LETTERS

Should the Gas Guzzler Go?

With the price of gasoline going up and up, it will soon be worthwhile to buy a car with better gas mileage, even if the old gas guzzler still has a lot of miles in it, before you *have* to get rid of it. Has that time come?

Would the fuel savings from the new car exceed its cost? Of course, the savings come in gradually, during the time that you would otherwise keep using the old car, while the new car cost occurs all at once and right away or as a down payment followed by loan payments. For simplicity, I assume that you would buy a new car after, say, Y years whether you buy a new one now or not. If you would have kept the old car for Y or more years, where

$$Y = (R \times M \times C)/(D \times P)$$

before trading it in, you will save money by trading it now. In this equation, R is the ratio of the new car's gas mileage to the difference between the new and the old mileages; M is the old car's gas mileage, in miles per gallon (mpg); C is the cost of the new car, in dollars; D is the average distance you drive, in miles per year; and P is the current price of gasoline, in dollars per gallon.

For example, if your gas guzzler gets 10 mpg, the new car 40 mpg, and it costs $8000, you drive 15,000 miles per year, and gas costs $1.30 a gallon, then $Y = 5.47$ years. If gas goes up to $5 a gallon, you would save money by getting rid of the guzzler right away, even if you were only going to keep it for 17.1 more months!

A more elaborate expression takes into account the interest you could have earned (but have to pay instead) on your car payments, further expected increases in gasoline prices, and differences in insurance and maintenance costs (if you can estimate them).

$$Y = \frac{RMC}{DP}\left(\frac{1+k}{1+g}\right) \times \left\{d + (1-d)\,\frac{i}{k}\left[\frac{1-(1+k)^{-N}}{1-(1+i)^{-N}}\right]\right\}$$

where R is, more precisely, the ratio of the new car's expenses per mile (instead of miles per gallon) to the difference between the old and the new; M, C, D, P are as above; k is the interest rate you can get on your money, in percentage per month; i is your loan interest rate, in percentage per month; g is the rate of increase in gasoline prices, in percentage per month; d is the fraction of C you have to pay as a down payment; and N is the length of the new car loan, in months.

If one uses the Jet Propulsion Laboratory Credit Union's current values of $k = 0.583$ percent per month, $i = 0.7$ percent per month, $d = 10$ percent, and $N = 48$ months; and assuming $g = 6$ percent per month, the more elaborate estimates of Y corresponding to the above example are 5.32 years if gas costs $1.30 per gallon, 16.6 months if gas costs $5 a gallon. If g were zero (don't we wish!), we would want to get rid of the guzzler if $Y = 5.64$ years or 17.59 months.

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Soviet Exchanges: An Alternative Path

Nicholas Wade errs when he concludes, in his recent article "Science exchanges chilled by Soviet invasion of Afghanistan" (News and Comment, 1 Feb., p. 510), "The mechanism of the exchanges gives [the United States] access to the closed Soviet society which it would not otherwise have. . . ." Not true! American scientists with some fluency in Russian have been collaborating with their Soviet counterparts simply by purchasing an extended stay in the Soviet Union on a regular tourist visa. The official exchange mechanisms can be bypassed entirely. It is fortunate that Western scientists can still decide for themselves—with a little help from their institutions' travel funds—whether it is unpatriotic or not to establish or maintain collegial ties within the Soviet Union.

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Soviet and U.S. Coal Supplies

In her review (7 Dec. 1979, p. 1174) of *The Soviet Energy System* (*1*), Gloria Duffy reports that "Soviet coal supplies are estimated at 6790 billion metric tons" as opposed to "reserves of the United States, placed at 437 billion tons." The two tonnage estimates are in no way comparable. The 6790 billion metric tons refers to the total coal resources of the Soviet Union, identified as well as undiscovered. The 437 billion short tons is not for reserves but refers to the U.S. coal reserve base, which is the identified coal from which reserves amounting to about 50 percent of the reserve base might eventually be withdrawn. A comparable U.S. coal resource tonnage estimate to that quoted for the Soviet Union is about 4000 billion short tons, as reported by Averitt (*2*). The latter estimate is now being revised by the U.S. Geological Survey for publication in about 1981 and will most likely be higher.

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References

1. L. Dienes and T. Shabad, *The Soviet Energy System, Resource Use and Policies* (Winston, Washington, D.C., and Halsted-Wiley, New York, 1979).
2. P. Averitt, *U.S. Geol. Surv. Bull. No. 1412* (1974).

Psychotherapy and Health Insurance

The fight to have psychotherapy by psychologists covered by Medicare and eventually by all health insurance (News and Comment, 4 Jan., p. 35; 22 Feb., p. 822) is of interest to me, even though I am a psychiatrist and so already covered. Although I have reaped the financial benefits of legislation in Massachusetts making $500 a year of outpatient psychotherapy a mandatory coverage in all health insurance policies, I have always thought that psychotherapy should *not* be covered by Medicare, welfare, or any insurance plan. I believe psychotherapy or psychoanalysis—that is, simply, the talking cure—should be paid for by the patient. For those who are unable to pay and are truly in need, I believe charity is the best answer.

The question of which type of therapy is effective is irrelevant to me. I enjoy doing psychotherapy, and I believe insurance coverage is destructive to the whole process. First, because it is impossible to tell which type of therapy is more effective, if psychiatrists are covered, then psychologists, social workers, nurse therapists, pastoral counselors, vocational rehabilitation counselors, occupational therapists, hypnotherapists, and so forth, should also be covered. If not, competition is being limited, and prices become inflated. This is not consistent with our democratic, free-enterprise system.

Second, government or insurance coverage interferes with the therapeutic