Letters

That Polluting Automobile

Jamison's article (5 July, p. 27) describes the growing controversy over the steam automobile very clearly and delineates the political and technical difficulties of controlling automobile pollution. The automotive transportation industry is so enormous and its effects on the national economy and the daily life of the individual automobile owner are so immediate that a change to steam engine power could have drastic repercussions if it were accompanied by a major degradation of performance or increase in price or maintenance costs. The basic dilemma confronting the public is that this pervasive yet unregulated industrial giant is unwilling (and probably unable) to advance technologically at the pace required to control and diminish its harmful by-products of air pollution, yet no other agency could possibly effect the required change in nearly 100 million vehicles of the coming "generation" (whose life span is a mere 10 years).

As a machine, the automobile is scientifically a crude device, operating on fundamental thermodynamic principles which were well understood even a century ago. Almost all the technologically sophisticated developments made by the industry have been concerned with reducing manufacturing costs while at the same time increasing the reliability and decreasing the expense of operation. Yet it is no exaggeration to say that the scientific causes of air pollution produced by automotive engines are not understood, at least in the quantitative sense necessary for controlling pollution. No one can say how much the pollution level of present engines can be reduced even though all the cut-and-try efforts to date have not yielded much improvement. Given the past irrelevance of this level of scientific understanding to the automotive business, this lack of knowledge is not surprising. In neither the programs of the responsible federal agencies nor those of the automotive manufacturers have we been able to detect any substantial recognition of the need for fundamental scientific research on the causes of air pollution as distinct from a search for a cure. We believe that there is a low probability of quickly finding a cure when a fundamental understanding is lacking.

The lack of careful scientific work on automotive pollution is no exaggeration. For example, to our knowledge the low levels of air pollutants for the steam engine quoted in Jamison's article have not been published in the technical literature. A private report, published by the Steam Automobile Club of America, Inc., quotes a hydrocarbon emission level for the Williams steam car of "20 ppm = 2 grams per mile." The latter figure of 2 grams of hydrocarbon per mile of automobile travel is only slightly less than the 1970 national standards of 2.5 to 4.1 grams per mile, depending upon engine size. We believe these quoted figures are inconsistent, and that publication in the scientific literature of the results of measurements are necessary before definitive statements on the antipollution potential of the Williams car can be made.

While there are sound scientific reasons for expecting that steam engines will produce lower levels of pollutants than present internal combustion engines, we cannot exclude the possibility that emission levels from the latter could be significantly reduced. It must be remembered that internal combustion engines were developed primarily as cheap and efficient power plants, and little if any consideration was given to the composition of the exhaust products until recently.

Several methods for reducing pollution from internal combustion engines are already being investigated, and many more undoubtedly exist. All of these will probably involve some compromise with the performance of present engines; however, similar compromises will undoubtedly have to be made in developing the steam engine as an acceptable substitute for the internal combustion engine. Ultimately the decision as to when the best compromise has been reached can only be made when we have achieved a quantitative understanding of both internal and external combustion processes involving hydrocarbon fuels. At the present time this is lacking, and a vigorous research program supported by both government and industry is clearly needed.

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Amazonian Fauna: Protectors and Exploiters

I hate to place myself (again) in the position of defending the exploiters of the flora and fauna of the Amazon Basin, since I am actually an ardent conservationist. Nevertheless, as is generally the case, there is another side to the "exploitation" described in Quaintance's letter (9 Aug.). It is true that some mammal and reptile species have become scarce around Leticia, Colombia, in part under the pressure of native collectors for the U.S. market. (Aquarium fishes have been much less affected. When marketable fishes become scarce in one stream, the Indians move on to another stream. The depleted stream eventually rebuilds to its normal capacity.)

But what about the other side of the coin? Thousands of isolated people along the Amazon have as their only means of earning money the collecting of animals. If animal collecting were to be made illegal, these people could no longer buy clothes for their children or gasoline for their outboards. Dare we say, "Save the animals. Let the natives go naked and paddle their canoes"?

Also, Quaintance implies that "the honorary U.S. Consul at Leticia" (named Mike Tschalikas) is an agent of American imperialism. Anyone who has traveled in that part of the world knows that Tschalikas is respected and loved up and down the Amazon for his humanitarian activities. Many natives and more than a few Americans owe their very lives to him, and hundreds of natives depend upon him for their livelihood. His animal compounds

are clean and well cared for, and I can't believe that animals are shipped under poor conditions, for the death of even one animal means a loss of several dollars.

Perhaps the depletion of Amazonian fauna in the Leticia area cannot be justified. I just don't know. But I feel that, in this case at least, human lives are more important than the lives of lower animals. The fact is that a substantial local industry centers around "the honorary U.S. Consul." Hundreds of families leading a marginal existence have been uplifted by the opportunity to work. No one has so far suggested a better way of earning a living there. Virtually all industries along the Amazon depend upon "exploitation" of the natural resources in some way.

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There exists in the Organization of American States a Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere which became effective 1 May 1942. Colombia was a signatory country but unfortunately has not yet ratified the Convention, although the United States has, as well as Argentina, Brazil, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Mexico, Nicaragua, Peru, and Venezuela. The Convention calls for each government

> . . . to take the necessary measures to control and regulate the importation, exportation and transit of protected fauna or flora, or any part thereof, by the following means: (1) the issuing of certificates authorizing the exportation or transit of protected species of flora or fauna, or parts thereof; (2) the prohibition of the importation of any species of flora or fauna, or any part thereof, protected by the country of origin unless accompanied by a certificate of lawful exportation . . .

During the past 2 years the Department of Scientific Affairs has compiled a list of endangered species in the OAS member countries. We have received such lists from the United States, Argentina, Bolivia, Costa Rica, Ecuador, El Salvador, Guatemala, Panama, Peru, Uruguay, and Venezuela. Colombia has stated that it would make such a list available; so far this has not been received.

Since Colombia has not yet ratified the Convention and has not furnished a list of endangered species, it is clear that even those countries that ratified

the Convention can import, subject only to national legislation of the importing country, the materials mentioned by Quaintance.

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Census Data: A Necessity in Antipoverty Planning

The letters of Irving Crespi and Congressman Jackson E. Betts (31 May), regarding the 1970 Census give the views of those who employ census data for secondary analysis and of the public servant who is concerned with individual privacy and a simple headcount of the population for apportionment purposes.

In the Office of Economic Opportunity, the geographic allocation of funds for supporting antipoverty programs is dependent on headcounts of the population in poverty, using information from surveys about each person's family living arrangements and income. In the so-called "small areas," which are census tracts in large communities or administrative areas and minor civil divisions in smaller communities, similar data are needed for planning and evaluating neighborhood-based activities in areas of concentrated poverty. Without such data, how can these substantial and expensive programs be responsibly administered? Social statistics for these "small areas" on a national basis are available only when an extremely large survey, such as a decennial census, is taken because the data required are comprised, as it were, of the results of thousands of surveys of localities and small places taken simultaneously throughout the country.

As of now, it is 8 years since we've had up-to-date small area data. If Betts proposes as an alternative, say, a national 25-percent sample survey every 2 years (for which 50 million people would be surveyed), that would be an adequate substitute for purposes of securing data. However, before any attempt is made to reduce the number of questions in the 1970 Census, I propose that a clearly adequate alternative be developed which satisfies the small area data needs of public and private agencies.

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