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COVER: Huge volcanoes on Mars, like Nix Olympica, can emit water vapor. There is strong evidence that channels on Mars were cut by large flows of water at some time in the past. Scientists are trying to explain where the water could be now, how Mars evolved before and since, and what it might all mean to the possibility of finding life. See p. 156. (Photo: NASA/Mariner 9)

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to the editor

Classical black holes

"Newtonian black holes," letter from Elliott Krefetz (SN: 2/17/73, p. 99).

The "prediction" of black holes by a combination of classical gravitational theory and special relativity referred to by Krefetz is quite erroneous. I am not arguing here about the intrinsic doubt that surrounds such a mixed theory (which Krefetz intimates), but rather the neglect of the gravitational effect of the kinetic energy, which would at least be expected qualitatively. If, for example, one were to say in such a theory that the change in mass-energy, $c^2 dm$, is to be equated to the work done against the gravitational force, and one allows the mass to vary as it does in special relativity, then $c^2 dm = -GmMdr/r^2$. Integrating and putting in the limits m and m_0 corresponding to the limits $r = R$ and $r = \infty$ respectively, one obtains $m = m_0 \exp(+GM/c^2 R)$.

This expression merely predicts that as the radius R of the massive body M becomes exceedingly small, the mass m of the projectile becomes very large. This is achieved in special relativity by allowing the escape velocity to approach the speed of light (not to exceed it), the limit occurring at $R = 0$. Thus no black hole is predicted.

It is preferable to say that the apparent connection between the classical escape velocity and the Schwarzschild radius is purely accidental. Setting $v = c$ is just a mnemonic for obtaining the radius.

C. W. Tittle
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Krefetz's involvement of special relativity on why escape is impossible from a body with a c -plus escape velocity is totally misleading. Escape would be impossible strictly on a Newtonian basis, since a photon would not exceed the body's escape velocity.

William T. Thomas Jr.
President, Thomas Optical
and Physical Laboratory
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Unscientific scientists

"Life's dependence on earth's ultraviolet screen" (SN: 2/17/73, p. 101) shows some very unscientific traits of people I would expect to be rigorous scientists.

Harold Johnston suggested that nitrogen

oxides from SST exhaust could catalyze destruction of the atmosphere's ozone layer.

Why did the National Academy of Sciences set up a panel to investigate possible effects of increased ultraviolet radiation? Why didn't they set up a panel to find if SST exhaust would change the ozone layer?

Harold Johnston told SCIENCE NEWS, "... We still don't know how much that would change the ozone."

This suggestion of change of the ozone was used to stop development of the SST. It seems very unscientific not to build the experimental models of the SST and make some tests to find the results.

James F. Jackson
Carlisle, Ind.

'Knowledge for its own sake'

The article "Science dissenters and social policy makers" (SN: 1/6/73, p. 5) deserves some added comment.

Many fields are being plagued with "egalitarian" protesters of a self-appointed nature nowadays. These include some who wish to invade the spotlight of science without going through the rigors of the scientific curriculum necessary to be a qualified, contributing member of the society. Their logic often also entails lack of such fundamental bases. Unfortunately, included in fellow-travelers of this group, are a number of unscientific scientists whose political bias permits them to adopt a position which would invoke *tyranny* upon other scientists, if not all of science.

When the scientist is not able to choose his own field, or work, as in a free society, and when a "democratic" vote of the radically biased element determines scientific policy, we have achieved the ultimate in illogic. Some of the uninformed attack all of science with the generalizations inherent in racism, and take up the time of the vital scientific virtuoso with back-fence drivel, as though all science was funded with public funds, or they were ultimate authorities in all fields.

"Knowledge for its own sake" is one of the important tenets of research and of science in general. The scientist can best serve humanity by maintaining necessary aloofness from logic-binding gasconading, nonsense peddlers.

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