Letters

Distribution of the NSF Dollar

Millett (Letters, 19 May) exposed the deficiencies of Ohio rather than of the National Science Foundation and apparently missed the most important implication for our state, as well as for the rest of the country, in the interesting data he presented on the distributions of population, NSF grants and contracts, and NSF fellowship awards among the states. Although geographic inequities in NSF's program may tend to "redistribute state wealth" by collecting taxes in states like Ohio to pay for programs in states like California, it does not follow that NSF fails to advance the economic and intellectual status of "have-not" states like Ohio. Aside from the obvious fact that an Ohioan can use the openly published product of a Californian's work, a careful look at Millett's data shows that NSF is, in fact, biasing its support in favor of the "have-nots." The percentage of NSF fellowships received in a state should be thought of as a measure of the state's scientific excellence, because the fellowships tend to be awarded competitively and without regard to geography. If grants and contracts were awarded solely in terms of excellence, then the percentages of these would be about the same as the fellowship percentages.

Millett's data show that NSF was, indeed, following a leveling program in 1966, as shown for the larger money-makers in Fig. 1. The distribution of grants and contracts tended to counterbalance the states' scientific status. The notably excellent states, which attracted significantly more fellows than one would expect from their populations (California, Massachusetts, Illinois, New Jersey, Wisconsin, and Connecticut), were all discriminated against in 1966 by receiving relatively less NSF grant and contract money than fellowship money. Thirty-eight of the other states got more grant support than their attractiveness to fellows warranted.

NSF was apparently doing what Millett seems to want it to do: trying to upgrade the economic and intellectual development of "have-not" states. It did this at the expense of states like California, Massachusetts, and Wisconsin, and perhaps at the expense of the overall excellence of our national scientific product. It is unusual that an Ohio official would publicly favor a kind of federal pump-priming to improve the intellectual health of disadvantaged states like Ohio. (In defense of my state I might note that it is not the worst offender; the greatest amount of such pump-priming seems to be directed at Texas, and this is something to ponder.) A solution more in tune with typical Ohio political attitudes would be that we should help ourselves by making our universities as attractive as Berkeley has been to the bright young men from Maine and elsewhere. When we do that, the research and technology dollar will follow naturally.

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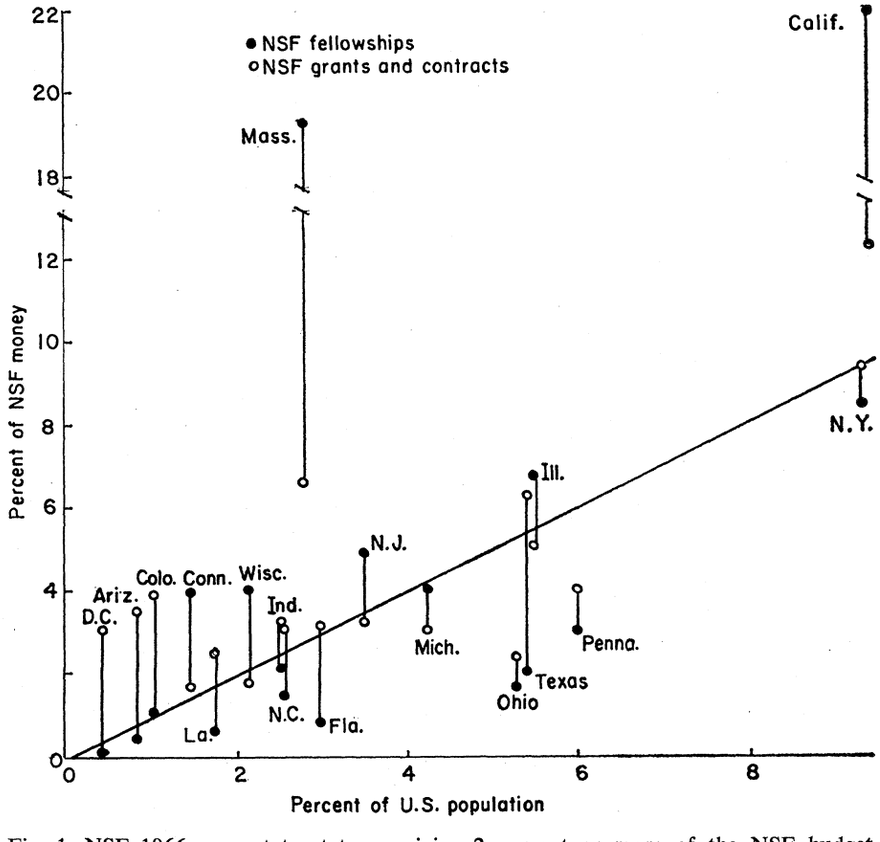

Fig. 1. NSF 1966 support to states receiving 2 percent or more of the NSF budget, with diagonal showing support expected on basis of population. States favored by fellows above expected level received less grant and contract support than warranted by the fellows' "vote," and nonfavored states received more, tending to "level" support toward the diagonal. [Data from Millett's letter, 19 May]

Amazonian Wildlife and Forests

As one who has traveled over and through the Peruvian areas visited by Heltne, and areas in Brazil, Colombia, and the Guianas as well, I can share his concern for the Amazonian wildlife (Letters, 14 July). In some places hide hunters have virtually eliminated the caiman, and fish collectors have reduced certain aquarium fishes to near extinction. But Heltne seems unaware of the fact that Amazonian mammals have never in historic times been nearly so abundant as they were recently in North America or as they still are in parts of Africa. (Those that are present are shy and nocturnal, which may

be why Heltne didn't see any.) Nature-conscious visitors to Amazonia have always noticed the relative paucity of mammal life. It is inaccurate to blame this on exploitation by humans.

Also, I find it difficult to believe that human exploitation has had any appreciable effect on the great Amazon rain forest. First, native agricultural deforestation always covers such small areas that the natives are able to extract only marginal existence from them. Second, only a fraction of the rain forest has commercial value. With few exceptions, lumbermen cut a tree here and another there, and always near a waterway. Third, even during a brief visit to Amazonia, Heltne must have developed an awareness of the extent of the virgin forest. Hour after hour the airborne traveler observes towering green forest as far as the eye can see in every direction with no visible signs of human exploitation—or even habitation. It's an awesome spectacle.

It will be a long, long time before man destroys the Amazon rain forest, but it *is* conceivable that species of animals might be eliminated from substantial portions of this earth's largest remaining untouched area.

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Groping through Spoken English

The columns of *Science* often contain expressions of concern about the inadequacy of the writing found in scientific papers. In this country, however, scientific communication is largely made through the spoken word in lectures and talks at meetings and symposia. The language employed for these presentations is almost invariably Ah-ah-ese. I propose a return to the use of English. This radical suggestion is prompted by my recent experience at a symposium in Paris where many papers were delivered in French. Through a fortunate circumstance in my childhood, I understand French as well as I do English. The speakers varied in eloquence, clarity, and audibility, but every talk possessed a quality of smoothness and directness whose origin I was unable at first to identify. Eventually it became trivially simple: every sound uttered by a speaker was part of a French word. What a contrast with scientific meetings in this country! I await the day when an unusually honest speaker of Ah-ah-ese will begin his talk with: "A-a-a-UMM! The ah insignificance of my ah remarks will-uh be-ah minimized, or er-er concealed, by the ahah braying noises I am ahahah emitting." The speakers in Paris convinced me that we too could speak our native tongue without groping around for every other word and moaning dismally as we search. Some of us may be too old to alter our ways. But at least we can persuade our students to cut out the noise, pronounce nothing but English words, and remain silent during the birth pangs of the next inspired phrase.

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Painfully Slow Medical Progress

Sabin's article, "Collaboration for accelerating progress in medical research" (23 June, p. 1568), appeals strongly to this layman who has been observing painfully slow progress in one area where collaboration and coordination could yield a quick, important payoff—the area of artificial internal organs in general, and artificial kidneys in particular. Though originally a temporary expedient, the kidney machine is now the only practical means of treating chronic uremia. Its cost of $10,000 per year has been prohibitive and, despite available technology, 15 years elapsed before these costs were reduced. Now a unit designed for periodic home hemodialyses has been made available to 25 patients under an experimental program. It is expected to reduce costs by a factor of five—a result of collaboration by physicians, chemists, engineers, and others. This is a major step forward, but its use still requires extensive training of patients and family physicians. The next obvious objective is continuous dialysis with simple equipment portable on the patient, thus obviating problems of intermittent, high-volume flow adopted for emergency use. But without coordinated collaboration, guided by NIH or others, another 15 years can pass before this is achieved even though it may today be within the "state of the art."

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