LETTERS

Energy Galactica

William D. Metz's interesting article (Research News, 25 Aug., p. 700) "Violently active galaxies: The search for the energy machine" should perhaps have been called "Violently active galaxies: Driven by black holes?"; for although these exotic objects could possibly act as adequate energy sources, it does seem unreasonable to describe them as the only sources not involving "new" physics. Indeed, a possible source which stands on a firmer experimental basis is the familiar annihilation of matter and antimatter (*1*). The lack of any substantial flux of annihilation radiation, among other things, has been held to establish a lack of antimatter in the universe (*2*), but this indicates only that intimate mixtures of matter and antimatter are scarce. As our realization increases that even the diffuse matter in the galaxy is violently nonuniform, the possibility of separate matter and antimatter clouds becomes ever more plausible (*3*), and there is no convincing case that our own galaxy does not contain substantial amounts of antimatter. In regions of violent mixing such as the galactic core, of course, annihilation and the consequent release of large amounts of energy is to be expected. Recent observations of annihilation radiation from the galactic core support this view (*4*).

WILLIAM B. THOMPSON
Department of Physics,
University of California at San Diego,
La Jolla 92093

References

1. H. Alfvén, *Rev. Mod. Phys.* **37**, 652 (1965); P. Carlquist and B. Laurent, *Nature (London)* **260**, 225 (1967).
2. G. Steigman, *Annu. Rev. Astron. Astrophys.* **15**, 332 (1977).
3. B. Lehnert, *Astrophys. Space Sci.* **46**, 61 (1977).
4. N. Levanthal, C. H. McCullen, P. D. Stang, "γ-Ray spectroscopy in astrophysics," T. R. Kline and R. Ramaty, Eds. (NASA Tech. Publ. 79619, Washington, D.C., 1978), p. 169.

On Prizes

It has finally happened. Similar to watching the Dow-Jones inching up to 1000, I have waited for the scientific jackpot prize to hit $100,000 for only one recipient. And now I have received an announcement from the General Motors Cancer Research Foundation, Inc., asking for names of, not one, but three, recipients for the $100,000 prizes each, in various aspects of cancer research. I am not surprised that the Mammon-indoctrinated business world does not see the obscenity of all this, but I am still being continually surprised that seemingly the scientific community takes all these prizes seriously, without any thought as to what is implied in their giving and receiving. What is implied is that scientists primarily work for the prize, for the money, not for the curiosity, for the excitement, for the scientific knowledge. What is implied is that gains in scientific knowledge are primarily achieved by very exceptional individuals, without any input from the tens whose work in the same field has led to a temporarily final formulation. The organizers of these prizes apparently have no idea as to how advancements in scientific understanding are obtained, do not understand the "communitas" of the scientific community, that it is not made up of individually isolated scientists, but is a true community composed of interacting individuals. Thus, the General Motors prizes are to be given for recent published work, as if all that has gone before can be ignored, and only the final step is to be recognized by the huge monetary award. Is it not about time that the scientific community try to put a stop to the prostitution of its procedures and goals and aims by a money-oriented segment of our society that recognizes no other achievements than those which can be monetarily inspired? Our community has no procedures, nor has it the right, to dictate to its fellow members, but if it were considered morally indefensible to accept these monetary prizes, then perhaps the shame of it all would penetrate the minds of the recipients, and the subsequent refusals would cause the appropriaters, and these prizes, to dry up and wither, to be blown away like chaff before the wind.

PHILIP SIEKEVITZ
Rockefeller University, New York 10021

Transporting Coal: A Suggestion

Luther J. Carter's article on the Alaskan Pipeline and the proposed Northern Tier Pipeline across the western United States (News and Comment, 18 Aug., p. 594) was interesting. I wish to endorse the concept of a Northern Tier Pipeline and feel that it should be designed to transport coal as well as the Alaskan oil.

The oil must eventually be brought to the Midwest, where it is needed. The most efficient method of long-distance, overland transport of petroleum is by pipeline, so the Northern Tier Pipeline could be routed through, or close to, the main western coalfields of Wyoming, Montana, and the Dakotas. The coal could be crushed and injected into the pipeline at various points along its route. Such a process would not require that water be sent out of the western states, which appears to be the main objection to a coal slurry pipeline.

There is an added benefit for shipping the coal with the oil: the oil will serve as a solvent and extract a number of valuable industrial chemicals from the coal. These are the aromatic hydrocarbons, such as benzene and naphthalene; alkylated aromatics, such as toluene, xylene, and methyl naphthalene; and hydroxylated aromatics, such as cresols, xylenols, phenols, and alcohols. Some of the shorter chain aliphatic hydrocarbons will also be extracted.

Under the usual conditions of shipping the coal by rail to an electrical generating plant, these chemicals would be lost when the coal was burned. Many of them are obtained from the destructive distillation of coal. However, the petrochemical industry is now producing large quantities of aromatic compounds from petroleum. This coal transport process would be more than a simple moving of coal from the mine to the power plant. It would also be a relatively inexpensive method for obtaining valuable industrial chemicals from a previously untapped source—boiler fuel coal.

The aromatics and short-chain aliphatics could be recovered when the oil is refined into its various components, and the coal would lose little of its heating value by removal of the aromatic hydrocarbons.

Sooner or later, decisions must be made about the course of an oil pipeline across the western United States. Here I present another reason for the northern route.

ROGER F. BONEHAM
Department of Geology,
Indiana University, Kokomo 46901

Human Rights: Good News and an Apology

Because of the considerable interest that has been elicited by my article (11 Aug, p. 502) on the work of the National Academy of Sciences Committee on Human Rights, I would like to share with readers some good news as well as an apology.

The good news is that four more of the 17 scientists in whose behalf the committee has taken action have been released. Elena Sevilla, an Argentine physics student, has arrived safely in the

United States to continue work at Cornell University. Amnesty International has just informed us that T. W. Kamil and I. Made Sutayasa were among the 10,000 prisoners freed by the Indonesian government in December 1977; both have returned to their families and are well. And Claudio Santiago Bermann, an Argentine psychiatrist, has been released from prison and is reported to be en route to Israel.

As for the apology, it is to Sir Andrew Huxley and to readers for an inadvertent distortion of his quotation (p. 505). By dropping a line, his entire meaning was changed. The currect statement follows with the dropped line in italics (*1*).

> The persecutions of the present day are not directed against scientific doctrines or against scientific enquiry as such; they are directed against individual citizens who have had the courage to speak up against oppressive features of the regimes under which we live. Among these brave individuals there are, for example, writers and medical men as well as scientists. The appropriate reaction therefore comes from us not as scientists but as citizens; if we wish to join in some corporate protest, it should be through a body whose prime concern *is with human rights and not through one whose prime concern* is with science. If a scientific body publicly takes a step whose justification is political and not scientific, it will lose the right to claim that it is acting purely in the defense of science on some future occasion when it wishes to speak out against, say, a repetition of the Lysenko affair.

I am indebted to Don K. Price of Harvard University for calling my attention to the error in the quotation.

ROBERT W. KATES

Graduate School of Geography, Clark University, Worcester, Massachusetts 01610

Notes

1. Excerpt from an address by Andrew Huxley to the British Association for the Advancement of Science, August 1977. Reprinted in *Chemical and Engineering News* (26 September 1977), p. 5.

Nitrites: The Newberne Report

The News and Comment article (8 Sept., p. 887) on the Food and Drug Administration's (FDA) move toward a nitrite ban states that an FDA-sponsored study by Paul Newberne at MIT provided "solid evidence that nitrites are themselves carcinogens." The MIT final report to the FDA (contract 74-2181 dated 18 May 1978) states, "The spleen . . . exhibited a condition referred to as immunoblastic cell proliferation. This change *may be* associated with developing lymphoma but evidence is lacking . . . *both* spleen and non spleen lymphomas were combined and there were *suggestions* for a nitrite effect; there was *not*, however, a convincing dose response [emphases added]." Further, "the data are *only suggestive* and the biological significance of nitrite associated lesions of the lymphoreticular system is *uncleared* [emphases added]."

The investigator did not report "solid evidence," and in fact carefully stated that "the results do not permit assigning nitrite a proximate carcinogenic role." He did state that "nitrite *appears* more a promotor of the neoplastic process than an initiator [emphasis added]."

It is imperative that the scientific community judge the facts and not the interpretations of advocates, reporters, or politicians. The nitrite issue is complex. Banning nitrite in cured meats would not substantially reduce human exposure (Reports, 30 June, p. 1487) and would in essence be another political nonsolution.

PAUL A. LACHANCE

Department of Food Science, Rutgers, State University of New Jersey, New Brunswick 08903

Data Evaluation in Biology

Stockmayer's excellent editorial (18 Aug., p. 577) calls attention to the paucity of evaluated data in the various handbooks and tabulations on which scientists must rely for numerical information. The focus of the editorial and its reference to a comprehensive survey sponsored by the National Academy of Sciences is entirely on physical and chemical data. As a life scientist, I must affirm that the need for evaluated data is just as great in biology and the health-related sciences. The Federation of American Societies for Experimental Biology has performed creditably in this field through its Biological Handbooks Office for almost two decades. Regrettably, this "unglamorous activity" is being terminated. I hope that an appropriate body of the National Research Council will take note. A replacement must be created for this critical capability. The alternatives involve (i) reliance on inadequately evaluated data with the attendant errors that would result or (ii) having each biological scientist spend a disproportionate amount of time becoming a data evaluator. Either alternative is considerably less efficient than priority funding of appropriate handbook efforts.

CHARLES S. TIDBALL

Department of Physiology, George Washington University Medical Center, Washington, D.C. 20037