Letters

Lake Tahoe: Measured for Pollution

Garman can only have arrived at his conclusion that mineral fertilizers pose no threat to Lake Tahoe by supposing the volume of Lake Tahoe to be infinite, like God's bounty to undeserving man (Letters, 12 August). This kind of notion has survived the collapse of the whaling industry and now promises to outlive Lake Erie and Lake Baikal. Garman claims that the annual increment of fertilizer to the entire state of Nevada, 2000 tons (2×10^{15} μg) of nitrogen, could not be detected by any means, "including a biological one," if mixed all at once into Lake Tahoe. This may be true in plant food circles, but limnologists use methods appropriate to the concentrations they encounter. Although no analyses of Tahoe waters are readily available to me, (and I have not studied the lake myself), the total nitrogen in so pure a lake is unlikely to exceed 100 μg/liter and is probably closer to 20; soluble nitrogen may be presumed to vary seasonally between 1 and 20 μg/liter. Tahoe is one of the deepest lakes in the world. Its boundaries are circumscribed in a map on p. 17 of G. E. Hutchinson's *Treatise on Limnology*, vol. 1 (Wiley, New York, 1957), and its volume is 124 km^3, or 1.24×10^{14} liters. Thus the hypothetical addition of 20×10^{14} μg of soluble nitrogen (16 μg/liter) might easily double the concentration; the difference would be easily detectable by standard micromethods, and ultramicromethods are available if needed.

Garman does not tell us how much phosphorus would accompany this nitrogen, but commercial fertilizers usually contain as much phosphorus as nitrogen, whereas the two elements are ordinarily present in natural waters in the proportion of N:P = 7:1 by weight. Doubling the nitrogen concentration by Garman's method might therefore entail a sevenfold increase of phosphorus. Garman's illustration was intended as a piece of hyperbole, of course, but his neglect of phosphorus makes his conclusions unrealistic. Ignoring sewage as a source of algal nutrients, we may use the 2×10^{15} μg of nitrogen, taken as the annual increment of fertilizer to Nevada, to estimate the current input of phosphorus to the lake. The lake itself occupies 0.18 percent of the state's area, and I will suppose that the drainage basin occupies 0.3 percent. The predevelopment concentration of total phosphorus would be of the order of 5 μg/liter. If the basin received its proportionate share of Nevada's fertilizer, with phosphorus equal to nitrogen, the current rate of application of phosphorus would yield an increment of 0.05 μg/liter per year to the lake. If only half the phosphorus, or 0.025 μg/liter per year, reaches the lake, its waters would be enriched by 1 μg/liter, or 20 percent, in the course of 40 years, or a little more than one generation. The amount of the increase is probably small, compared with sewage pollution, but algae know what to do with a scarce element when it suddenly becomes available.

The present mode of harvesting Lake Tahoe's productivity—angling for salmonid fishes—is admittedly obsolete, even atavistic; technological progress could easily find more efficient ways of utilizing an enriched lake. Most citizens, however, would find the price of such progress rather high, for Lake Tahoe, apart from its quite exceptional beauty, is poorly sited, and much too deep, for an experiment in growing algae.

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Medicine for the Poor in Denver

Were it not part of a common oversight, I would not seize on a single sentence in Langer's constructive report on "Medicine for the poor: a new deal in Denver" (News and Comment, 29 July, p. 508). However, her comment that, "To all intents and purposes, the Neighborhood Health Center is the only thing Denver has to show for its War on Poverty," strikes me as rather cavalier treatment of Operation Head Start which is part of the community action program. One must realize that large components of the War on Poverty have been delegated to the departments of HEW, Labor, and others. It happens that the 700 enrollees in the Denver Neighborhood Youth Corps are part of the War on Poverty, that they are beneficiaries because they earn $1.25 per hour and get some training too, and that they are contributors because they perform useful community services which otherwise would not get done.

The Neighborhood Youth Corps is administered in the Department of Labor and it is one of the unsung success stories. Everybody knows about the Job Corps but few realize that on the first of June the Job Corps had just reached its 27,000th enrollee, while the Neighborhood Youth Corps was past the half million mark. I found the Denver Youth Corps an effective but rather silent partner in the War on Poverty.

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Langer's article does its greatest disservice by its tone. It imputes the worst possible motives to the Medical Society, Denver General Hospital, public spirited citizens, poverty groups, and even the Neighborhood Health Center itself. It is replete with inaccuracies, inconsistencies and inferences which incorrectly portray the center and its relation to the community.

While the Health Center did in fact draw its neighborhood aides from the special training program given at Denver University, the implication is that the wife of a state senator, who is not in the poverty group, was so employed. This is not true. This woman was never among the neighborhood aides at the center.

It is grossly inaccurate to state that Denver General Hospital or the Department of Health and Hospitals has largely left the Neighborhood Health Center alone. All major decisions have been made by this department; all hiring has been accomplished through the hospital's personnel office; almost all services (including visiting nurse, social, and psychiatric) rendered at the center are direct extensions of those rendered by the hospital; all needed specialty services, emergency services, and hospitalizations have been provided by Denver General Hospital.

The article appears to praise the center. Yet, the care given at the center is described as being no better than that at Denver General Hospital, which, by insinuation, is poor. Or as stated, "neither much better nor much worse than most municipal hospitals."

In the future I would suggest that all relevant sources of information be sought before writing such an article. Visiting Denver General Hospital and discussing the subject with the manager of health and hospitals would have afforded the writer the opportunity to ascertain more of the facts.

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Langer's article strikes me as one of the more perceptive analyses of the importance of local health service programs in the current OEO-sponsored antipoverty programs. Its discussion of the center's impact on the scope, quality, and tone of health services made available to an urban minority group, of its impact on political and professional interest groups, and of its utilization of a combination of nonprofessional and professional personnel, among other points, made the article extremely useful for our classes in social welfare policy.

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Population Stabilization

John Walsh's discussion of the food-population balance (News and Comment, 13 May, p. 896) again emphasized the overwhelming need for controlling world population. Wars and famine are but two examples of world problems that are intensified by population pressures. A 1965 Gallup Poll indicated that only 60 percent of Americans regard overpopulation as a major world problem. The Office of Economic Opportunity is reluctant to support progressive family planning programs because of possible negative public response. Therein lies the role and obligation of the scientific community: to learn about and to teach the need for population stabilization.

The combined efforts of the biologist, chemist, mathematician, physicist, geologist and meteorologist could greatly improve community understanding of overpopulation and its consequences. One lecture, or part of a lecture, each semester by each *Science* reader would help shape the political atmosphere that is essential before our government can launch an international program. High school and university students would quickly grasp the seriousness of the situation when confronted with the demographic facts. Though birth control has been commonly considered a personal matter for each individual and his family, this will be less true in the future. Some people believe that a massive international program of family planning methods would corrupt youth. This does not follow. The seeds of morality are planted elsewhere and do not depend on the availability or denial of information for their nourishment. The point is that citizens of every nation must learn about the international consequences of unchecked population increases, and have a knowledge of basic family planning methods. In thirty years, Vietnam, Korea, and Cuba will be incidents in history books, but with a population twice that of the present one, the world may be in interminable chaos.

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Tenure in 1897

Occasionally, it is almost a relief to look back, perhaps three score years and ten, to find a few real problems existed in those older days as well as today. The following postcard, addressed to the late Frank Smith, then an assistant professor at the University of Illinois, may underscore one such worry about the future:

My dear Smith: I was much pleased to receive your paper on the Oligochaeta yesterday. It rejoices one to realize how you are prospering. I can hardly help but envy you such a good solid place. Zoologists are getting terribly frequent nowadays and it makes me speculate about the future. However, I am having a fine time now. I am expecting to go down to Naples before long, to stay till the middle of July.

Yours,
H. S. Jennings

Jena, Germany
February 22, 1897

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