

to the editor

Yet another Great Lakes study?

Your article about a scientific Great Lakes study (IFYGL) rekindles our fires of anger and disgust (SN: 5/13/72, p. 316).

For many years, we have fought for a total but realistic plan for salvaging the Great Lakes, especially Michigan. Neither the state nor the Federal agencies are receptive to total treatment so long as percentile removals will pacify the "establishment" industries and the general public.

They prefer to ride out their terms, get the retirement plaque, gold watch and pension and let the next regime handle the real problems. Proof of this is as near as your nearest body of polluted water, which is not hard to locate.

And so, we learn now of yet another "study" being undertaken at taxpayers' expense while the effluents continue to be swept under the carpet of the once-pure Great Lakes.

Our report, "Lake Michigan—A rendezvous with Death," examines the question of the meaningless standards being used for water quality as well as our position that nitrogen and not phosphorus is the limiting factor in eutrophication.

We believe issues such as phosphorus and thermal gradients are being used as smokescreens for the really serious threats to the Great Lakes—namely nitrogen from improperly treated municipal sew-

age, industry and agricultural runoff and radiation contamination from nuclear power plants.

Environment, Inc. is a citizen-scientist local and very small organization which has for years volunteered free research findings to the state and Federal agencies or anyone interested, involved or concerned about water quality.

In spite of being ignored by most of the "authorities" our findings continue to be verified with the passage of time and more tax-financed "studies," "commissions" and miscellaneous lip service, none of which is benefitting over-all water quality.

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Delay in teaching new concepts

The article "Rapid changing Seyfert: Problem for theorists" (SN: 5/27/72, p. 343), strikes a familiar note with me. For the past 10 years certain astrophysical studies have thrown doubt on much of currently accepted physical theory. This applies not only to the limiting velocity of light, but also to another early assumption; that of being unable to establish a generalized frame of reference. This was laid to rest in 1969 by Conklin of Stanford (NATURE 222, 971, 1969). I discussed this development in a paper before the A.P.S., San Francisco, January 1972.

My heresy is to believe that we are now in the midst of a scientific revolution equal to that of 1890-1930. The data of 1950-1972 indicate that many of the assumptions of 1900-1920, which were programmed into physics as "laws," are untenable.

The unfortunate part of this present era is that these newer basic developments which are now being discussed in the scientific literature, particularly foreign journals, are not being brought to the attention of the eager young students of science, coming up. If the history of science is any guide it will be another 20 years before these new concepts reach our textbooks.

I certainly hope that SCIENCE NEWS continues to publish these developments, to show that physics is not a dead end street, with nearly everything neatly fitted into place. Let's whet the students' appetites!

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A novel proposal on energy

To sustain our present civilization's population at its present standard of living will require large amounts of energy. All of our present sources of energy will end in the foreseeable future. Your article, "Solar Energy Technology" (SN: 4/8/72, p. 237) was a refreshing and optimistic assessment of the potential of one source of energy (the sun) that will probably outlast the existence of the human species. Building mirrors and/or other collecting systems to capture the sun's energy has one ma-

JOR ecological advantage. No pollution from combustion exhaust or radioactivity!

I believe there may be another way to capture solar energy that has been overlooked. It is photosynthesis. Suppose we learn enough biochemistry and molecular genetics to breed, mutate, and otherwise genetically alter photosynthetic algae to (1) "over-produce" one of their cell membrane constituents (fatty acids) and (2) decarboxylate them to "oil" (long chain alkanes). These oils would pass to the cell's exterior and, being insoluble in but less dense than water, float to the surface for convenient collection. Burning these oils in cars, homes and factories would return carbon atoms back to the form of CO₂. In that form, the carbon would be again available for photosynthetic fixation by the algae. Thus the carbon is recycled and the energy to drive the system is freely available.

I have made some very rough calculations based on the total U.S.A. rate of petroleum consumption and the greatest values for plant primary production (see any ecology textbook) to find out how much land area would have to be put under "cultivation" for the photosynthetic production of petroleum. One can show that a square of about one hundred miles on each side would be needed. This is large, but still less than Lake Michigan. In any case, it would be a reasonable price to pay to get an unlimited source of oil.

If our success with the breeding of cultivatable land plants (like corn, wheat, etc.) is an indication, it may be possible to reduce the "hundred mile square" to a more reasonable size. The idea of harnessing a whole ecosystem has still another important possibility: It might be possible to make it capable of self-regulation and self-repair, like many naturally occurring ecosystems.

Arthur E. Sowers
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Society's first priority

Having studied biology in college, I consider the possibilities of science to be man's only hope for survival of this planet. However, to survive pollution, et al, I believe must first make an attempt, a very drastic attempt, to completely alter and redefine our priorities. And then not let ourselves be intellectually lulled into complacency; but actually do something.

To see things in the proper perspective we have to sacrifice. We have to give up James Bond, mood elevators, diamonds, furs, outdoor swimming pools, maybe some pay, and all sorts of other things of our basically decadent higher reality of fun, frivolity and illusion. Making this earth survive should be our biggest priority.

Edward Cavitch
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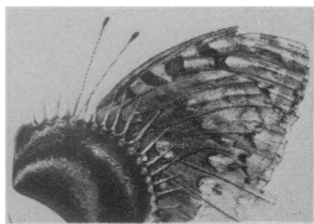
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