tions to which he so violently objects. I wanted only to add some dimension to the men within the context of portions of the article. Similar descriptions were included in profiles on the men in recent issues of *Medical World News*, profiles with which, I understand, both men were quite pleased. That on Fogarty (18 Aug. 1961) was headlined: "One-time bricklayer becomes a key force behind the $4 billion federal medicine and research programs." As science relies more and more on government money, the politicians themselves become factors in federal appropriations for science. In this respect it is noteworthy that De Bakey's letter to *Science* was released to the press by Fogarty's office shortly after it was written.

I wish to again credit the pioneering study of NIH appropriations made last year by Robert P. Clark of the Louisville *Courier Journal* while he was a Nieman fellow at Harvard University.

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Shelter and Survival

Please allow me to offer a brief rebuttal of the editorial on President Kennedy's fallout shelter program, an editorial titled "Better nothing than something?" [*Science* **134**, 1955 (1961)].

The editorial discusses the President's contention that the proposed shelter program is meant to serve solely as survival insurance in case of an irrational or accidental nuclear attack on this nation and is not to be construed as an added element of our military deterrent power.

I personally support the President with some enthusiasm, but the fact that he said the words and himself believes the words does not make them true. He is flatly disputed by one of his most ardent supporters, who, insofar as the subject of civil defense is concerned, is much more knowledgeable than he is himself—Chet Holifield, congressman from California. Holifield heads the subcommittee which has been riding close herd on civil defense for the past decade, as recorded in volume after volume of expert testimony.

It is Holifield's well-buttressed judgment that shelters will definitely contribute very substantially to both the credibility and the actuality of weapons deterrence. And it is on this basis that he is pressing for an eventual expenditure of $20 billion on a nationwide shelter system. The Kennedy proposal simply gets our feet in the water, and once that happens the logic of being committed to "survival by shelter" will soon take us into the deeper water of "more shelters, more survival," "bigger bombs? deeper digging!" "faster weapon-delivery time? full-time safety by full-time living, working, and sleeping underground!"

I do not say the President himself will push us into this deeper water, or will even approve of it. My feeling is that he would do just the opposite. But the Pentagon hasn't opened with the Herman Kahn civil-defense gambit with any intention of stopping short of a checkmate to stifle the opponents of more arms and more bellicosity.

So the people of America have no simple choice between insurance and deterrence, as the editorial implies they have when it asks, "Is the distinction between insurance and deterrence really so hard to grasp?" The question can be answered easily and directly with a "No."

But this is the wrong question, and it is a misleading question because it carries the implication that civil defense really makes sense if people will just stop being confused about it. For my part, I do not blame anybody for con-

cluding that civil defense is not only a useless but a dangerously diversionary activity when it is directed against the threat of destructive forces as overwhelming as those of thermonuclear war. And my attitude is the outgrowth of 7 years of full-time professional service for civil defense in the field of public information.

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As civil defense seems inevitable whether we believe in it or not, one may indeed join the writer of the *Science* editorial in the hope that the Kennedy Administration's ambitious civil defense program "may make . . . people look squarely for the first time at the consequences of atomic war." Some of us entertained a similar hope 20 months ago when Tucson was selected to be ringed with Titan missiles and thus turned into a high-priority target likely to receive intense local fallout after an attack on the upwind missile installations (*1*).

From their actions it appears that economic self-interest continues foremost in the minds of community leaders and that contemplation of the outcome of nuclear war is considered irrelevant or even unpatriotic. Fear of economic reprisal, in the form of withdrawal of the local SAC air base and location of the costly Titan silos elsewhere, persuaded community leaders to accept, over the protest of local scientists, a pattern of Titan base encirclement which presents the greatest possible civil defense hazard (*2*).

Local civil defense leaders have also demonstrated that if their intimate association with the program has led them to look closely at the consequences of atomic war, the result has not led them to consider alternatives. In a public statement, State Civil Defense Director Ralph R. Redburn proposed that the United States consider going to war against Russia now, when there is a fifty-fifty chance of our winning (*3*).

Admittedly Tucson may present a special case; furthermore, in the absence of a careful attitude survey it is impossible to evaluate the impact of intimate association with advanced defense installations on the mind of the average citizen. Future experience may show that the shelter construction program beginning here did finally impress people with the danger of atomic war. For the moment there is little in the Tucson case to demonstrate that serious

confrontation with matters of civil defense brings the result the *Science* editorial hopes for.

Regarding President Kennedy's request that patriotic citizens construct their own fallout shelters, some individuals, who have come to believe that continued civilian participation in the defense program is a dangerous means of bringing home to one's neighbors the insanity and immorality of atomic war, may prefer an alternative. In protest against both the folly and the selfishness of building a private fallout shelter in a world where hundreds of millions of people lack any form of decent housing, many Americans may choose to contribute instead to a recently announced program of the Fellowship of Reconciliation, "Shelters for the Shelterless."

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References

1. J. E. McDonald, *J. Arizona Acad. Sci.* **2**, 18 (1961).
2. ———, *Arizona Frontiers* (Nov. 1961); P. S. Martin and C. Steelink, *Bull. Atomic Scientists* **17**, No. 4 (1961).
3. Tucson *Daily Citizen* (16 Nov. 1961).

I concur 100 percent with your editorial of 15 December concerning our national civil defense program. I have been taking this position for many months now and have been reproached by almost all my scientific colleagues. Apparently these people feel that the "don't look at it and maybe it'll go away" attitude will solve the problem.

I just can't understand how the usually sound rational thinking of competent technical workers can fail to lead them to the conclusion expressed in your editorial. Somehow the usual "brotherhood of man" attitude which prevails internationally among scientific men continues to becloud their thinking in the political areas. For example, I heard Harrison Brown express this "let's not have shelters" sentiment in a recent national TV broadcast, where he took a position opposite to Kahn's very realistic point of view.

I hope that enough of your readers who believe that Khrushchev and his colleagues are not rational leaders read your statement and see through to the kernel of the matter—that insurance is essential.

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Allow me to commend, as well as criticize, your excellent editorial, "Better nothing than something?"

I am in complete agreement with the underlying major premise of the editorial, that it is absolutely imperative that the likelihood of atomic war be eliminated. Whether the building of shelters under private or public auspices would contribute to the general awareness of the utter destructiveness of such a war is a delicate question. As one of the 285 faculty members of the Chicago area who signed an open letter protesting against the shelter program on the ground that it created a false sense of security and predisposed the public to underestimate the tragic futility of nuclear warfare, I took a position different from that of your editorial. If your editorial has left me unconvinced that I was wrong (one can never be sure that one is right in such matters), it was mainly for the following reason.

The editorial cited the President's distinction between deterrence and insurance and then proceeded to argue as if the two were entirely independent, as if insurance never weakened caution against risk-taking. Simply because the shelter program, like accident policies, may spell out the dangers and enumerate excluded risks, is there any good reason to expect that this will predispose the public to discountenance adventures in "brinkmanship"? Do not accident policies frequently undermine the motorist's sense of personal responsibility, a sense that would otherwise deter him from driving recklessly? The very analogy your editorial drew, leads, I should say, to the conclusion (the very opposite of your own) that the shelter program would not preclude taking fearful risks.

Forgive me if I write less as a fellow of the AAAS than as a grandfather of five pretty babes and as a teacher of more than 30 years' standing, who rebels at the thought of exposing the youth of the world to annihilation or to the prospect of begetting generations of crippled progeny.

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Isosceles Triangles and the Center of Population

Walter Crosby Eell, in a recent letter [*Science* **134**, 797 (1961)], pointed out that the center of population is not necessarily the point at which the population can convene with minimum travel mileage, and he proceeded to show this with two simple examples.

While there can be no doubt about the soundness of his basic contention, we would like to point out that his second example of three persons living at the vertices of an isosceles triangle is not entirely correct. Speaking of the distance from the base AB of the triangle to the vertex C, he states, "regardless of that distance, the point of minimum travel for the three [people] to convene will be a fixed point, the center of the equilateral triangle of which AB is one side."

This is true whenever the distance from the vertex C to the base AB of the isosceles triangle is greater than the distance from the center of the equilateral triangle to the base AB. But if we have a "short" isosceles triangle, the point of minimum travel is the vertex C itself.

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