attack by fragmentation bombs. If such use of so-called "non-lethal" CB-1 weapons becomes widely practiced and generally accepted, the way is paved for a chemical and biological arms race and progressive escalation in this or future wars to the use of the entire spectrum of CB weapons.

In this connection we would like to quote the strategic analyst T. C. Schelling [Arms and Influence (Yale Unv. Press, New Haven, 1966), p. 131] on possible agreements for preventing the use of gas in warfare:

"Some gas" raises complicated questions of how much, where, under what circumstances; "no gas" is simple and unambiguous. Gas only on military personnel; gas used only by defending forces; gas only when carried by projectile; no gas without warning—a variety of limits is conceivable . . . But there is a simplicity to "no gas" that makes it almost uniquely a focus for agreement when each side can only conjecture at what alternative rules the other side would propose and when failure at coordination on the first try may spoil the chances for acquiescence in any limits at all.

JOHN T. EDSALL
MATTHEW MASELSON
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In Defense of Rachel Carson

Philip H. Marvin’s complaint (Letters, 7 Apr.) that the "plague" of Rachel Carson’s book continues to "infest" the minds of scientists demands comment. The Silent Spring has not only "infested" scientists, but also caused naturalists who look further than the results of a single crop to become acutely aware of the danger of pesticides. It is true that Carson’s book contains overstatements, but it is also true that many forms of wildlife, particularly those at the end of a feeding hierarchy, such as hawks, terns, spoonbills, and many others, are unnecessarily decimated by the indiscriminate use of pesticides. In Holland several of these forms of wildlife are now at the brink of extermination. The "plague" of pesticides forms a real danger, and the struggle to preserve nature, based both on Carson’s warnings and on the newer investigations of the near extinction of wildlife, must continue.

MARTIN G. RUTTEN
Prinses Beatrix Str. 37,
Bunnik (4), Holland

Patriotic Emigrants

Although the brain drain is a complex sociological problem, it is unfair to blame it on those who do not take of it (Byrne, Letters, 17 Mar.). Having spent some years researching in one of the bigger institutes in the U.S. or Britain, the returned scientist can hardly expect the fate of 'self from his stay-at-home colleagues, who have continued to work in much less glamorous surroundings, with second-rate equipment and poor funding, with lower salaries and larger teaching duties, but still have managed to keep the home institution going during their colleague's absence. That valuable research experience abroad should be recognized by the home institution is without question; it is equally true that a university or college owes its lifeblood to those who, perhaps shortsightedly, stay with it through difficult times. The fact that so many returned emigrants eventually leave their native shores again is as much their own failure to come to terms with their home environment as it is of the home institution to appreciate their value. If such institutions, "which have been unchanged since St. Patrick," are to be changed, then it will come about through the efforts of those who return—and stay. Whether the motive is patriotism or the desire to help an underprivileged nation to better itself—surely either is big enough to withstand some petty, but inevitable, professional jealousy.

TREVOR C. WEEKES* Smithsonian Institution Astrophysical Observatory, 60 Garden Street, Cambridge, Massachusetts 02138

*On leave of absence from University College, Dublin, Ireland.

Byrne (Letters, 17 Mar.) would class me as a "returned Yank" and, indeed, for some time after I returned 12 years ago I shared some of his feelings toward Irish institutions. However, the change in attitude toward returning scientists which he calls for has been underway for some time.

In this University College, a majority of the senior teaching staff are "returned Yanks" or "Sassenachs," a development that is obviously being encouraged. The government-sponsored Commission on Higher Education recently recommended drastic changes in university administration, including replacing our archaic appointment system with one in which applicants for senior staff positions will
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be assessed by a small committee which will have among its members "two experts external to the institution, one at least of whom would be from outside the State." This committee would submit one name only to the appointing authority. The government, through its Department of Education, has just inaugurated postdoctoral fellowships in science and engineering which will be tenable in Irish universities and research institutes; preference will be given to applicants proposing to work in institutions other than those from which they apply. These measures demonstrate the widespread desire to reverse our brain drain.

It cannot be denied that tremendous efforts must be made in Ireland in the near future if it is to avoid a state of scientific and economic colonialism. According to a recent OECD-sponsored report "international comparisons show that Ireland is among the nations with the lowest rate of research expenditure in Europe." However, there is a feeling of optimism abroad and it is earnestly hoped that the establishment of the proposed National Science Council will inaugurate a new era in scientific studies in Ireland.

COLM Ó HECHKA
Department of Biochemistry,
University College, Galway, Ireland

Anthropologists Debate Ethics

Niehoff's objection (Letters, 3 Mar.) to the American Anthropological Association's Vietnam resolution and his fine distinction between condemning the barbaric behavior of the United States in Vietnam as an American, and condemning it as an anthropologist was a disturbing sophistic exercise.

It is one thing for an anthropologist to observe ritual killing and torture in another culture without expressing ethnocentric moral judgments, and quite another to maintain Olympian detachment while his own culture brutally and systematically decimates another.

He argues that the anthropologist cannot judge the customs of other cultures according to his own morality. Few would disagree. He then says that the anthropologist is supposed to be "culture free," and presumably, since he no longer belongs to his own culture, he cannot, as a good anthropologist, subject it to moral judgment. These intel-

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lectual gymnastics may serve for some as an escape from the responsibility of their active or passive participation in the uglier aspects of our own society. One is reminded of the astounding degree of objectivity displayed by the German doctor attached to a concentration camp, who rigidly maintained aseptic conditions when he performed a cesarean section with impeccable technique, and then placed mother and child on a stretcher and imperturbably sent them off to the gas chamber. Surely, this is the ultimate in cultural detachment, though few would aspire to it.

The fact that we are scientists, regardless of speciality, neither "legislates" us out of our culture, nor out of the human race. As scientists, we bear the same responsibilities as any other citizen. Precisely because scientific research is being used for military applications against our fellow human beings, we must face these moral dilemmas without assigning ourselves to a class of acultural, amoral scientific automatons.

**VICTORIA BORDAZ**
Calculus Center, University of Montreal, Montreal, Canada

**JACQUES BORDAZ**
Department of Anthropology, University of Montreal

The recent action of the anthropologists is most discouraging. . . . Could it be that they hope for the best of both worlds; that is, they will share all of the advantages of a free world and will yet have gained some measure of respectability in that shadow world where it is considered to be a morally courageous act to be absent from those who are willing to stand up and be counted.

**KENNETH R. COBURN**
100 Whitehorse Pike,
Haddon Heights, New Jersey 08035

We wish to record our concern with the professional and scientific implications of the article, "Anthropologists' debate: Concern over future of foreign research" (23 Dec., p. 1525) and "Anthropologists' Vietnam resolution." In our opinion the articles do not reveal the full implications of the debate. At the November American Anthropological Association annual meeting at Pittsburgh, Ralph L. Beals reported on his activities as chairman of a committee in research problems and ethics. The remarks were diffuse, personalized and subjec-
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tive, as was a politically oriented introduction of Beals by the newly appointed executive secretary of our association. Because of the lateness of the hour, and the fact that floor microphones were not working, subsequent discussion was brief. Controversial portions of the Beals report received front-page coverage in the New York Times.

When copies of the report were distributed, some Fellows sought to determine the intent and meaning of what they were being asked to approve, and others sought to revise the wording. Although the executive board's request for approval was cast as "approving the Beals report," the document to be voted upon, in the opinion of many Fellows, appeared to be a quasi-ethical manifesto, in which there were questionable statements of fact and of implication. Approval of the statement would, in effect, recommend separating American anthropologists from significant kinds of service to the government.

Beals admitted that allegations of "tainting" anthropology by CIA were based on hearsay. (Some of such hearsay has the ring of the apocryphal: Supposedly one anthropologist was asked "How would you go about poisoning the water supply of Guatemala City?") Questions that attempted to reach the facts seemed always to go back to Project Camelot, upon which Beals was not adequately informed. Project Camelot was not in any way related to the CIA, nor was it a classified project; distorted press discussions of Camelot have generated more heat than light. The Beals report was recommitted to the committee for revision by a vote of 155 to 104.

The so-called "Vietnam Resolution" offered by David Aberle for council action was markedly different from the one actually passed and published in Science. Initially the resolution was a relatively conventional indictment of U.S. policies in Vietnam. When first offered for discussion, it was refused by the presiding president-elect of the association, based upon an opinion that as a political document it was not appropriate to the scientific purpose of the association. The resolution was later revised from its original anti-U.S. government bias to a general condemnation of certain aspects of warfare by any participants.

More important were the implications of what was involved. If we understand correctly the clarifying state-

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ments and intent of those concerned with the Beals report in its initial form, they would: (i) eliminate all classified government work from the universities, except in time of declared war; (ii) make it undesirable for anthropologists to work for the government on realistic administrative terms; and (iii) cast doubts upon the wisdom of young anthropologists working for either commercial firms or nonacademic, nonprofit groups that accept government contract work. The effect of approving the proposed "report" would be to put the association on record as believing that the federal government should support independent anthropological research, but should have no right to expect responsible loyal support from the anthropologists they otherwise subsidize.

We are disturbed by the naivety displayed by students of human behavior who would stipulate that war must be formally declared before a scientist can offer aid to his country. Can any informed adult, conscious of the dangers of nuclear warfare be unaware that today, more than ever, a declaration of war signifies the final failure of diplomacy—when it is far too late for a country to profit by overdue patriotic motives!

DONALD S. MARSHALL  
ROBERT C. SUGGS  
3414 Halcyon Drive,  
Alexandria, Virginia 22305  
Received 18 January 1967

Who Fights in Little Wars?

The discussion of selection of men for military service put forth by Dael Wolfe (Editorial, 24 Mar., p. 1499) seems most reasonable if the selection is made in anticipation of a major war. In that case, the optimal deployment of available manpower would appear to form a reasonable basis for selection.

However, there seem to be other considerations when it is a question of fighting "little wars" that do not greatly tax the nation as a whole. In these cases, it is perhaps less necessary to be "optimal" and more desirable to demand the direct exposure of a representative spectrum of citizens. Otherwise, it seems to be a case of our leaders being willing to give less than their best for a cause which they hold worth fighting for.

JOHN M. MYERS  
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Measurements of axial ratios (quotients of length over width) of profiles and their classification yield information on the three-dimensional shape of the objects, cut or seen on photographic plates of celestial objects.

The foregoing relations are valid under the assumption of random arrangement of objects in space. In cases of preferred orientation of parts in a sample, randomness can be produced by repeated random sectioning or by other methods of sampling.

The program included a few papers on stereoscopy and photogrammetry. This approach to the study of three-dimensional structure is based on bi-axial viewing (parallax) and therefore is not really connected with stereology. Nevertheless the participants in the Congress, being concerned with every possible approach to the investigation of three-dimensional structure were equally interested in the papers on photogrammetry and stereoscopy.

Many representatives of the inorganic sciences became acquainted for the first time with various techniques of reconstruction from serial sections, so frequently used in the life sciences. They recognized that this method might be of advantage for the study of their own objects. Mathematical stereology as described previously is applicable only where many components of similar geometrical properties and of relatively simple shape are examined. But when a single object of complicated structure

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is studied, geometric-statistical stereology is of no avail; serial sectioning is, at this time, the best known method of attack.

Another, extremely interesting approach to the study of three-dimensional structure of opaque objects is serial section cinematography. This process involves staining or etching the surface of the remaining block of a specimen, while the slices are discarded. The stained, exposed block surfaces are recorded on successive frames of a motion picture film. When projected, the film reveals the topological qualities of a specimen such as continuity, contiguity, connectivity, isolation, as well as the genus of a component of a specimen. Primarily, however, such films give very specific information on the arrangement of parts. Whenever a component has a shape other than that of a cylinder or pyramid oriented perpendicularly to the cutting plane, the film, when projected, gives the visual impression of change of shape or movement.

This chain of thought leads to "hyperstereology," the extrapolation from three- to four-dimensional space which might occur at a later time help in the clarification of certain cosmological phenomena.

The Congress was supported by a grant from the National Science Foundation. The complete program of the Congress with abstracts of all papers constitutes volume 6, No. 1, of Stereology, the bulletin of the International Society for Stereology. The proceedings of the Congress, now in press, will be published by Springer-Verlag, New York and Heidelberg.

HANS ELIAS

Chicago Medical School,
710 South Wolcott Avenue,
Chicago, Illinois 60612

Calendar of Events

National Meetings

June

8–9. Photographic Systems for Engineers, seminar, Newton, Mass. (Soc. of Photographic Scientists and Engineers, 1330 Massachusetts Ave., NW, Washington, D.C. 20005)


8–10. Fourth Pacific Northwest Plastics Workshop, Spokane, Wash. (R. Raff, Re-
search Div., College of Engineering, Washington State Univ., Pullman 99163)

11-14. Apollo and Beyond, American Astronautical Soc., Huntsville, Ala. (S. S. Hu, Northrop Space Labs., P.O. Box 1484, Huntsville)

11-15. American Nuclear Soc., 12th annual, San Diego, Calif. (J. E. Wilkins, Jr., General Atomic, P.O. Box 608, San Diego 92112)

11-15. Industrial Pharmaceutical Research, 9th annual nat'l. conf., Land O' Lakes, Wis. (A. P. Lemberger, Extension Services in Pharmacy, 190 Pharmacy Bldg., Univ. of Wisconsin, Madison 53706)

11-16. Air Pollution Control Assoc., 60th annual mtg., Cleveland, Ohio, (Seward Covert & Associates, 1059 Leader Bldg., Cleveland 44114)


12-16. American Osteopathic Academy of Orthopedics, 7th annual instructional course, Vienna, Austria. (P. H. Lewis, 1930 Chestnut St., St. Joseph, Mo. 64501)

12-16. Technical and Industrial Communication, 10th annual instn., Fort Collins, Colo. (Director, The Institute, Colorado State Univ., Fort Collins 80521)


14-16. Transmission, seminar, Chicago, Ill. (B. Kettinger, News Service Office, P.O. Box 3404, Rochester Inst. of Technology, Rochester, N.Y. 14614)

14-17. Modern Computer Analysis of Complex Social Science Data Bases, Council of Social Science Data Archives, annual mtg., Los Angeles, Calif. (W. A. Glaser, Bureau of Applied Social Research, 605 W. 115 St., New York 10025)


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15-17. American Assoc. of Physics Teachers, summer mtg., Canton, N.Y. (A. B. Arons, Physics Dept., Amherst College, Amherst, Mass.)

15-17. Symposium on High Energy Radiation Therapy Dosimetry, American Assoc. of Physicians in Medicine, New York, N.Y. (L. H. Lanzi, Dept. of Radiology, Univ. of Chicago, 950 E. 59 St., Chicago, Ill. 60637)


15-19. American College of Chest Physicians, Atlantic City, N.J. (M. Korafeld, 112 E. Chestnut St., Chicago, Ill. 60611)

16-17. American Geriatrics Soc., Atlantic City, N.J. (E. Henderson, Executive Director, The Society, 10 Columbus Circle, Room 1495, New York 10019)

17. Academy of Tuberculosis Physicians, Atlantic City, N.J. (G. F. Bailey, 1295 Clermont, Denver, Colo.)

17-18. Academy of Psychosomatic Medicine, 4th symp. on anxiety and depression, Atlantic City, N.J. (E. Dunlop, 150 Emory St., Atteboro, Mass. 02703)


17-19. Reliability and Maintainability, 6th annual conf., Cocoa Beach, Fla. (Meetings Dept., American Inst. of Aeronautics and Astronautics, 1290 Sixth Ave., New York 10019)


18-22. Society for Investigative Dermatology, Atlantic City, N.J. (G. W. Harbrick, Jr., The Society, Johns Hopkins Hospital, 601 N. Broadway, Baltimore, Md. 21205)

18-23. American Soc. of Ichthyologists and Herpetologists, annual mtg., San Francisco, Calif. (W. I. Follett, California Acad. of Sciences, Golden Gate Park, San Francisco 94118)


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25-21. Heat Transfer and Fluid Mechanics Inst., La Jolla, Calif. (D. B. Ofle, Dept. of Aerospace and Mechanical Engineering Sciences, Univ. of California at San Diego, La Jolla)
25-22. Western Soc. of Soil Science, annual mtg., Los Angeles, Calif. (J. L. Young, 100 Agricultural Hall, Oregon State Univ., Corvallis)
25-23. Modern Titrimetry, 20th annual summer symp. on analytical chemistry, Claremont, Calif. (A. L. Beilby, Dept. of Chemistry, Pomona College, Claremont 91711)
25-30. Animal Reproduction, 8th symp., Urbana, Ill. (Short Courses and Conferences, 116 Illini Hall, Champaign, Ill. 61820)
25-23. American Soc. of Enologists, annual mtg., Santa Barbara, Calif. (The Society, Box 411, Davis, Calif.)
25-28. American Soc. of Agricultural Engineers, annual mtg., Saskatoon, Sask., Canada. (O. L. Symes, Dept. of Agricultural Engineering, Univ. of Saskatchewan, Saskatoon)
25-28. American Leather Chemists Assoc., Lake Placid, N.Y. (W. T. Roddy, Executive Secretary, The Association, Univ. of Cincinnati, Cincinnati, Ohio 45221)

26–30. American Schools for the Deaf, conf. West Hartford, Conn. (E. W. Tillinghast, Arizona State School of Deaf and Blind, P.O. Box 5545, Tucson 85703)

26–30. **Computers in Chemistry**, conf., Univ. of California, San Diego. (P. James, Chancellor Office, Univ. of California at San Diego, La Jolla)


26–8. **Immunology**, summer course. Lake Forest, Ill. (S. Dray, Univ. of Illinois at Medical Center, P.O. Box 6998, Chicago)

27–29. Western Soc. of **Crop Science**, University Park, N.M. (B. A. Melton, Jr., New Mexico State Univ., University Park 88001)

28–30. American Scientific **Glassblowers** Soc., 12th annual symp., Atlanta, Ga. (R. W. Poole, 100 Cedar Lane, Oak Ridge, Tenn. 37832)


29–1. **Navigation** in the Last Third of the 20th Century: Where Do We Stand; What Needs to be Done. Inst. of Navigation, 23rd annual mtg., Washington, D.C. (The Institute, 711 14th St., NW, Suite 912, Washington 20005)

**International and Foreign Meetings**

**June**

14–15. **Light and Vision**, intern. symp., Columbus, Ohio. (G. A. Fry, Ohio State Univ., Columbus 43210)


14–17. Canadian **Psychiatric Assoc.**, annual mtg., Quebec City, P.Q. (W. A. Blair, 225 Lisgar St., Ottawa, Ont.)


18–21. Canadian **Ophthalmological Soc.**, 30th annual mtg., Ottawa, Ont. (Office of Secretary, 1948 Yonge St., Suite 902, Toronto 7, Ont.)

18–23. Canadian Soc. of **Laboratory Technologists**, Quebec City, P.Q. (The Society, 99 Wentworth St. S., Hamilton, Ont.)


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School for Deaf, Northampton 01060


19–21. Federation of European Biochemical Societies, 4th mtg., Oslo, Norway. (W. J. Whelan, Dept. of Biochemistry, Royal Free Hospital School of Medicine, Univ. of London, 8 Hunter St., London, W.C.1)

19–23. Electronics, 14th intern. scientific congress, Rome, Italy. (Rassegna Internazionale Elettronica Nucleare e Telemacromagnetografica. Via Crescenzio 9, Rome)


20–23. Pathology and Microbiology, 15th Scandinavian congr., Copenhagen, Denmark. (J. C. Sim, Statens Seruminstitutet, Amager Boul, 80, Copenhagen)

21–25. Town Planning Inst. of Canada, annual mtg., Montreal, P.Q. (The Institute, Board of Trade Bldg., 11 Adelaide St. W., Toronto 1, Ont.)

21–29. ACHEMA 1967, 15th chemical engineering congr. and exhibition, Frankfurt-am-Main, West Germany. (Deutsche Gesellschaft für chemisches Apparate- und Maschinenwesen, Postfach 7746, 6000 Frankfurt Main, 7)


25–2. Chemotherapy, 5th intern. congr., Vienna, Austria. (Sekretariat, Wiener Medizinische Akademie, Albert Strasse 4, 1090 Wienn, Austria)

26–70. Carbonium Ions, 1st intern. symp. on physical organic chemistry, Athens, Greece. (The Symposium, Dept. of Chemistry, Michigan State Univ., East Lansing 48823, or G. Gregorion, Nuclear Research Center "Democritos," Aghia Paraskevi, Athens, Greece)
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26 MAY 1967
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and applications

editor-in-chief: Angelo Miele, Professor of Astronautics, Department of Mechanical and Aerospace Engineering and Materials Science, Rice University, Houston, Texas

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<table>
<thead>
<tr>
<th>Sepharose Type</th>
<th>Particle Size Microns</th>
<th>Percent Agrarose</th>
<th>Fractionation Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B</td>
<td>60-250</td>
<td>2</td>
<td>2x10⁴ to 25x10⁶*</td>
</tr>
<tr>
<td>4B</td>
<td>40-190</td>
<td>4</td>
<td>3x10⁵ to 3x10⁸*</td>
</tr>
</tbody>
</table>

* Determined with polysaccharides.

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