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up the burden. The scattering of teams now in existence would be a tragedy, and would delay answers to the problems on which they are working. Worse, the news of destruction of research teams will reach campuses quickly. It would turn youngsters away from coal engineering as a career, and indeed, would discourage talented youngsters from contemplating a career in government scientific service of any kind. I cannot believe that 50 years of the Bureau of Mines tradition for quality scientific research and engineering study will go down the drain simply to save \$40 million in the 1972 budget.

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## Washoe the Chimpanzee

The reports of Washoe's language learning seem destined to be met with analyses attempting to show major differences between the potential language abilities of humans and nonhuman primates. I don't wish to argue the question of differences—careful analysis may prove that there are many. I am concerned, however, that Bronowski and Bellugi ("Language, name, and concept," 8 May, p. 669), despite their concern with the ideal control group, failed to deal with the problem of very early experience. They suggest that Washoe should be properly compared with the (unavailable) "deaf child of deaf parents." Since Washoe was "obtained as an infant chimpanzee from the wild when she was about 1 year old," the more appropriate comparison would be with (an equally unavailable) feral child. (Since chimps mature more rapidly than humans, the expected deficiency may in fact be more profound than would be anticipated from a year of verbal deprivation for a human child.) With the present evidence on behavior of feral children and recent data on other "deprived" youngsters, we cannot be surprised that Washoe shows "cognitive deficits." Her pattern of deficiency is precisely what one would expect: relatively less impairment of simple cognitive skills, and more profound impairment of more complex skills.

In short, we cannot determine from the data whether apes are significantly poorer than humans in complex language skills as "the structural activity of reconstitution," or whether Washoe, like

a new deprived minority, is showing evidence of a considerable imposed "cultural" handicap. I think that the analysis of Bronowski and Bellugi is potentially an important one. I hope that future data will permit a fair comparison.

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A number of further comparisons remain to be made between Washoe and other primates and children. In our view, the most important is with a deaf child learning sign language, and one of us (Bellugi) is engaged in this study. The results will be published in full, but it can be said now that they support in a most interesting way our characterization of a child's acquisition of language.

The one comparison that would be quite fallacious, however, is that with a feral child which Linton suggests. This would imply that Washoe's first year was as unnatural to her as a year in the wild is to a human child—which is plainly false. Washoe before the Gardners adopted her was not a "deprived youngster," and chimpanzees in the wild are not handicapped humans.

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## Genetic Patterns

The statement of H. H. Suter (Letters, 15 May) that "abortion, culling, [and] termination" will cover population control concerns only one side of the ledger. The other side—a new worry—is the generation of selected individuals. One can visualize the use of somatic cells or cultured somatic cells for the replication of larger numbers of "superior" beings. Several techniques that could make this feasible will be available in the near future. It is now possible to maintain or preserve the genetic pattern of somatic cells—how perfectly isn't known—of an individual long after his death. From an ethical and "moral" viewpoint perhaps we should take steps to insure that an individual's genetic pattern is not replicated as an individual and dies with him.

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