

Letters

Philadelphia, Pa.

EDITOR:

I entered Caltech as a rather bewildered freshman in September 1958 when Dr. Huttenback began his tenure as Master of Student Houses and therefore remember with considerable nostalgia many of the events of his narrative ("Confessions of a Genial Abbot" *E&S*—Feb., March, April 1969). I also recall with deepest gratitude the kindness, warmth, and sympathy of Dr. and Mrs. Huttenback, which greatly mitigated the succession of distressing psychic shocks I and my classmates experienced in our first few weeks. It is surely a pity that Dr. Huttenback was the author of his own reminiscences, since I fear modesty has prevented him from adequately celebrating the role he played in our lives.

Into this Eden of praise, however, I fear I must introduce the hissing of one snake, in the name of historical accuracy. In his role of professional historian I am sure Dr. Huttenback will forgive me. The article gives the impression that the proprietors of the anaconda [which, according to Dr. Huttenback, was being kept in a student's bathtub, but decided to investigate the plumbing and became arranged between two toilets, head up in one and tail up in the other] were living on campus in one of the student houses under the Master's jurisdiction. In fact, they shared an off-campus apartment. This in itself is a minor error that I would not have troubled to correct. What I strongly protest is the impression that might be left with the casual reader that we in the Houses had *bathtubs* and/or private toilet facilities. As anyone who lived on campus during that turbulent era could tell you (and probably would, if provoked), bath-tubs would have been as much use to the typical undergraduate as suspenders to the anaconda.

JULIAN V. NOBLE '62

Chicago, Illinois

EDITOR:

In *The New Republic* for March 29 I find the statement: "Harold Brown, formerly a top Pentagon official, said two weeks ago that we must anticipate nuclear confrontations in which each side fires a limited number of ICBM's at the other side's missile sites. So, Mr. Brown argued, our missile sites need ABM protection."

This is so idiotic that I cannot believe Brown actually said it. I wonder if you can trace the quotation for me to the speech or article from which it was taken, and tell me where I can get hold of a copy of the original text.

MARTIN TANGORA '57

Who Said What, Where

The statement credited to Harold Brown in *The New Republic* has apparently been "adapted" from an interview with Dr. Brown conducted on January 21, 1969, in Washington, D.C., when he was still Secretary of the Air Force. The interview was printed in *The New York Times* for March 2, and the statement in *The New Republic* appears to have been taken from this portion of *The New York Times* article:

Dr. Brown warned that while the current balance of power might deter nuclear war in most situations, it might not in a crisis in Europe in which both sides believed that their vital interests were threatened.

Against that possibility, he feels, it may be necessary for the United States to anticipate a nuclear war in which each side fires a limited number of ICBM's at the other's weapons, rather than his cities.

To prepare for that possibility, he says, the United States might better protect its offensive missiles so that it would not quickly be forced, by the loss of ICBM's on their pads, to have either to capitulate or to destroy the enemy's cities.

But the statement credited to Harold Brown in *The New York Times* has, in turn, been "adapted" from the original, and far longer, interview with *Times* reporter William Beecher. According to the direct transcript of this interview (and to that portion of it that seems to apply here) what Brown actually *said* was:

MR. BEECHER: Do I understand, Mr. Secretary, that in the absence of a mutual limitation on strategic weapons, you think that both the United States and Russia must really provide enough ICBM's to wage protracted nuclear war, firing only against each others' weapon systems, rather than against cities.

SECRETARY BROWN: At the moment, I don't think that is necessarily the correct posture. I am saying only that it is a factor that you have to consider in making your force decisions. It depends a great deal on the detailed characteristics of the system. Protracted war is something that, as I say, isn't very likely, but then a strategic war isn't likely in any form. One would have to look, and we have done some looking, at the details of what it takes to improve your situation so that you can have extended survivability of forces, not just survivability against one strike.

MR. BEECHER: In terms of the psychology involved, do you think both nations would feel more secure if their rough numbers of strategic systems were about on a par?

SECRETARY BROWN: I think that each nation has to feel that the situation is relatively stable. It may be that the way for each to feel that is to have roughly equal numbers of something. Numbers of missiles and numbers of bombers are typical examples, but I do have a feeling that the two sides may value different things. Their strategies may be different, their geography is different, their economics are different. I think the best thing is for each side to feel that it is at least equal and perhaps better than equal in something that is im-

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portant to it. And I think that if those things are different, both sides can feel that they have equality or better in what is important to them. One way to put it is that both sides can have second-strike superiority.

MR. BEECHER: What you are describing is a situation of mutual deterrence. Would you say that the two nations have already built enough strategic weapons for this mutual deterrence?

SECRETARY BROWN: I am not describing simply a mutual deterrence situation, I am describing a situation of stability. The question is, deterrence against what? I think that it may not be too hard to get mutual deterrence against unprovoked attack; attack where there is not a great deal of tension. Where there is tension, it is not clear to me that the same balance produces the same degree of deterrence. If one imagines a situation where each side considered its vital interests to be involved, and in which they somehow had gotten engaged, let's say in Europe as one example, then one side or the other may be impelled into dangerous acts despite the fact that each side correctly calculates that an all-out thermonuclear war is going to lead to its destruction, as well as the destruction of the other side.

MR. BEECHER: But in terms of the sizes of the two strategic forces, do you feel that at the present time the two nations have at least a kind of equilibrium in terms of mutual deterrence?

SECRETARY BROWN: I think that the present situation is relatively stable in terms of the weapon systems that exist, or are immediately programmed, and I think that may offer a real chance for arms limitations agreements that will maintain that stability.

Leroy, New York

HAROLD BROWN, PRESIDENT
CALIF. INST. OF TECHNOLOGY

Caltech's fund-raising campaign in 1968 found me delighted that Dr. DuBridge was stressing the role that

Caltech could play in the "Science for Mankind." Certainly his poetic and rational appeal that ended "the first time man has gained the scientific knowledge to shape his destiny and shape it well" seemed to have the ring of a great humanist as well as that of a great scientist. *It appeared that Dr. DuBridge and I had arrived independently at the same conclusion*; the conclusion being that Caltech had spent, in recent years, an inordinate amount of its energies, resources, and prestige in joining with the military in planning a science for mankind's destruction rather than a science for mankind's physical and genetic salvation. A wish-fulfilling fantasy on my part, perhaps, but that was my interpretation of his appeal.

Now Dr. DuBridge has used his and Caltech's very considerable prestige to influence President Nixon in the President's decision to disperse the Anti-Ballistic Missiles—a decision, certainly, that will not hurt Caltech in the years immediately ahead but will jeopardize man's chances of civilized survival forever. Believe me, I recognize that Caltech is no longer Dr. DuBridge but I have listened and searched in vain for some sign indicating that the trustees, the administration and the faculty are not in agreement with him on this crucial matter.

My reaction to Dr. DuBridge's reversal of emphasis is one of ambivalence—a feeling of being deceived and a feeling of being reassured. Deceived because I felt my efforts and money would be used to help change Caltech's direction. Reassured in my long-held, reluctant and unhappy conclusion that institutions as well as individuals sell themselves on the open market to the highest bidder. Both feelings force me into withdrawing my remaining pledge to Caltech and its "Science for Mankind" and using the monies so withdrawn to help organizations with less conflict of interest and a more genuine concern for mankind.

ROBERT G. FUSSELL '35

A Reply From President Brown

Along with many other people at the Institute, of varying views on national security matters, I share your belief in the importance to the future of mankind of finding ways to avoid the dangers presented by the existing large stocks of nuclear armament. In all such matters, individuals at Caltech are free to speak their personal views. In the particular case of the antiballistic missile, some of our students, trustees, faculty, and administration are undoubtedly for it, and some are against it. Currently, a petition to the President of the United States expressing opposition to the ABM is being circulated at Caltech, so the fact that you may not have heard any public expressions in opposition to the ABM does not mean that they have not been made; statements in favor of the ABM may also be made.

No such expressions, either pro or con, are expressions of an institutional policy or position on the part of the California Institute of Technology—which, *as an institution*, takes no stand on such issues. And, of course, Dr. DuBridge was speaking as a member of the national Administration, supporting the Administration's position, not as president or as ex-president of Caltech.

With respect to military research, you are probably aware that Caltech faculty or students do no classified research on campus. The work at the Jet Propulsion Laboratory, though some small parts of it may be classified, is almost entirely concerned with the unmanned exploration of the moon and the planets for the National Aeronautics and Space Administration. This lack of involvement with military research and development is in contrast with the situation at some other institutions; I say this not in criticism of them but merely to point out that in singling out Caltech you may not be looking at the best example for your objections.

Caltech has a long tradition of al-

lowing individuals associated with it to speak on public issues on which they may have some expertise, or even an unexpert opinion, provided that they speak as individuals. The Institute has maintained that position at times when some of the views so expressed by people associated with it were regarded as very unpopular, and it came under extreme pressure from a point of view quite different from the one which you present. We believe that our attitude is correct now, as we believe it was correct then. I continue to believe that important national issues, as well as the question of participation of the Institute, and their impact on the Institute should continue to be freely discussed. In that spirit I am submitting your letter and this response to it for publication in *Engineering and Science*.

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To: The Caltech Community
From: Victor M. Lozoya

On May first I flew to the Hawaiian Islands for the purpose of choosing the best acreage available within the 4,000-acre tract to be opened around June first. This land will be sold in 3-acre parcels, with prices starting at \$10,000 for each parcel. The land is in the middle of much of the activity proposed for the Kona Coast and will offer outstanding views and location.

As a point of interest, construction costs for paved roads in that area have risen dramatically within the past six months, so that within a year's time it is felt there will no longer be any acreage available in that location for less than \$6-8,000 per acre.

Land in Hawaii has increased in value over the past five years an average of 38 percent per year and in many instances as much as 200 percent per year. Experts predict the trend will be straight up for the next ten years. A prime reason for this is that large corporations are beginning to invest heavily, particularly on the Big Island of Hawaii, and with increasing emphasis on the Kona Coast. Existing blueprints for proposed development along the Kona Coast include plans for 20 hotels and more than ten thousand homes and condominiums. The dollar value of the proposed development is approximately \$1,500,000,000.

As an investment, Hawaiian land is second to none.

If you have thought about investing in land or a condominium on the famed Kona Coast, please call or write me at your earliest convenience. Indications are that the anticipated "big boom" has commenced, and that available land may soon be exhausted. It will certainly be far more costly in the very near future.

Research opportunities in highway engineering

The Asphalt Institute suggests projects in five vital areas

Phenomenal advances in roadbuilding techniques during the past decade have made it clear that continued highway research is essential.

Here are five important areas of highway design and construction that America's roadbuilders need to know more about:

1. Rational pavement thickness design and materials evaluation. Research is needed in areas of Asphalt rheology, behavior mechanisms of individual and combined layers of pavement structure, stage construction and pavement strengthening by Asphalt overlays.

Traffic evaluation, essential for thickness design, requires improved procedures for predicting future amounts and loads.

Evaluation of climatic effects on the performance of the pavement structure also is an important area for research.

2. Materials specifications and construction quality-control. Needed are more scientific methods of writing specifications, particularly acceptance and rejection criteria. Additionally, faster methods for quality-control tests at construction sites are needed.

3. Drainage of pavement structures. More should be known about the need for sub-surface drainage of Asphalt pavement structures. Limited information indicates that untreated granular bases often accumulate moisture rather than facilitate drainage. Also, indications are that Full-Depth Asphalt bases resting directly on impermeable subgrades may not require sub-surface drainage.

4. Compaction and thickness measurements of pavements. The recent use of much thicker lifts in Asphalt pavement construction suggests the need for new studies to develop and refine rapid techniques for measuring compaction and layer thickness.

5. Conservation and beneficiation of aggregates. More study is needed on beneficiation of lower-quality base-course aggregates by mixing them with Asphalt.

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