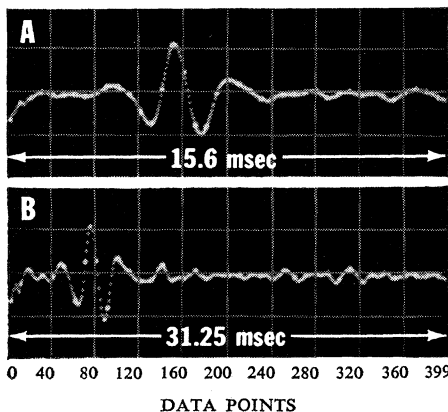


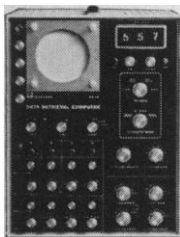
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correspondents have, that the ends are unquestionable without recognizing precisely what they happen to be.

The scientist cannot, any more than others, claim immunity from moral responsibility. The letters quoted above are very disheartening and seem to presage new and more frightful developments in an attempt to justify all those errors of judgment which so far have gone into this shameful affair. I hope that no one, besides their authors, is going to be fooled by these efforts at "objectivity."

M. C. GOODALL

*Institute for Biomedical Research,
American Medical Association,
535 North Dearborn Street,
Chicago, Illinois 60610*

... What is apparently overlooked and totally ignored by these petitioners is that this [the war in Vietnam] is not an academic exercise divorced from life and death. It is a very real exercise in how to achieve a goal, however distasteful, with a minimum of casualties among our own combat personnel. I believe that any technique, weapon, tactic, or strategy that will minimize casualties among our combat personnel is right, and any technique, tactic, or strategy that preserves the combat effectiveness of our opponent is wrong.

DONALD E. MCCRARY

*Post Office Box 1297,
Mountain View, California 94042*

Rothschild cites such nonlethal diseases as Venezuelan equine encephalomyelitis, Q-fever, and dengue fever, and implies that biological weapons of this kind might humanize warfare. Unhappily, the developers of biological weapons do not limit their attention to diseases with low mortality. Although the Army's microbiological laboratory at Fort Detrick has conducted considerable research on Venezuelan equine encephalitis virus, it is also interested in organisms a good deal less cuddlesome, including *Pasteurella pestis* (plague) and *Bacillus anthracis* (anthrax). The reason for this interest in highly virulent pathogens is perfectly obvious. The logic of military necessity requires that an enemy be destroyed, not given a case of sniffles. The military would be betraying its own responsibilities if it ignored this necessity.

There is, however, a crucial qualitative distinction between conventional explosive weapons and biological weapons, a distinction which underlies the

concern expressed in the CBW petition. Conventional weapons can, at least in principle, be *aimed*. Even aerial bombardment can be carried out with a considerable degree of precision. With conventional weapons it is therefore possible to discriminate to a large extent between combatants and noncombatants. Such discrimination is demanded, not only by the humane principles which are supposed to justify our society's reasons for engaging in warfare, but also by a body of international law ranging from the Hague Convention Rules of Land Warfare to the United Nations Genocide Convention of 1948.

But biological weapons cannot, in general, be used with such discrimination. There is no pathogen which is host-specific for military personnel. Crop destruction by plant pathogens (or, for that matter, by herbicides) is injurious to all, military and civilian, who require food. This unique aspect of biological warfare evidently escaped Silverman (Letters, 10 Mar.), who asks: "Why is it more horrible to be ill (even acutely ill for a period of time) than to be mangled or dead for all time?" First of all, this question conceals the assumption, as groundless here as in Rothschild's letter, that biological warfare will eschew lethal diseases. Secondly, the relative charms of being victimized by a bomb or by an aerosol of *P. pestis* is not the point at issue. The point is that bombs can be aimed at military targets, while the dissemination of a plague among a whole population would be genocide.

Those of us who are concerned about CBW are not necessarily pacifists, any more than were the framers of the Hague Convention. Our concern is with the philosophy of our society. Rothschild points out, somewhat paradoxically, that "the amount of damage a nation will execute upon civilians . . . is defined by the philosophy of the nation using the weapons." Precisely.

JONATHAN GALLANT

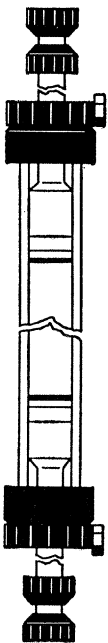
*Department of Genetics,
University of Washington, Seattle*

Congressional Witnesses

Marvin's letter, "Pesticides: Overstated dangers" (7 Apr.), mentions an investigation conducted by the House Appropriations Subcommittee on Agriculture, chaired by Congressman Jamie L. Whitten (Mississippi), in which

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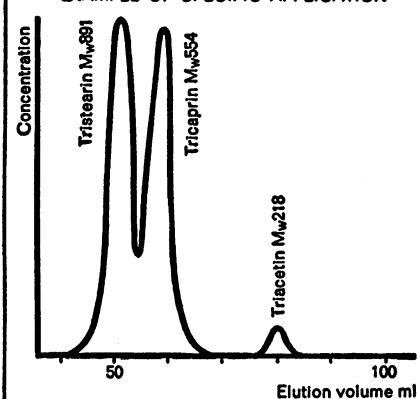
RANGE OF APPLICATION

Solvent	Approx. solvent regain ml solvent/g dry gel	Approx. bed volume ml/g dry gel
Dimethylformamide	2.2	4
Water	2.1	4
Methanol	1.9	3.5-4.0
Ethanol	1.8	3.0-3.5
Chloroform*	1.8	3.0-3.5
n-butanol	1.6	3
Dioxane	1.4	2.5-3.0
Tetrahydrofuran	1.4	2.5-3.0
Acetone	0.8	1.5

*Containing 1% ethanol.

Particle size: 25-100 μ

EXAMPLE OF SPECIFIC APPLICATION



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"over 185 outstanding scientists and 23 physicians were interviewed, as well as officials of the American Medical Association and university medical school faculties. Also included were biologists, chemists, entomologists, nutritionists, pharmacologists, plant pathologists, toxicologists, zoologists (including a geneticist), as well as experts in agriculture, conservation, and public health." However, contrary to general practice, the testimony of these persons has never been published. Instead, only a summary written by the committee staff appears in the hearings report and there is no list of the scientists who appeared before the committee (1). A list does appear in Whitten's book but it includes only those who "were agreeable to being identified as having been interviewed by the staff" (2). Nowhere is there any indication that any, or which, of the scientists support Whitten's or the staff report's contentions, and nowhere is the testimony printed in its entirety for the open judgment of the scientific community.

MILTON LEITENBERG

Committee for Nuclear Information,
5144 Delmar Boulevard,
St. Louis, Missouri 63108

References

1. *Department of Agriculture Appropriations for 1966* (hearings before a Subcommittee of the Committee on Appropriations, H.R., 89th Congress, 1st session, Government Printing Office, Washington, D.C., 1966), pt. 1, p. 165.
2. J. L. Whitten, *That We May Live* (Van Nostrand, Princeton, N.J., 1966), p. 217.

Weightlessness Can Be Confusing

While much of the theory of the space age has no interest for the nonscientist, the concepts of orbiting in a gravitational field, and "floating freely" through space, are two which the public should be able to distinguish. The word "weightless" is used frequently to describe the condition of spacecraft and astronauts in orbit. A majority of readers of the daily press probably interpret weight to be simply the gravitational force of attraction between an object and the earth. I fear that many readers are led to the erroneous but understandable conclusion that if an object is weightless, then this force has ceased to exist. Some may invoke, as a reason, the great distance of an orbiting body from the earth. In fact, the height of most orbits reduces the gravitational force by only a minor part,

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