Letters

Relevance of Science during Times of Social Stress

The New York *Times* editorial which *Science* reprinted (21 July, p. 295) attacked the appropriation of national funds for a 200-billion electron volt accelerator by stressing the "irrelevance of this accelerator to any real present national problem." It stated that "It is a distortion of national priorities to commit many millions now to this interesting but unnecessary scientific luxury."

This is such a serious attack against the essence of basic science in general that it should not remain unchallenged in a magazine devoted to the advancement of science. It represents a way of thinking which is most tempting during a period of social and economic stress. Obviously, far too few funds are devoted to the dire needs of a considerable section of our population in respect to housing, education, and medical care. In times of stress it is of utmost importance never to forget the aims of our civilization and the ideas which made our epoch uniquely distinguished and great. Certainly basic science plays an essential part in this. The United States took over the lead in this great development, it is today the country in which science is most active and vigorous. This leading position is threatened by an overzealous trend to cut these efforts in the present national emergency. Shall we relinquish this position because we are now living through a time of increased strain? The total expenses for basic science in the United States, including the planned giant particle accelerator, amount to less than one-third of a percent of the gross national product. Little would be gained for other purposes by giving up new projects which will keep us in the front line of research, but much would be lost. Projects such as the new accelerator might appear irrelevant to our immediate national problems. However, our scientific effort has a more enduring meaning. It is part of our cultural heritage which makes our lives worth living; it is the basis and precondition for technological inventiveness and industrial progress; it belongs to those activities in which we hope more and more people can and will participate through a better and more democratic system of education.

The troubles of today are, to a large extent, caused by our insufficient efforts to create a society in which more people can partake in a life which is worthwhile, interesting and significant. These efforts would become senseless if we begin to sacrifice some of the most active parts of our cultural life. In these difficult days, we must, more than ever, continue to support all that is positive and valuable in our civilization.

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Vague Identities Exasperate

Scientific journals should refuse to accept reports recording experiments on animals which are vaguely identified or only by a common name. Binomial nomenclature has been standard practice for more than two centuries, and the time of indefinite identification of an animal as the frog, the shark, the rat, the monkey should be past. One doubts that many experimenters are so vague about their research that they are unaware of the identity of the animal in hand, but too many do not care enough about such vital information to transmit that datum in print for the benefit of others.

My general exasperation at this unfortunate but widespread practice is brought to the point by the report (30 June, p. 1765) on short-term memory in monkeys which had had the cortex of the frontal lobes of the cerebrum removed. Nothing in the article gives a clue as to the kind of monkey involved, yet the common word "monkey" covers two groups (Ceboidea and Cercopithecoidea) which are quite different phylogenetically, anatomically, and behaviorally, and undoubtedly are biochemically different as well. The New World group (Ceboidea) had phylogenetic origins from North American early Tertiary prosimians, an evolutionary sequence undoubtedly different, and probably later by some millions of years, from that involved in the phylogeny of the Old World monkeys from a different prosimian group. The two groups of monkeys thus have had independent adaptive radiations. The Ceboidea are divergent enough among themselves to be separated into two families, of which the various genera and species vary considerably from one another so that experiments performed after frontal ablation on one might well produce results quite different from the same experiments performed on another; similarly the cercopithecids, although included within a single family, represent an extremely diverse group anatomically and behaviorally, and the numerous taxa are adapted to a variety of environments. Thus, whether comparisons are to be made of experiments performed upon animals of the same or of different families (all in this case being given the lay term, "monkey"), scientific confusion results unless the animals are accurately identified as to genus and species.

In a further article in the same issue (30 June, p. 1772), there is mention of a genus and species, here presented as *M. mulatta*, which, by common usage, should be translated to read *Mulatta mulatta*. No such animal exists but not everyone may know this. Furthermore, in the same article, we find the Animal Kingdom divided for convenience into humans, nonhuman primates, and "lower animals." The first two categories are clear, but the latter seems not to mean the logical assumption—all animals other than the Primates—but instead only non-Primate mammals (presumably therian mammals, or should we exclude the marsupials here?) used in laboratory experiments. Even if we ignore the unnatural narrowing of the non-Primate portion of the Animal Kingdom to that meagre part denoted by the lingo of the laboratory experimenter, I must still ask why *Canis familiaris* or *Tursiops truncatus* are "lower" than *Lemur catta* or *Nycticebus*