

Mind and Brain:

A Philosophy of Science
by Arturo Rosenblueth

The author, who is Director of the Centro de Investigación de IPN in Mexico City, is both a scientific generalist and a specialist, and the two aspects together serve to guide his philosophic approach.

As a generalist, he organized a seminar on scientific method in the 1930s, as a student and later a collaborator of Walter B. Cannon at the Harvard Medical School, to discuss these questions with exponents of many disciplines and to see them whole. Norbert Wiener, a member of the group, has written about the influence of Dr. Rosenblueth on his formulation of cybernetics, a notable scientific synthesis embracing animal and machine. In his book, Rosenblueth continues his search for scientific universals.

As a specialist, the author is a neurophysiologist. He is thereby an experimental philosopher, for this is the field most likely to provide hard answers to the central questions of perception, sensation, volition, and the nature of human knowledge. A nonneurological epistemology can be only impressionistic, and in order to allow the lay reader to follow the later discussions, the book reviews the present state of the neurological sciences, including the speculations on intrinsic uncertainties and indeterminacies, and neural events at the quantum level. \$5.95

Neurosciences Research Symposium

Summaries: An Anthology of Work Session Reports from the Neurosciences Research Program Bulletin
Vol. 4, edited by Francis O. Schmitt, Theodore Melnechuk, Gardner Quarton, and George Adelman

This is the fourth annual anthology of the Neurosciences Research Program Work Session reports which have appeared in the issues of the *Neurosciences Research Program Bulletin* for 1969-1970. It continues the coverage of "hot" areas in the neurosciences begun in 1966 with the first volume of this series. The current volume includes core research topics from a wide range of the neurosciences (neurophysiology, cell biology, neurochemistry, and animal behavior) in five critical summaries of research. \$15.00

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**MENTAL
EVENTS AND
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LETTERS

Two-Way Benefits of Defense Research

Like many scientists in the New York area, I was gratified to read the editorial in the *New York Times* (13 Jan.) on the funding of academic research. It is most encouraging that a subject of truly national importance, which has been surrounded by a great deal of irrational and partisan debate, should have been brought to public attention.

The *Times* article which pleaded for "orderly transfer" of nonmilitary Pentagon research to other federal agencies overlooks the harsh reality of research budget cuts everywhere; cuts in research funds at this time are likely to undermine many universities' financial structure. To eliminate defense funding without facing up to real needs is to replace expedience with neglect. A sharp delineation between basic, nonmilitary, and mission-oriented research is not possible and research is not a supply line than can be turned on or off at will.

Scientific contributions to man's knowledge have always been in the service of all of man's needs including (rightly or wrongly) his armory. From Archimedes to Leonardo da Vinci to this day, science in war and peace provided the potential from which military inventiveness designed its hardware. If the present law stipulates that cooperation by universities be limited to areas of evident military application, this violates the basic mission of universities and excludes true academic participation. The cooperation between the Department of Defense and universities is far from a one-way affair, on the financial or the intellectual level. The vast storehouse of factual information at the disposal of DoD is of very great value to the academic man who in turn can prevent DoD from becoming insulated from the trends of the day or from investing in dubious causes. In any case, to undertake to decide beforehand which piece of scientific inquiry is going to be useful to the military is trying to chart the unknown. Therefore, apart from the facts pointed out in the *Times* editorial that the new congressional rule can only serve to reduce seriously the support for scientific inquiry in this country, it must be emphasized that diluting the military-university partnership is not only bound to cause serious delays in transmission

of new knowledge, but will impair the building of a force of academic men who have the necessary defense background in case of emergency. If the British had delayed the development of radar by only 6 months, if France had not insisted on butter before guns between the wars, or if Hitler's politics had not interfered with the development of nuclear physics at a time when all the trumps were in his hands, history would have taken another turn. In times when the next war may come undeclared and be over in a few hours or days, we are flirting with catastrophe to stifle the military-university interchange.

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Campus Computer Costs

Mark Oberle's article entitled "Campus computers: Federal budget cuts hit university centers" (26 Sept., p. 1337) failed to consider what we believe to be a major inequity in regard to the use of university computer facilities by government research projects on campus. He states that "The Bureau of the Budget requires that all users of a computer that handles government-sponsored projects be charged the same rate for the same service." However, this is not necessarily true. Under some circumstances the government requires that the cost to university users not funded by government contracts or grants must be greater than the cost to university users who are government-supported.

This situation arises because the government refuses to recognize interest charges (on money borrowed to purchase, rather than lease, a computer) as an allowable cost to government contracts and grants. Although the interest expense which is included in the lease price of a computer by the manufacturer or by a third party is an allowable expense, the university is not always given the option of leasing. Should the lease payments on a system exceed what would have been the annualized amortization of that system's purchase price, the government can disallow lease costs in excess of that depreciation figure. Since many universities plan to retain their systems for beyond that break-even point, they are in a sense "forced" to purchase their computer equipment. Economic considera-

tions may also point toward a purchase decision. However, it is often necessary to borrow money in order to purchase a major computing system today. This is particularly true in view of the current financial straits of most universities. Yet, the government will not permit its users to pay their fair share of the interest charges on the funds used to purchase the computer, requiring instead that the university-funded users pay not only for their own share but for the government-sponsored users' share as well. The magnitude of the inequity becomes apparent when one considers that the interest costs for a \$3-million computer system amortized over 5 years amounts to more than \$780,000 at today's interest rates.

It is easy to understand how the government policy of not allowing interest expense came into existence. Where commercial profit-making organizations are involved, the government can validly argue that profit is defined to include return on capital investment as well as rewards for risk-taking and accomplishment. Thus it would neither be fair nor in the government's interest to permit a contractor to exercise high leverage through debt rather than equity financing, recover the interest cost of borrowed capital and obtain a profit on it while other contractors, using invested capital, must pay their capital costs from profits alone. Therefore, no cost allowance is permitted for "interest" computed on invested capital, for dividends on equity capital, or for interest paid on borrowed capital. The source of capital is not of concern, and the contractor is expected to pay the cost of capital from profits. In the case of nonprofit educational institutions, however, it is clear that the above factors are irrelevant.

Private colleges and universities operating under the Internal Revenue Service regulations for nonprofit institutions cannot very well sell stock to raise capital, so borrowing from the bank must be the avenue for financing equipment acquisitions. Even if an institution were willing to invest endowment capital in a new computer, the loss of endowment income would represent a real cost to the institution, equivalent to the payment of interest. Yet, when such an institution performs work for government-sponsored users, it is allowed neither profit nor interest recovery regardless of the fact that a capital cost is incurred. One must then conclude that the government is ad-

versely discriminating against colleges and universities in the handling of computer costs.

Further, the policy of not allowing interest expense can also result in government funded users paying more for computer usage than they would if the interest expense of nonprofit organizations were allowed. For example, a nonprofit contractor often elects to lease computers from the manufacturer or from a third party (interest on the capital being included in the lease price) for shorter periods of time than they otherwise would so that cumulative lease costs are less than purchase price. Yet, the purchase price plus the interest expense less the residual salvage value of the equipment at the end of the period will frequently turn out to be less expensive than the cumulative lease payments over the period.

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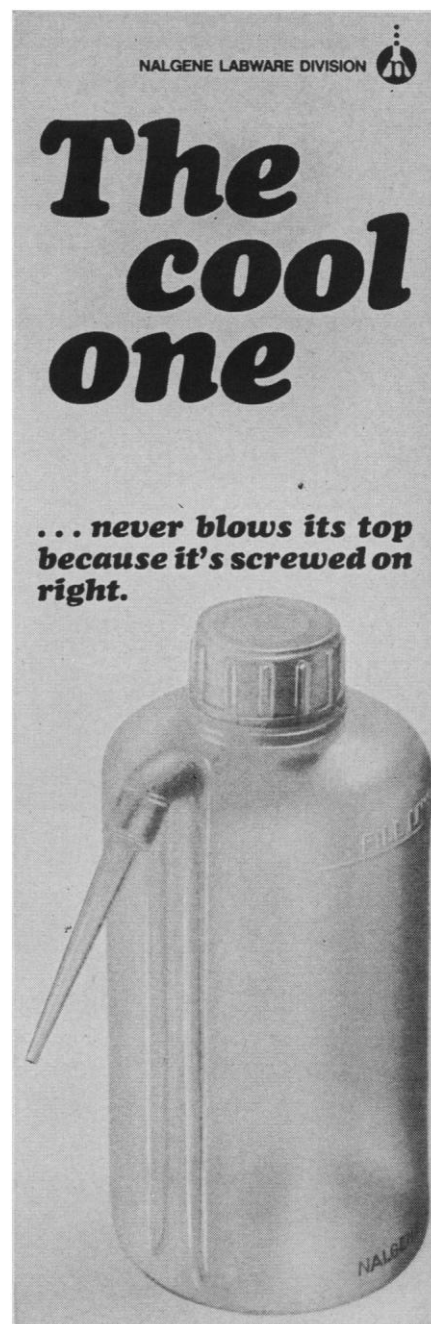
New Ringmaster—Same Circus?

The article by Carter (26 Dec., p. 1603) records the departure of Yannacone as general counsel of the Environmental Defense Fund (EDF) and states the scale of compensation which furnished the incentive for his cross-examination of scientific witnesses. Wurster [*BioScience* 19, 809 (1969)] has extolled Yannacone's courtroom tactics as furnishing the "acid test of relevance and competence" for obtaining information on DDT. Yannacone was described in *Science* (22 Dec. 1967, p. 1552) as without "formal training in ecology."

The bizarre tactics employed by Yannacone at the Wisconsin hearings, according to the hearing examiner, included "histrionics and badgering witnesses." I have hoped that the material in those hearings might some day be reexamined in a more orderly scientific atmosphere, but this seems doubtful: EDF's new general counsel boasted in the hearings at Seattle on 16 October of his lack of training in biology. My prediction for the EDF is: same traveling circus, different ringmaster.

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