national Commission on Zoological Nomenclature, which has been in existence for over half a century. Each code provides criteria for the naming of organisms within its field.

A basic criterion is the law of priority: the oldest name applied to a plant or animal, with a description, and usually also with technical illustrations, is the valid name. To interpret the name correctly, one must refer to the original description. It provides a basis for all subsequent study. There should therefore be no restriction on the use of the original description. Subsequent descriptions, as well as taxonomic keys (by which certain plants or animals may be distinguished from one another), should also be regarded as in the public domain. The new copyright law should make clear that copyright does not extend to any taxonomic description, key, or figure, of a plant or animal.

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NSF: Initiative in National Policy

Greenberg's discussion of a House subcommittee's report on the National Science Foundation ("Daddario study says NSF should be in the forefront of policymaking," News and Comment, 14 Jan.) brings into focus what to me is the most remarkable feature of NSF funds: their availability to those who wish to test hypotheses previously untested or misinterpreted but still worthy of further study. NSF is a reserve that can be drawn on by those whose minds are open to the multitude of physical and biological systems yet to be explored. It is a monument to the belief that one should not have to be born rich in order to engage in learned pursuits of one's own choosing that further man's knowledge and welfare. The soundness of this philosophy has already been demonstrated. We need now to safeguard its future. The fact that the distribution of funds differs markedly from ancestral custom need not be alarming. We can be confident that better use of the funds will be made by allocating them to creative men who come forward with proposals than by the age-old system under which a few persons decide how funds should be spent and then search for someone to pursue that course.

At present scientists seem to be in a very favorable position of trust. . . . As NSF now stands, it is a tribute to both science and management. It demonstrates to the researcher that his course is acceptable to his fellow men, and to managerial authority that scientists have confidence that their needs will be met in the general economy. For these reasons it is to be hoped that NSF will not be required to enter the competitive political arena.

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Commenting on the Daddario subcommittee's recommendation that the National Science Foundation take greater initiative in the determination of national science policy, Abelson (4 Feb., p. 521) says that "science policy cannot be made without reference to national goals," that these are established by politicians, and that "if politicians wish to have a sharper formulation of policy they must provide a more clear-cut description of the goals and of the relative priorities."

It is easy to confuse national plans with national goals.

National goals should arise in the consensus of the population, not in the mind of a politician. If later his speeches seek to articulate a public desire as a means to re-election, this is not the establishment by the politician of a national goal. For example, equality of opportunity is emerging as a national goal. So is a pollution-free environment. Such desires emerge slowly, are difficult to realize, and frequently entail heavy demands on the scientific community, however slow it may be to respond.

The defense industry has an attitude with legitimate roots which dictates passive waiting for government to state the requirements before the industry will open a major campaign. I sense this attitude in Abelson's characterization of scientists. And yet the scientific community should be able to identify and promote some worthy national goals with success at least comparable to that of the radio industry in foisting color television on the consuming public. In short, I don't view with alarm; I call for accepting responsibility.

Finally, Abelson says that because

the national goal of winning the war was clear and persistent, "[scientific] accomplishments during the war were unprecedented, and they have not been matched since, in rate or quality." I wonder if they are not matched by—for example—the intercontinental ballistic missile, DNA, polio vaccine, the Rangers, Mariner IV, Early Bird, the jet transport, and all the other achievements our colleagues could add to the list.

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Evolution of Hairlessness in Man

Most of the remarks made by Baker, Kraft, and Fentress (Letters, 25 Feb., p. 935) seem to me to be interesting extensions of various lines of thought suggested by my essay on "The ethical basis of science" (3 Dec., p. 1254). The unabridged essay contained in the book from which the article derived may offer other extensions and possibly clarification of some moot points.

I must take exception, however, to Baker's comment on my "rather Lamarckian statement connecting the 'loss of certain unnecessary structures, such as bodily hair, once clothing was invented.' " There is nothing whatever Lamarckian about the statement. It would be "Lamarckian" only if I had said or implied that the needs or desires of the human being had led to the inheritance of a trait. Natural selection is required to maintain every functioning, necessary feature at a functioning level. Whenever, by change of environment, a once useful structure becomes useless, the prevalent nature of mutation will lead progressively to its reduction or deterioration. That is to say, it is by *mutation in the absence of natural selection* that functionless structures become reduced, then vestigial, and finally disappear altogether. No geneticist or evolutionist to my knowledge would propose any Lamarckian explanation for the disappearance of useless structures. The wings of all the now wingless insects of Kerguelen have presumably been lost solely by natural selection in an environment where wings were not only useless but a positive handicap. Eyes in cave fish and salamanders are presumably no detriment, but they have lost significance and the animals have evolved to a blind or even eyeless condition.

The situation is similar with respect to human hair. All other primate species, whether living in the tropics or in temperate regions, whether arboreal or ground-dwelling, are hairy. Man, too, still possesses all his hair follicles, but the hair itself, over most of the body, is reduced and vestigial. In this respect he is comparable to the elephants or the cetaceans. Evolutionists suppose that the relative hairlessness of these mammals arose from a change in selection pressure, and it is reasonable to suppose the same is true of the human species. What was this change in selection pressure? One may postulate a positive advantage in being hairless, a disadvantage in hairiness; or one may postulate that hairiness simply became inconsequential to man. The first hypothesis does not seem very probable, because the human species, evolving in East Africa or wherever else, was in the company of other primates who did not become hairless, to judge from their modern descendants. Although the matter must of course remain without conclusive proof, it seems far more reasonable to suppose that man very early in his separate existence as a species (or genus) began wearing clothing (in the form of skins) and later using fire to warm himself. Thus he changed his environment sufficiently to make hairiness an inconsequential feature, except on the more exposed parts of his anatomy.

It is highly significant, as a support of this theory, that head hair, so clearly a protection from sun, wind, and rain, has been retained. Mutations eliminating only body hair have not been removed from the population by natural selection, while those that eliminate head hair have been extinguished. I would go so far as to propose seriously that baldness, like myopia, is largely a genetic trait that has only become widespread and common in human populations since man became relatively civilized and keen vision and a good head of hair were no longer so important to survival. In fact, baldness is still limited almost entirely to males who have passed the age at which most males, in primitive times, would have died of various causes. Thus the apparent extension of baldness as a common human trait is largely a matter of the extension of the life span. That cannot be the case for general body hairlessness.

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