LETTERS

Oil Refinery near the Taj Mahal

The Indian government is building a large oil refinery in Mathura, 20 miles away from the Taj Mahal. The government says the refinery will have equipment to trap any corrosive chemical emissions. Government laboratories have pledged that this equipment will be effective. However, any mechanical device occasionally breaks down or malfunctions. If this should happen in the case of the refinery, then harmful emissions would spill into the sky, creating a serious danger to the Taj. Sulfur dioxide, when leaked into the atmosphere, mixes with water vapor and forms a sulfuric acid shower that can react with marble (calcium carbonate). Thus, the polished white surface of the Taj could first become discolored, then pitted.

Indian industrial licensing laws unfortunately do not include pollution control standards, with the result that, some years ago, effluents from a public sector refinery literally set the Ganges River on fire. The treasures of the Taj cannot be shifted, but the site of the refinery can be. The government has made a promise to Parliament that the plant will not be operated unless protection to the monument is ensured. The protection they were apparently referring to was to use only crude oil with a low sulfur content in the refinery.

This is not agreeable, either to the Archeological Survey of India or to those who are concerned with the preservation of the rich cultural and architectural heritage of the country. It is therefore necessary to form an International Action Committee to try to prevail upon the government of India to do something about the refinery. The committee will function at the address furnished below and welcomes communications from scientists and intellectuals throughout the world.

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Chrysotile Asbestos: Health Effects

In answer to my letter criticizing their report (17 June, p. 1319) on environmental asbestos pollution in Maryland, Rohl, Langer, and Selikoff (Letters, 19 Aug., p. 716) have produced a long involved effort at persuasion with a vast amount of information. My letter certainly called up a professional job. Unfortunately the information supplied would probably not

help anyone answer with a reasonable degree of certainty the question at issue: Does the use of serpentine rock from the Hunting Hill quarry near Rockville, Maryland, for the paving of roads, trails, and so forth create a health hazard? Their argument is based on the occurrence of chrysotile in the quarried material and in airborne dust raised by traffic. The link to lung cancer and other diseases, according to them, is that abnormally high incidences of cancer and other lung diseases have been found among workers in asbestos manufacturing industries that use a variety of asbestos minerals—including amosite, crocidolite, and chrysotile.

It is curious that their letter compares the crushed rock at Rockville with the crushed rock of the chrysotile mines of Quebec, Canada. This comparison is indeed relevant, but not in the way they imply. The Quebec mines are among the largest chrysotile-producing mines in the world and have been worked since 1886. Voluminous data have been collected there on mortality causes for 28,000 workers based on records going back more than 50 years. Dust levels related to the various operations have been determined and correlated with mortality causes and rates. More than 50 publications dealing with the subject have been released since 1969. A summary of a few of the findings (*1*) related to the Maryland situation follows: Cancer-related mortalities in the chrysotile mining and milling industry are much lower than, and cannot be compared with, those in the asbestos manufacturing industries. Thus possible hazards related to dust from quarried rock cannot be judged by experience in those industries. On the other hand, the Quebec data show that exposure to very high dust levels for many years (for example 4 million particles or more per cubic foot at the workplace for 50 years) does result in unacceptable health hazards. Nevertheless the general health of employees in the Quebec chrysotile mining and milling industries is comparable to that of the population of Quebec Province as a whole.

As the serpentinite quarries near Rockville contain much lower concentrations of chrysotile than the mines in Quebec, it would appear that a health hazard related to the use of serpentinite for fill and pavement is unlikely. No reference to the Quebec studies is among the three dozen cited by Rohl, Langer, and Selikoff in their lengthy reply, nor do they discuss the Quebec results in their original report. I wonder why.

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!Kung Ecology

In an otherwise knowledgeable review (13 May, p. 761) of our book *Kalahari Hunter-Gatherers: Studies of the !Kung San and Their Neighbors* (*1*), B. J. Williams makes a serious error of fact. In the book we argued that !Kung San (Bushmen), in spite of their desert environment and simple technology, have a more than adequate food supply. In taking issue with that view, Williams cites a piece of evidence that he says has not been published and that he calls "the real clincher." He writes, "Lee noted in his Ph.D. dissertation of 1965 that two-thirds of the San population in the Dobe region had been removed from there in a resettlement program only 2 to 3 years prior to his fieldwork. That there were superabundant gathered foods after two-thirds of the population had been removed is not surprising, nor is the superabundance relevant to general hypotheses concerning hunter-gather adaptations."

No such statement appears in Lee's dissertation, nor did such an exodus occur. What Lee did say was that in 1960 the South African government had settled the !Kung of Nyae Nyae but that the Dobe area !Kung from the Bechuanaland side of the border did not join the settlement scheme in any numbers. Lee went on to state that fewer than 50 Dobe !Kung went to the settlement while over 350 continued to hunt and gather in the Dobe area (*2*, p. 67). In other words, the maximum out-migration indicated was 12.5 percent, not 66.7 percent as Williams says. The settlement of the !Kung of Nyae Nyae, a different population, did not add a single square mile of foraging area to the space available to the Dobe !Kung.

The data available, far from showing a rapidly declining population for the Dobe area, indicate a stable or rising one during the period in question. Lorna Marshall estimated 432 !Kung in the Dobe area in 1952 (*3*). In 1964 (*2*, p.45) Lee counted 433, a figure later revised to 466 after a more thorough census taken in 1967 (*4*). None of us found any evidence to support a two-thirds drop in population prior to the study period (*5*). In our research project the findings of each investigator were checked against the work of several others; a discrepancy of such magnitude could not have gone unnoticed. Williams's assertion leaves the impression that members of the research group somehow suppressed information about massive out-migration in their published work.

This is not the place to go into the complex issues of !Kung ecology and history. Let us just say that, whatever the source of the !Kungs' ample food supply, Williams is certainly in error in attributing it to depopulation.

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2. R. Lee, "Subsistence ecology of !Kung Bushmen," doctoral dissertation, University of California, Berkeley (1965).
3. L. Marshall, *The !Kung of Nyae Nyae* (Harvard Univ. Press, Cambridge, Mass., 1976), p. 159.
4. R. Lee, in *Hunters and Gatherers Today*, M. G. Bicchieri, Ed. (Holt, Rinehart and Winston, New York, 1972), p. 333.
5. N. Howell, in (*1*), pp. 137–151; H. Harpending, in *ibid.*, pp. 152–165.

American Ice Cream

Nicholas Wade states in his article on the current ice cream controversy (News and Comment, 27 Aug., p. 844) that American ice cream is "made from dairy products of one sort or another." Actually, most American ice cream contains approximately 18 percent sweeteners and flavorings and about 0.5 percent stabilizers and emulsifiers. A commonly used stabilizer is carrageenin (extracted from seaweed), and cereal proteins (gluten) are used as emulsifiers. Federal law does not require container listing of ingredients in ice cream, and ice cream manufacturers seem reluctant to divulge this information. As a result, people who cannot tolerate gluten are unable to eat ice cream.

The Food and Drug Administration would do consumers a service if it insisted upon container listing of the exact ingredients in ice cream.

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