

(4) Since abortion rates and reproductive habits are known to differ significantly among different economic strata (F. A. E. Crew, *Am. Naturalist*, 71, 523 [1937]) it appears most doubtful whether unstratified data from the total population, such as used by Dr. Novitski, are suitable for discovering genetic mechanisms affecting the human sex ratio (M. Bernstein: "Evidence of Genetic Variation of the Human Sex Ratio," *Abst., Biometrics*, 8, 388 [1952]). The writer has utilized data from the upper social strata, with a minimum of induced and other avoidable abortions, of first births only (data from Radcliffe College alumnae and a 1935 German "Who's Who") and so far has found no age affect on the sex ratio of offspring for either fathers or mothers.

MARIANNE E. BERNSTEIN

39 Brewster Road
Waltham, Massachusetts

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Dangers for Science? or, Snares for the Scientist?

THE discussion of American foreign policy, which began with Melba Phillips' "Dangers Confronting American Science" (*SCIENCE*, 116, 439 [1952]), and which has been continued with Joseph K. Marcus' "Snares Awaiting the American Scientist" (*SCIENCE*, 117, 507 [1953]), seems to be emitting more heat than light.

Foreign policy and international politics are obviously matters of great importance to all of us. Politics would seem to be a legitimate field for scientific study, and might benefit greatly from such study. Whether this means that the limited space available in *SCIENCE* should be devoted to polemics is more debatable. So is the question of whether our understanding of these matters is best advanced by publication of relatively uninformed opinions by political amateurs—a class to which most of us belong.

On the whole, I am on the side of those who favor such publication. Scientists are political animals, whether they like it or not, and a journal devoted to the advancement of science may, it would seem, legitimately give some space to the political development of scientists. If any profit comes from this, however, it is not apt to be because scientists are better informed politically than the professional politicians, nor because they are more articulate than those who make their living by commenting on foreign affairs. Still less is it apt to result from the greater emotional intensity of our involvement, or, even, from the greater power of our intellects or the superior subtlety of our dialectic. The contribution that scientists can make to the discussion will come from an attitude: from objectivity, tolerance, reluctance to distort or suppress evidence, and willingness to accept sound logic and demonstrable fact.

In the present instance, I agree with Mr. Marcus that Dr. Phillips' comments seem to show a definite bias. To me, however, the article by Mr. Marcus is no

less biased, and seems even less likely to lead to constructive action than the one which he criticizes. His attitude is so widely accepted and so intensively publicized in the United States that it seems unlikely to cause any reaction except complacent self-satisfaction.

It is difficult to join Mr. Marcus in his indignation over the pamphlet "Steps to Peace" issued by the American Friends' Service Committee. The pamphlet was obviously not prepared under any delusion that it would be widely circulated in Red China, or used as a guidebook by the rulers of Russia. It was addressed primarily to the American public. Under the circumstances, the fact that it points out a few alternatives to our current policies and beliefs does not seem unnatural. It would have been much less honest, and much less effective, if it had pretended to give a complete and balanced analysis of the world's problems in 64 pages, and had then filled most of those pages with a restatement of the familiar case against the U.S.S.R. It is true that the pamphlet cites many criticisms of American foreign policy without explaining that this foreign policy was the result of traditions, provocations, pressures, objectives, and personalities that are quite understandable. It is equally true that Mr. Marcus dismisses these criticisms without attempting to answer them, which would seem to be a crime of at least equal gravity.

I can testify that it is possible for one who is not a communist, and who has never been one, to be deeply disturbed by the foreign policy of the United States. That there were reasons behind this policy, I take for granted. That its authors have been Americans of the highest patriotism, I have never questioned. That its objectives are honorable and admirable, I am willing to concede. But this is all beside the point: the question is, what is it doing?

A careful study of the record will, I fear, convince most people that we share with Russia the responsibility for the armament race which is absorbing so large a portion of the world's resources, and which is leading us so rapidly toward the Garrison State. It may be that we have never had an alternative. A nation that is convinced that time is working on its side may have no real interest in agreement, and perhaps Russia would have rejected any offer that we made. It is hasty of us to assume this until we have made an offer which we, in Russia's place, would consider accepting. I do not feel that we have done this. That the Russians are no better in this respect, is small comfort.

Perhaps Galileo would have felt at home in a world which was devoting its best thought to guided missiles and atomic bombs: let us concede Mr. Marcus his point. This does not make it a better world, nor does it alter the fact that science, as we have known it, is suffering very real harm. And the fact that Bertrand Russell has aptly described the functions of science as enabling us to know things and enabling us to do things, does not mean that it is immaterial what sort of things we know or do.

I have no quarrel with Mr. Marcus' point that

many admirable people have been involved in the creation and implementation of our foreign policy. It would be unreasonable, though, to expect public figures, charged with the responsibility of carrying out our policies, to be publically critical of the policies that they represent. A discussion of our shortcomings can be more gracefully carried out among those of us who do not pretend to represent America to the world.

My criticism of our present policies would be not so much that they are based on military power, but that they are based almost *exclusively* upon military power, with no alternatives to give flexibility to our negotiations. And that, in meeting what we claim is a temporary emergency, we are subsidizing many enemies of the liberal, democratic tradition that we claim to represent, and ignoring many needs that should have our sympathy. A policy that stands in the way of legitimate aspirations of the human race cannot, in the long run, be a sound policy for a nation which contains only 7 per cent of that race.

WILLIAM PALMER TAYLOR

416 Ross Avenue, Hamilton, Ohio

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"THE true and lawful goal of the sciences is simply this, that human life be enriched by new discoveries and powers. The great majority have no feeling for this. Their thoughts never rise above money-making and the routine of their calling." Thus wrote Francis Bacon in the *Novum Organum*. Of course Bacon knew that "the mechanical arts may be turned either way, and serve either for the cure or for the hurt." In one of his fables he says explicitly: "Yet out of the same fountain come instruments of lust, and also instruments of death. For (not to speak of the arts of procurers) the most exquisite poisons, as well as guns, and such like engines of destruction, are the fruits of mechanical invention; and well we know how far in cruelty and destructiveness they exceed the Minotaur himself." Even before Bacon, and certainly ever since, men have known that science means knowledge and power, both of which may be misused. But those of us who reject a philosophy of despair see science as good because it is our basis of hope for improved human welfare in an unexplored future.

On the whole the best answer to the misrepresentation of "Dangers Confronting American Science" made by Joseph K. Marcus (*SCIENCE*, 117, 507 [1953]), is to urge that the reader compare it with the original article. Dr. Marcus seems to have little interest in our principal objective, that of improving the status of science in this country. Furthermore the practice of mind reading, which some of his inferences suggest, is neither a part of the accepted method of science nor a suitable basis for scientific discussion. We therefore refer the reader to *SCIENCE*, 116, 439 (1952), and also call his attention to the guest editorial in the April, 1953, issue of the *Bulletin of the Atomic Scientists*, "Basic Science and the Cold War," originally published under the title "Bathwater and the Baby," by Dr. R. E. Peierls.

The letters in response to "Dangers Confronting American Science" that were forwarded to us by the editors of *SCIENCE*, and others received directly, have been, on the whole, so favorable as to constitute substantial basis for hope and optimism. The late Edwin G. Conklin called it "the most telling call to scientists to return to the ethics of real science that I have seen in this period of lost ideals." With profound respect for the memory of one of America's greatest scientists, we venture the belief that the ideals are not lost and only partly suppressed. If scientists and scientific societies exercise their right and duty to discuss freely and reasonably the main problem, that of bettering the conditions for the progress of science, not only will science itself benefit but the welfare of the nation as well.

M. PHILLIPS

298 West 11th Street, New York City

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Scientific Book Register

Atoms, Men and God. Paul E. Sabine. New York: Philosophical Library, 1953. 226 pp. \$3.75.

Engineering Drawing. Josef Vincent Lombardo, Lewis O. Johnson, and W. Irwin Short. New York: Barnes & Noble, 1953. 432 pp. Illus. \$2.00.

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Experimental Studies in Psychiatric Art. E. Cunningham Dax. Philadelphia, Pa.: Lippincott, 1953. 100 pp. Illus. + plates. \$5.00.

The Making of A Scientist. Anne Roe. New York: Dodd, Mead, 1953. 244 pp. \$3.75.

Annual Review of Plant Physiology, Vol. IV. Daniel I. Arnon and Leonard Machlis, Eds. Stanford, Calif.: Annual Reviews, 1953. 453 pp. Illus. \$6.00.

Cybernetics: Circular Causal and Feedback Mechanisms in Biological and Social Systems. Transactions of the Ninth Conference, March 20-21, 1952, New York. Heinz von Foerster, Ed. New York: Josiah Macy, Jr. Fdn., 1953. 184 pp. Illus. \$4.00.

Stress Waves in Solids. Monographs on the Physics and Chemistry of Materials. H. Kolsky. New York: Oxford Univ. Press, 1953. 211 pp. Illus. + plates \$5.00.

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Elementary Electricity for Technical Students, Vol. I. A. C. Davies. New York: Cambridge Univ. Press, 1953. 132 pp. Illus. \$1.50.

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