Letters

Interpeduncular Nucleus

Thompson [*Science* **132**, 1551 (1960)] relates damage to the interpeduncular nucleus of the rat to the loss of a visually conditioned avoidance response. Since no mention is made of the closely adjacent nucleus of the posterior accessory optic tract, it would seem necessary to confirm the absence of damage to this visual center before ascribing a role in visual responses to the interpeduncular nucleus.

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David Bodian's point, that neural structures (for example, the nucleus of the posterior accessory optic tract) other than the interpeduncular nucleus may be involved in retention of preoperatively learned visual tasks is well taken. The following data derived from two experiments [*J. Comp. Physiol. Psychol.* **53**, 488 (1960); *Exptl. Neurol.*, in press], however, strongly support my original contention [*Science* **132**, 1551 (1960)] that the interpeduncular nucleus has a significant role in visual responses: (i) the degree of retention loss is directly related to the amount of damage to the interpeduncular nucleus; (ii) lesions placed immediately lateral, superior, or posterior to the interpeduncular nucleus are without effect; (iii) lesions in the region of the posterior accessory optic tract are without effect; and (iv) damage to the habenulopeduncular tract produces a deficit similar to that found with damage to the interpeduncular nucleus.

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I would like to comment on the report of the President's Science Advisory Committee as it appeared in *Science* [**132**, 1802 (1960)]. As I read through the report, I was struck by one glaring lack: hardly anywhere, except inadequately in the section called "Background," was there any questioning of why we scientists should do research. In that section, a pat on the back is given to the idea that research, that knowledge, is good for its own sake, but the main emphasis is on the "material returns of scientific investigation," on a "recognition that the defense and advancement of freedom require excellence in science and in technology."

Now I do not want to quarrel with this division. We all recognize that not only science but all the arts—everything which lifts man above the brutes—should have the support of the government and of the people. But, once we recognize that scientific endeavor has another function, that of increasing real wealth, of eradicating poverty and misery—once we recognize this function, should we not also go about seeing to it that scientific research is so conducted that we can obtain these hoped-for results? Oh, I know that many scientists will immediately cry out, "Planned research! Conducted research!" But is not our research in this country mostly conducted, conducted for the government, for "defense," for private profit? I hear no complaints from these people about this kind of research.

What I would like to have read in that report was a summary of the areas where we could have more scientific research and of areas where we could immediately end research without loss to anyone. With no direction, talent is wasted, and the good name of science is besmirched in the public mind. For example, should so much money have been spent on a relatively minor disease, poliomyelitis? Do we really need research so that we can travel faster on this earth, or get to the moon within our lifetime? We have many problems which cannot be solved by improved weedkillers, or improved nasal sprays, or improved antibiotics. Our urban sprawls are spawning inhumanity; our resources are being squandered, our air is being polluted. Why cannot we do away with the internal-combustion engine and get some research going on something to take its place, without noise, without pollution, without a wastage of scarce resources? Racial tensions are increasing all over the world; this is assuredly a problem which scientists can tackle. All your readers can multiply instances of such problems many fold, and I am sure all the problem-areas that they cite will be relevant, and all will be amenable to scientific endeavor.

You will say that it was not the purpose of the advisory committee to talk about these things. I answer that it was precisely in their province, if they were going to ask for more federal help and money, to give some ideas as to where this money and these brains are going to be used. Once you accept the idea that scientific research has goals besides the burgeoning forth of new knowledge to set beside the knowledge that has been handed down to us from previous generations—once you accept the idea that science should act to make more men's lives better, more humane, sacrosanct, then it devolves upon you to make it clear where this research should be conducted, in what fields, to meet what needs.

If this is not done—and if the report is accepted it will not be done—then, to the layman, more scientific research will mean more gadgets, more and better bombs, more drastic, unnecessary changes in the conduct of our life. Really now, do we honestly need communications satellites? I have talked to many nonscientists, and to them, more scientific research means deadlier wars. Right or wrong, this is a conception, and it is up to us scientists to do something about this, or else we will be damned, and, I think, rightly so.

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Western Snake River Fault Zone

Malde [*Science* **130**, 272 (1959)] has described a zone of northwest-trending, high-angle faults which have displaced the western Snake River Plain downward relative to highlands on the north by at least 9000 feet; 5000 feet of the movement occurred between the early and middle Pliocene, and the balance occurred in Cenozoic time. His studies are based in part on numerous gravity measurements, and from an "analysis of a 50-milligal residual anomaly associated with the steep gravity gradient near Mountain Home, it is calculated that from 13,000 to 38,000 ft of rocks about as dense as Columbia River basalt have been dropped down against the Idaho batholith."

Kirkham [*J. Geol.* **39**, 210 (1931)], from a plane table traverse of Squaw Butte near Emmett, calculated a thickness of 17,000 feet for the Columbia River basalt exposed in the butte. He said that this thickness would not hold if faults were found. While the faults are not particularly obvious on the surface, they are easily observed from an airplane. The rocks are tilted at various angles, from 8 to 40 degrees, and form narrow north-south wedges. Horizon markers are not easily identified in the Columbia River basalt, but it is obvious from the large amount of displacement visible from the air that the actual thickness of the basalt is of the order of 3000 rather than 17,000 feet. I have studied these basalts over large areas of Oregon, Washington, and Idaho and believe that a thickness in southern Idaho of appreciably more than 4000 feet is not likely. It might be argued that Snake River basin was a downfaulted basin in which the basalts pooled and became unusually thick. However, nothing in the appearance of the basalts next to the major fault zone indicates that the basalts are ponded. It seems more likely that steep gravity gradient near Mountain Home is due to thin wedges of Columbia River basalt downdropped along the border of the plain against the Idaho batholith, leading to an error in calculated thick-