the speed of light. Since special relativity considers going faster than the speed of light a definite no-no, no projectile (including a photon) could "escape" from such a body.

As to whether or not black holes exist, one need only quote the well-known scientific dictum: "If it can happen, and sometimes if it can't, it will."

Elliott Krefetz
Unified Science Study Program
Tufts University
Medford, Mass.

Our Apollo coverage

This is a long-overdue note to express one reader's appreciation for the really fine articles Everly Driscoll has been turning out, one after another for month after month, on Apollo and also on Mariner 9. Although I have been meaning to write for sometime, I was finally stimulated to do so by her "The wealth from the moon" (SN: 12/16/72, p. 396). The danger pointed out—that the Apollo materials will go unstudied and eventually deteriorate due to lack of funds stemming from lack of public interest—is surely less likely if the public can be made aware of the Apollo findings as they are made. The mass media, unfortunately, show no interest in discussing Apollo science even now; it seems highly improbable they will be doing so, say, five years from now. It suddenly hit me that SCIENCE NEWS is the only publication available to the gen-

eral public that has been regularly and systematically reporting on Apollo scientific results in nontechnical language.

Time and time again I am asked for a reference on some aspect of Apollo, by a student or member of a planetarium audience, and I find myself saying that the only suitable source is some one of your articles.

James A. Loudon
Lecturer (astronomy)
Residential College
University of Michigan
Ann Arbor, Mich.

Vietnam resolutions

Science suffered another setback in the esteem of the taxpaying public recently when an executive committee of the American Association for the Advancement of Science popped off with resolutions on Vietnam (SN: 1/13/73, p. 21), a subject they knew next to nothing about.

The few representatives of AAAS who drew up the resolutions on Vietnam may belong to an organization with 130,000 members but they surely don't speak for many of them; at least not for many scientists I know.

Paul Gwin
College of Agriculture
University of Missouri
Columbia, Mo.

Are you a man or mouse?

An interesting experiment was reported in your Behavioral Sciences column (SN: 2/3/73, p. 73), where overcrowding appeared to cause an irreversible collapse of a mouse society. My first reaction was a suspicion that these results might be extended to human societies. I now wonder if the author hasn't stretched extrapolation beyond credulity.

In any event the results are interesting, and beg for a series of related experiments. I wonder if herd animals would not behave entirely differently in super-crowded conditions. I don't think they would turn to cannibalism, or antisocial activity. I wonder if hive insects would exhibit any changes when overcrowded. Some primates prefer living in troupes. Man is a primate so perhaps he can tolerate and adjust to very dense population conditions.

Channing S. Williams
Rockaway, N.J.

*Address communications to Editor,
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