Letters

Oil Pollution: Unsolved Problems

Abelson's editorial (26 May, p. 1037) focuses attention in a commendable way on the problem of oil pollution and its drastic effects on fish and wildlife and on water-related recreation resources. A 90-day study of the problem is now underway and changes have been recommended in the enforcement and clean-up provisions of the 1924 Oil Pollution Act.

The problem of oil pollution from ocean-going tankers is a particularly severe one, as the *Torrey Canyon* disaster and many other oil tanker spills on our Atlantic and Pacific coasts have taught us. First of all, great amounts of pollutants are concentrated in one place. The *Torrey Canyon* carried about 118,000 tons, but 500,000 ton tankers are in the planning stage. There are in the neighborhood of 1 billion tons of crude and oil products moving on the seas this year, with an annual increase of about 4½ percent. Each year 5000 tanker loads enter New York harbor alone. Once spilled, the oil spreads over large areas and may affect the estuaries, including the bays, sounds, marshes, rivers, and coastal waters which are all critically important for plant life, shellfish, sport and commercial fish, waterfowl, and shore birds. Over 60 percent of our annual commercial fish harvest consists of species which spend some portion of their life cycle in estuarine environments. This harvest of estuary and fishery resources comes to over 3 billion pounds annually with a value of nearly $400 million to the fishermen. These resources include shrimp, salmon, oysters, clams, and about 70 other commercial and sport species.

It is clear that improved legislation alone is not sufficient to cope with the problem. We do not have many of the scientific and technical answers. Specifically we would like to encourage advanced technical ideas on the detection of oil spillage as soon as it occurs, both day and night, perhaps by aerial or satellite detection. Once oil has been spilled, we need to establish its immediate source, perhaps by analytical techniques described in the editorial. We need scientific help also in other areas: above all, techniques for removal or neutralization of oil; the degradation of oil through microbial action; establishing a better basis for gauging the ecological effects of estuarine pollution, as well as the detrimental effects of detergents used to fight oil pollution.

It is becoming clear that interference with the environment by human activities has now reached a level which requires us to obtain the best scientific and technical thinking to neutralize the threat which environmental pollution presents to our well-being on this planet.

CHARLES F. LUCE
Office of the Secretary, U.S. Department of the Interior, Washington, D.C. 20240

Phenylalanyl tRNA Available

Approximately 1 gram of purified phenylalanyl transfer ribonucleic acid tRHA^{phe}) from *Escherichia coli* B is available for distribution free to qualified investigators. The product is approximately 65-percent pure, as judged by the ratio of phenylalanine acceptor activity to adenosine end groups. This material, prepared at the Biology and Chemical Technology Divisions of the Oak Ridge National Laboratories, is a result of a collaborative program between the NIH and the AEC, supported by the National Institute of General Medical Sciences, on the research and development of methods and technology for the large-scale separation of biologically important macromolecules.

Requests, in letter form, for portions of this material should include the specific amounts needed, a technical exposition of the intended research use, and sufficient material on the background and qualifications of the applicant to assess his capacity to carry out the proposed research. These requests should be sent to Associate Chief, Research Grants Branch, National Institute of General Medical Sciences, National Institutes of Health, Bethesda, Maryland 20014.

The requests will be considered by a consultant scientific review group, and awards of material will be made on the basis of the merit of the proposal.

Those to whom material is sent will be expected to make available the information obtained through its use, either by publication in the scientific literature or by communication to the National Institute of General Medical Sciences.

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Squaring the Record

Marshall and Suggs' letter (26 May, p. 1033) impugns the nature of my report to the Fellows of the American Anthropological Association, attributes statements to me I did not make, and badly misrepresents the events at the November 1966 meeting of the AAA and the subsequent referendum. It further ties together the report and the *Statement on Anthropological Research Problems and Ethics* with the so-called Vietnam Resolution, when in fact they had quite distinct origins and were handled quite differently.

The reports made by me and the executive board at the November 1966 meeting were in response to a resolution passed at the previous annual meeting. In October 1966, I submitted to the executive board my 43-page summary of information and opinions along with suggested possible actions.

On 17 November 1966, at the request of the board, I presented an oral statement at a public meeting sponsored by the Association in Pittsburgh. This report contained no recommendations for action. This is the "Beals Report" referred to by Marshall and Suggs.

At the annual meeting of the Council of Fellows 19 November 1966, the executive board presented a *Statement on Anthropological Research Problems and Ethics*. I had no significant part in the writing of this statement although it drew upon materials I submitted to the board. It was this *Statement* that the Fellows were asked to accept, and at no time were they asked to approve

my report. After lengthy debate and several amendments, the *Statement* was returned to the executive board with instructions to submit a revised version to the Fellows for a mail referendum.

At this point, David Aberle introduced a resolution condemning the United States' actions in Vietnam. After several amendments which eliminated specific reference to the United States and called on all parties to the Vietnam conflict to seek methods of peaceful solution, the resolution was passed at the end of the meeting which already had lasted some 3 hours.

Readers of the Marshall and Suggs letter could not escape the impression that there was but one meeting, that the meeting was asked to approve the "Beals report" rather than the *Statement* by the executive board, and that the Vietnam resolution and the report and *Statement* were connected. None of this is correct.

In the January 1967 *Fellow Newsletter* the executive board and I published a "Background report on problems of anthropological research and ethics." This is the only printed document dealing with the findings of my survey. The executive board also circulated by mail a revised *Statement on Anthropological Research Problems and Ethics*, together with a ballot. Over 70 percent of the Fellows returned ballots and 92.5 percent of these approved the *Statement* ("Anthropologists overwhelmingly approve research ethics statement," 21 Apr., p. 365).

Contrary to assertions by Marshall and Suggs, the *Statement* does not condemn individuals working for the CIA; rather it objects to anthropologists pretending to carry on research while secretly working for the CIA. Marshall and Suggs also assert that the intention of the *Statement* is to make it undesirable for anthropologists to work for the government on "realistic administrative terms." The *Statement* clearly expects anthropologists and anthropology to be used in government and makes concrete representations for the improved use of anthropology. In Washington I found wide awareness that the present "realistic administrative terms" are not producing the kind of social science assistance and advice that government needs.

Quite aside from their misrepresentations of the *Statement* and its confusion with my report, Marshall and Suggs do not understand the function of a professional organization and are unable to distinguish the responsibilities of the citizen and the scientist any more than are the proponents of the so-called Aberle Resolution as expressed by the Bordaz' letter in the same issue of *Science*.

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Interdisciplinary Communication

The response to the article, "The skin" (by Rushmer, Buettner, Short, and Odland, 21 Oct. 1966, p. 343), was a deluge of requests for reprints from an astonishing diversity of undergraduate, medical science, clinical, and industrial laboratories. One objective of the article was to determine whether interest could be stimulated in applying the competence and technology of many diffuse disciplines to this most accessible of tissues. Accordingly, after publication, a questionnaire was devised and mailed to 500 individuals who requested reprints. A list was also enclosed, giving the names and addresses of the first 433 respondents, arranged according to their professional affiliation. The third enclosure was the reprint of the article.

Responses to the questionnaires must be evaluated with caution (see Tables 1 and 2) since there may be significant discrepancies between what people think and do and what people *say* they think and do. The need for caution is well expressed in *How To Lie with Statistics* [D. Huff and I. Geis (Norton, New York (1954)]. The principal reasons given for requesting the reprints included current research activity, interest in multidisciplinary research, and information content of the article. Of the respondents, 83 were sufficiently interested to write additional details regarding their research and many sent informative reprints. The number of individuals who stated they routinely request reprints (22) before reading articles (16) was smaller than I would have anticipated. One might expect some reluctance to check these two questions.

In response to question 2, nearly half (134) indicated that a list of names and addresses of investigators interested in the same subject would be of interest to them, and 61 indicated that the prospects of setting up a cooperative or collaborative relationship was appealing. A substantial number (51) indicated that they planned to seek information from one or more of the individuals. The most common suggestion was for more information regarding the specific research interest than was conveyed by departmental affiliation or addresses. Despite this obvious defect, nearly half of the respondents indicated that such lists of names and addresses would be useful for specific types of articles.

Table 1. Questionnaire on reprints and distribution of responses.

Choices	Distribution
Question: Why did you request reprint?	
Engaged in studies of the skin	120
Planning studies of the skin	47
Interested in multidisciplinary research	139
Intrigued by the philosophy	35
Specific details were of interest	121
Need to refer to certain points	93
Routinely request reprints	22
Request reprints before reading the articles	16
Other reasons	83
*Question: Will the enclosed list of names be of any interest to you?**	
I discovered a potential collaborator with similar interests	19
The prospects of setting up a cooperative or collaborative relation are appealing	61
Will contact one or more of the individuals listed	28
Will seek information from one or more of the individuals	51
Other reasons	28
Question: How would you regard circulation of such lists?	
Generally useful	88
Useful for specific types of articles	146
Waste of time	48
Imposition	2
Unethical or reprehensible	2
No reply	22

*Yes: 134; no: 147; no reply: 26. Several respondents made more than one choice.

Table 2. Summary of disciplines represented by the 308 individuals who returned questionnaires.

Biology	16	Medicine	18
Psychology	11	Pediatrics	6
Anatomy	12	Psychiatry	8
Biochemistry	15	Cancer	8
Microbiology	11	Radiation	10
Pathology	13	Public health	15
Pharmacology	14	Dentistry	10
Pharmaceutical industries	11	Veterinary medicine	12
		Unclassified	71
Physiology	16	Surgery	9
Dermatology	18	Engineering	4

Judged from this particular experience, multidisciplinary research can be encouraged to some degree by publication of articles emphasizing questions requiring investigation rather than reports of what has already been accomplished. Such efforts are most likely to be rewarded if the manuscripts are published in scientific journals serving a large segment of the scientific community. More communication between disciplines should be established by every reasonable means.

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