LETTERS

Animals in Research

We are pleased to find ourselves in agreement with John McArdle when he calls for "objective analysis and discussion" in addressing the use of animals in research (Letters, 13 July, p. 114). It is for this reason that many scientists support S.773, which contains a proposal that the National Academy of Sciences (NAS) conduct an inquiry into the numerous unanswered questions that have been raised in the debate over the use of animals in research. This study would be a comprehensive assessment of the use of animals in research and would provide much needed data on the number of animals being used, the types of animals, and the areas of research where they are used, among other topics. The information that would be provided by the NAS would help minimize the use of distortions and misleading claims that are the hallmark of much antianimal research literature.

A case in point is that an officer of the Humane Society of the United States (HSUS) can criticize the research community for reacting in a hyperemotional, nonobjective fashion when HSUS literature on the subject of animal research is not accurate about the use of animals in research, particularly behavioral research. The claims contained in HSUS literature are incorrect about the numbers and types of animals used, research techniques, and purposes and outcomes of research efforts. Contrary to McArdle's assertion, this is not an "acceptable case to the general public." This strategy prevents any good faith efforts to establish an open discourse on laboratory animal welfare, a position to which the vast majority of scientists are wholly committed.

Were it not for behavioral research with animals we would be without critical information about the emotional, social, and intellectual development of children; language systems that enable profoundly retarded children to communicate; the use of biofeedback techniques for the control of hypertension and hypotension; methods for reduction of pain in humans and nonhumans; conditioned taste aversion in the treatment of cancer patients; treatment of eating disorders; and improved captive breeding for endangered species. These are just a few examples of the benefits that have accrued from the use of animal subjects in behavioral research.

The NAS study is a necessary first step in establishing an appropriate national policy on the welfare of animals used in research. Equally important is the need for all parties involved to resist the temptation to fill the void of information with accusations and undocumented allegations. The goals of all parties involved should not be focused on swaying public opinion one way or the other, but on arriving at a true and factual context upon which can rest a constructive exchange of views.

MICHAEL S. PALLAK
American Psychological Association,
1200 17 Street, NW,
Washington, D.C. 20036

The Mohole Project

In the article by Richard A. Kerr "Continental drilling heading deeper" (Research News, 29 June, p. 1418), the Mohole Project is described as "a fiasco in American scientific drilling [that] had as its single goal a deep ocean hole through the Moho."

As the director of that project for the National Academy of Sciences, I find that appraisal unfair, at least for the part of the work done under the aegis of the Academy.

Mohole was a catchy name used to promote the project, and it did give the impression of one deep hole. However, in the original description of the project, which I presented at a convocation on oceanography at the United Nations in New York, the objectives were clearly stated: "The AMSOC Committee believes that *it is desirable* to drill a series of holes into the strata beneath the ocean culminating in one that pierces the Moho and samples the mantle."

In dozens of lectures and articles I stressed the importance of exploring the ocean basins by drilling many holes and that the sampling beneath the Moho was a long-range objective. When we began in 1961, the deepest water in which anyone had ever drilled was less than 400 feet; the gurus of drilling at the Houston Petroleum Club shook their heads in disbelief that one could ever drill in oceanic depths.

Nevertheless, out of the first drilling done for the Mohole Project came the proven ability to drill, core, and log at least 600 feet into soft sediments and basalt under 12,000 feet of water. To do this our small team of engineers pioneered precise station keeping in deep water with dynamic positioning and a local sonar location system. We devised means of reducing pipe-bending stress both at the surface and at the bottom, where we drilled in a casing. We successfully tested a wire-line coring diamond-bitted turbodrill that was most efficient in hard rocks.

Our scientific achievements consisted of finding that the seismic "second layer" was basalt, covered by some 600 feet of Miocene ooze, of measuring the earth's temperature and heat flow deep in the bottom, and of calibrating seismic velocities with physical measurements. The total cost of all the above was $1,536,500.

The following year (1962) the project left the National Academy of Sciences and became ever more political, expensive, and inept. In the end perhaps it did become a fiasco, but in the early days it established the great possibilities in deep ocean drilling.

WILLARD BASCOM
5137 Vista Hermosa,
Long Beach, California 90815

References

1. W. Bascom, *Drilling Through the Earth's Crust* (National Academy of Sciences–National Research Council, Washington, D.C., 1957).

Yosif Begun

Poland recently celebrated the 40th anniversary of communist rule in style: during a month-long amnesty, 652 political prisoners and 35,000 common criminals held behind bars said a conditional goodbye to stark barracks and cramped cells. Regretably, Poland's ideological mentor, the Soviet Union, has given no sign of granting such amnesty to any of some estimated 10,000 political prisoners in the "gulag." One of these is mathematician Yosif Begun. His wife, who desperately awaits his return, describes his pathetic plight as no one else can:

July 1984

My husband, Yosif Begun, is a Candidate of Technical Sciences (equivalent to a Ph.D.). His field is applied mathematics.

Since 1971, when he filed his application for an exit visa to Israel, he has been unable to find employment in his field. He has worked as a night watchman, a fireman, a boiler worker. In connection with his quest to emigrate, he was twice tried in 1977 and 1978 and served 5 years in internal exile.

In November 1982 Yosif Begun was arrested a third time, charged with slandering the Soviet State, and sentenced to 7 years in a strict regime labor camp and 5 additional years of internal exile. While awaiting action on his appeal of this sentence, he was confined in a special punishment cell in Vladimir Prison.

Now my husband is in a strict regime labor camp where much cruelty is inflicted upon him. In early May he was placed in solitary confinement for 15 days. Soon thereafter he

was sentenced to 6 months in the camp prison, where conditions are even worse.

During his 20 months of imprisonment he has not been allowed visitors. For two months I received no letters; then I finally received a letter dated 22 June in which he said, "I am alive. My only pleasures are the letters. . . . My only hope lies in the grace of God."

His jailors are doing all in their power to undermine the health of my husband. At age 52, he faces 5½ years more of imprisonment and 5 years exile.

I appeal to you, his scientific colleagues, to save my husband by raising your voices. Keep striving to better his situation.

Inna Begun's is but one still, silent voice calling for humane treatment for her husband. More voices are needed to persuade Soviet authorities to ease their long-standing oppression of this man. We urge you to join with us in championing his cause.

MARK KAC
JOEL L. LEBOWITZ
PAUL H. PLOTZ
Committee of Concerned Scientists, 330 Seventh Avenue, Suite 608, New York 10001

A Manual Twitch

We note with interest the report by Evert Lagerweij *et al.* (14 Sept., p. 1172) suggesting that use of a twitch to grasp the upper lip of a horse increases the horse's tolerance of pain. We have for several years been conducting research among the Turkana tribe of northwest Kenya and have observed what may be another example of this "variant of acupuncture."

The Turkana are nomadic pastoralists who derive a substantial portion of their diet from blood drawn from their herd animals. Camels (*Camelus dromedarius*) are bled by tightening a thong around the neck and puncturing the distended jugular vein with several twists of a chisel-like metal blade. The bleeding stops when the thong is released. Inducing a fully grown camel to sit still for such an operation would seem to be a formidable task, but Turkana of both sexes routinely bring camels to their knees (literally) by grasping both lips firmly, one with each hand. The beasts do bellow, but are otherwise surprisingly passive during what is surely a painful procedure. This manual twitch is also employed during branding. The Turkana also bleed their cattle, but do not employ the same technique.

We have no physiological evidence to demonstrate that grasping the camels' lips causes analgesia and sedation, but it may well be that the potential to respond to "acupressure" on the lip is present in mammals other than horses. It is clear that this restraining technique has been discovered by African herders as well as by Western farmers.

PAUL W. LESLIE
Department of Anthropology, State University of New York, University Center at Binghamton, Binghamton 13901
J. TERRENCE MCCABE
Department of Anthropology, University of Georgia, Athens 30602

Prenatal Learning

Gina Kolata's article "Studying learning in the womb" (Research News, 20 July, p. 302) recalls to my mind the famous legend from the great Indian epic, *The Mahabharatha.* Lord Krishna, the legend says, was teaching the great Pandava warrior Arjuna how to enter the *Padmavyuha,* a military formation perfected by the Kauravas, with whom the Pandavas were at war. Arjuna's wife Subhadra, who was in an advanced state of pregnancy, was also present. As Krishna proceeded with his instructions, Arjuna answered with a "Hmm." After some time Krishna realized that the acknowledging answer was not coming from Arjuna, who had dozed off, but from the womb of Subhadra. Krishna, who was reluctant to impart this knowledge to anyone other than his favorite Arjuna, suddenly stopped talking. Years later during the Mahabharatha War, a young Abhimanyu, the son of Arjuna and Subhadra, could break into the *Padmavyuha* with ease by drawing on his knowledge acquired during his prenatal stage. But since he had been denied the knowledge of how to get out of the *Padmavyuha,* Abhimanyu fell fighting inside the formation.

All of which makes one wonder whether all "modern" research is all that modern!

KAMALA RAMACHANDRAN
The Wealth of India, *Publications and Information Directorate, Council for Industrial and Scientific Research, Hillside Road, New Delhi 110012, India*

Erratum: In the report "A candidate magnetic sense organ in the yellowfin tuna, *Thunnus albacares*" by M. M. Walker *et al.* (18 May, p. 751), the standard error given on page 752 (3rd column, first full paragraph) for the sizes of the magnetite particles was instead the standard deviation. Use of the term "standard error" implies a far greater variance in the sizes of the particles than actually existed and could lead to the conclusion that the published electron micrograph is not typical but presents a biased sample of the particles.