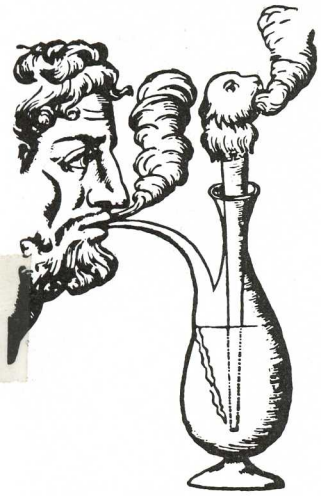

The editor's page

IN THE AUGUST 1971 issue of AMERICAN LABORATORY, we wrote an editorial about zero population growth or ZPG as it is popularly known. Some letters we received on the editorial are published here, together with an extended comment by me. We welcome your comments.

Sir:

I read your editorial (August, 1971 American Laboratory), and must reply to two of your conclusions. First, you state that a deliberately attained smaller population as the result of zero population growth means a "smaller than natural" gene pool. Zero population growth implies a population in which births equal deaths and the size of this hypothetical population is almost certain to be larger than the current human population of the earth. Thus the size of the gene pool (unless reproduction were limited to a small part of the population) is bound to be larger than the present one which in turn is far larger than ever in the past. (Consider the numbers of humans alive 1000 and 10,000 years ago.) Zero population growth might actually enrich the diversity in the gene pool by reducing the relative contributions of that minority of "gifted" individuals who have large numbers of offspring. You also stated that the reduction in gene pool "might be mitigated by efforts to assure the widest possible intercourse between peoples of the earth." Simply reshuffling genes does not affect the number in the pool, although it does affect the appearance of individuals (phenotype). I think it is often better not to achieve much wider intercourse amongst groups genetically or culturally quite different because a population with both distinctive appearance and culture may disappear. Witness the fates of many tribes of American Indians.

R. B. HELLING
Associate Professor of Botany
The University of Michigan

Sir:

Your editorial concerning zero population growth in the August American Laboratory was very timely and appropriate. However, I think that you would have done your readers a great service by answering

My primary objective in the editorial was to stimulate a broader discussion of ZPG than has so far occurred. To ignore the potential problems an expanding population will create is certainly foolish; however, to advocate a zero growth rate as the answer without a wide-ranging and scrupulous examination of the idea would be even worse. Aside from the question of whether it ought to be advocated at all is the question of whether it ought to be advocated as a *community* goal. How much injustice, pain and death has been inflicted in the past because what may possibly have been desirable general or personal goals were adopted as community goals and given the sanction of force? An enforced ZPG would be a worse fate for mankind than that of "a solid mass of bodies of astronomical size expanding with a radial velocity approximately equivalent to the speed of light" reached voluntarily. Even at one billion the U.S. population would be less dense on the average than that of Europe but would give plenty of pause for thought if it happens.

Of course present discussions infer voluntary attainment of ZPG and only vaguely suggest government intervention. But suppose voluntary ZPG didn't work because it ignored more fundamental natural drives. Note, for example, that the fertility rate in the U.S.A. has been dropping for the past century (from about 6 to 3.77 in 1957 to 2.45 in 1969 and is still dropping) despite the fact that this nation has encouraged population growth and dotes on its children. Perhaps the decline reflects a "creature comfort" index since the birth rate for the more affluent families is less than that for poorer families. It would be interesting to know whether anthropologists and historians might shed light on such a possibility.

If some such hypothesis has validity, voluntary ZPG wouldn't work. The higher birth rates of black people and other people systematically prevented from changing their condition may reflect an intuitive recognition that their hope of an easier life is generations away and rests with their children. If a goal of ZPG became accepted and voluntary ZPG didn't work, it would require only a short series of steps to reach the acceptance of compulsory birth control such as federal licensing of babies and attendant horrors. Maybe, the ardent advocates of ZPG should be even more ardent, active and vocal in assuring that artificial and natural barriers to the *potential* for the "good life" are eliminated from high birth rate societies.

As for the loss of a "population with both distinctive appearance and culture" due to genetic reshuffling, such a loss might be distinctly the lesser loss to the species. If, for example, avoidance of a nuclear holocaust or irreversible environmental pollution requires the patience and regard for nature apparent in the American Indian, it would indeed be ironic to lose the species due to a widespread lack of these traits because the American Indian was being "preserved" Especially if he were being preserved involuntarily on a reservation.

The cancer analogy might be a good one but not simply becau

the question "ZPG—good or bad?" with "Obviously good!" In this age of specialization we are apt to miss what goes on in the lab next door simply because a different language is spoken. We may miss some fundamental truths which may have much broader implications than our curriculum might suggest. An analytical chemist may not learn much, if any, of what the biologist learns, and vice versa. But most biology students are aware of two fundamental facts of life: 1) the human body exists as an adult essentially in a state of zero (cell) population growth. Cancer and gigantism are both considered serious diseases! 2) A bacterial culture in a closed container with limited nutrients goes through a period of exponential growth, followed by a period of involuntary, environmentally determined zero population growth, followed by an exponential die-off caused by the accumulation of poisonous materials in the medium. Human beings can only do the same thing unless voluntary zero population growth is attained prior to environmental limitations on population growth, and unless we simultaneously eliminate the pollution of the environment in which we live. Voluntary zero population growth not only is good for us, there is no alternative which will allow the species to survive!

JACK RYAN, PH.D.
President, The Institute for Tomorrow, Tucson, Ariz.

Sir:

I was glad to see your editorial on ZPG in the August issue. Wide recognition and discussion of the population problem is certainly needed. Your statement that ZPG represents "a radical departure from the maximum possible expansion of population which has characterized the species since its origin" is somewhat ambiguous. As a matter of fact, the present high population [g]rowth rate is extremely unusual, in [c]omparison with the relative stable [p]opulation over thousands of years. [I]t there was an effort [t]o limit population throughout human history, and no doubt before history, but this was in conditions where expansion was very difficult and death rates very high. It is not at all certain that it is "natural" for species to continue to try for maximum population growth in more favorable conditions. Many animal studies indicate that population tends to stabilize at certain numbers even when there is an abundance of food. ZPG would be much closer to the average condition of the human race throughout its overall history than to the present high growth rate. The above type of comment would also apply to your statement about a "smaller than natural gene pool." The overall average of the human gene pool has been much smaller than the present throughout the history of the species, except for the past hundred years. When you mention "alternatives," you must be thinking in relatively short-time terms, in comparison with the many thousands of years of man's existence. Over the long range, 500 to 1000 years plus, there is *no* possible alternative, e.g., in about 6600 years at the present growth rate, humanity would be a solid mass of bodies of astronomical size expanding with a radial velocity approximately equivalent to the speed of light. I believe that the most significant metaphor in this case is that: "growth for growth's sake is the philosophy of a cancer." I believe that the problem of genes will eventually be solved by discoveries and developments which will enable direct manipulation of them.

KARL E. BALLIET
Bedford, Va.

an example of unrestrained growth. Cancer is a vague term for what appears to be dozens, if not hundreds of diseases, some caused by viruses, others by chemicals, and still others by as yet unknown processes. Several researchers are investigating the possibility and cause of *ineffective communications* between cells which appear to differentiate some cancerous and noncancerous growth (Schwartz, J., *American Laboratory 2,* 37, April, 1970). In any event, it is unlikely that the cell population itself could avoid cancer solely by advocacy of a cellular ZPG.

Finally, we humans tend to seek close-ended solutions to apparent sociological crises; the solution must resolve the crisis at once and forever, almost regardless of the price in freedom of choice. We are continually shocked and chagrined that our solution has created more fundamental problems or, if we have the hindsight of history, we smile knowingly at the naiveté of those who proposed such a solution in their time. It ought finally to be evident that despite computers and clairvoyance, there are just too many unknown variables to expect any solution to work forever or even now necessarily. We should be seeking open-ended statements of problems, statements which outline the widest range of options and preserve the greatest freedom of individual action. If, for example, the advocates of ZPG actively supported equality and freedom of opportunity for women, blacks, Puerto Ricans, Indians, Orientals, Appalachians and others and the removal of abortion as a legal matter, as well as realistic sex education and family planning services, they might eliminate the ZPG problem completely, if there is one. Those changes, however, will take a lot more work than espousing a "stop at two" philosophy.