

for the investigator cannot get away from the fact that it is he himself who is knowing something, and *what* he knows is often in very significant ways determined by this fact.

Within this framework Bridgman presents interesting, and often very penetrating, analyses of logic, physics, psychology, and the social sciences. Perhaps the most important point which he uncovers by these considerations is that as we pass from the abstractions of logic to the value judgments of the social sciences, the role of the individual knower becomes increasingly important. Although it is true that when I utter a proposition of Euclid I must consider the fact that I am uttering it as part of the total picture, this is not nearly so significant as when I state a truth about society. For here I must recognize that there are no "values" (without qualification) but only "values-for-someone"—in this case, myself.

It may be worth while to point out that two of the most important of the recent schools of philosophy—the Existentialists and the Linguistic Analysts—also take their departure from the concrete individual. The former considers him as a creature experiencing anguish and dread; the latter, as a symbol-using animal endeavoring to communicate the simple truths of his experience. I hesitate to present Bridgman with such ill-deserved bedfellows. But there may be significance in the fact that intelligent people in widely different areas are exploring the modern overemphasis on abstraction, togetherness, and the "public interest," on the grounds that this may lead us, as individuals, unwittingly to commit suicide.

A. CORNELIUS BENJAMIN
Department of Philosophy,
University of Missouri.

The Great Decision. The secret history of the atomic bomb. Michael Amrine. Putnam's, New York, 1959. 251 pp. \$3.95.

This is a valuable and interestingly written contribution to a particular chapter of the history of atomic energy for military purposes. It begins with the afternoon of 12 April 1945, when Vice-President Harry Truman was informed by Eleanor Roosevelt of the death of the President.

That evening Harry Truman was sworn in as President of the United

States. Later there was a brief cabinet meeting, and Secretary of War Henry L. Stimson lingered for a private word with the President. That was Truman's first official knowledge of the atomic bomb project, which at that moment had about 100,000 persons working in secret laboratories and factories. The great bulk of these persons were unaware of the over-all objective of the factories in which they worked.

This was just 116 days before the whole character of war was changed by Americans when they dropped one atomic bomb on Hiroshima, Japan. This was followed three days later, 9 August 1945, by the dropping of another bomb on Nagasaki, Japan. During the afternoon of 14 August the Emperor of Japan announced his acceptance of the terms for ending the war contained in the Potsdam Declaration, and World War II was at an end.

Michael Amrine has given a brilliant synthesis of the peculiar circumstances of those less-than-four momentous months in history. He has searched carefully and told the story as well as anyone could in view of the fact that not all of the essential information has been made public. He is aware of the incompleteness of his narrative, for he says in the concluding chapter: "We look back, with troubling questions, at these events, which helped so much to set new limits and choices for man. Were the atomic bombings necessary for an early end to the Pacific war? Were the atomic bombs used in haste, without proper thought of the consequences?"

"This book was written to help people answer these questions for themselves. There is also a hope that if the available record is set down, as far as it can be, other people who have not yet spoken may tell the full story of their participation. There are official records that should be opened now. Some contain no official secrets. Others contain technical secrets now outmoded. It is time for these records to be opened, but, so far, the doors have remained shut to journalists, historians, and sometimes to former officials, even to famous American officials who lived through these events. A nation, like a man, cannot fully understand its future if it does not understand some of the secrets of the past."

As we begin to appreciate the vastness of the consequences of atomic energy with its million-fold multiplication of war's horrors which now threaten humanity, one of the most important tasks of scholarship becomes the writing of a

really definitive history of atomic energy. This is not a project to be undertaken by one or two men: it calls for the coordinated efforts of a major group of physical scientists, social scientists, and historians. These scholars should subject the stories of the various groups to searching critical analysis so that men may know what a great change atomic energy has worked in every facet of their lives.

My part of the project was finished by February 1945 and, in any case, since I was never associated with it at a level that could influence policy, I have little first-hand knowledge of the story that Amrine gives us. But what I do know confirms the essential accuracy of the story as he tells it. It may be useful to point up some comments on the parts of the story which seem most significant.

A complete history would tell how the project was born in complete and equal cooperation between the United States and Great Britain. We did very little on the project between 1939 and the fall of 1941 while the British accomplished a great deal in spite of the distractions caused by the disaster at Dunkirk and the Germans' mass-bombing of English cities.

Our scientists were indecisive and ineffectual in this early period. It was mainly the push afforded by the British scientists which led to the organization of a major project in the late fall of 1941. At that time it was agreed that the British would shift their work to this country and that we and they would work together on the project as equal partners.

In 1942 General Leslie Groves was put in charge of the project. The full story has not yet been told of how he worked to hobble and frustrate this cooperation. Amrine mentions it briefly (pages 121-2). He tells how, by February 1943, Sir Winston Churchill's irritation reached such a point that he cabled Harry Hopkins the following message: "I should be very grateful for some news about this, as at present the American War Department is asking us to keep them informed of our experiments while refusing altogether any information about theirs."

By August 1943 this had become a major issue and was discussed at the Quebec Conference between Churchill and Roosevelt. After this it was no longer possible for Groves to frustrate cooperation with the British. It was not until that time—but it happened with great speed immediately thereafter—that a

large, able group of the best British scientists came to the United States to help in every phase of the project at the many different laboratories and factories.

It was about this time that Churchill, feeling that the Americans under General Groves were intent on "squeezing out" the British, made the "somber decision" to go it alone by setting up an independent effort at Chalk River, Canada. This conduct on our part which, in my judgment, was clearly aimed at hampering Britain's development of atomic energy for industrial purposes after the war, put a severe strain on Anglo-American cooperation.

Another topic that needs fuller exploration, as Amrine indicates, is the kind of specific detail about the bomb that was available to our policy makers at the time policy decisions on how to use the bomb were being made. Amrine tells us (page 132) that General Groves, in a memorandum to General George Marshall dated 30 December 1944, vastly underestimated the power of the bomb. He estimated the power of the bomb at only 500 tons of TNT, whereas it was actually 20,000 tons when used on Hiroshima. As Amrine says, our military planners "were only given reason to think it was a spectacular improvement in bombs, not another kind of warfare."

Now I know that General Groves did not know enough physics to make his own estimate; and I do not believe that anyone at Los Alamos would have made such a low estimate. How then could Groves have erred by a factor of 40? Could it have been intentional, so that the top policy planners would not be aware of the horribly serious nature of the decision they were taking?

It would have been quite easy to mislead the White House especially since Admiral Leahy—the staff military adviser, who "had had a long experience with explosives"—long thought the project a gigantic "boondoggle" because "this bomb did not fit anything he knew about explosives" (page 134).

Moreover, it would be natural for Leahy to discount the bomb because the thing, if a reality, horrified him. To use it, he believed, was to adopt "an ethical standard common to the barbarians of the Dark Ages. . . . I was not taught to make war in that fashion . . . these new and terrible instruments of uncivilized warfare represent a modern type of barbarism not worthy of Christian men" (page 170).

I believe that an erroneous view of

the magnitude of their responsibility was planted in the minds of the nation's leaders by the 30 December 1944 memo of General Groves and that this erroneous view was not changed by the later, brief, coded messages. Truman learned of the Alamogordo test on 17 July by this message which was sent to him at the Potsdam Conference, "Babies satisfactorily born." This was certainly designed to minimize the seriousness of a new development of which the President had first become aware in sketchy outline just three busy months earlier.

At Potsdam it was decided that Truman should inform Stalin of the new weapon. We do not know exactly what he said when he did this. Truman has written (page 187), "On July 24 I casually mentioned to Stalin that we had a new weapon of unusual destructive force. The Russian Premier showed no special interest . . ."

But apparently, Truman had not used the key words "nuclear" or "atomic" and, perhaps because of the 30 December 1944 memo, may not have himself at that time fully realized the magnitude of the revolution in warfare that had occurred.

Amrine's account of this affair (page 190) is fascinating: "No one at Potsdam had time to think much about the lack of reaction from Stalin to the news. Perhaps they thought that (like Admiral Leahy) Stalin found it hard to believe in these superweapons." But had he really been told of a *superweapon*? "Perhaps, like James Byrnes, he found it hard to understand scientific matters."

The book tells in detail of the sustained efforts of the scientists on the project to get our government to give some kind of demonstration or warning to the Japanese before actually using the atomic bomb against them. It has often been said that the Potsdam Declaration met this minimal moral demand. But one may very well ask whether it really did so, when this is all that it said that might be so construed (page 191): "We call upon the government of Japan to proclaim now the unconditional surrender of all Japanese armed forces, and to provide proper and adequate assurances of their good faith in such action. The alternative for Japan is prompt and utter destruction."

The last chapter, "Conscience and questions," is a searching analysis of the troublesome questions that still perturb the thoughtful, about whether or not the bomb should have been used.

Because the entire attack on Hiro-

shima involved only three planes, the air raid alarm was not sounded and people did not take shelter. Amrine writes: "That accidental happening cost the lives of tens-of-thousands of women and children who were not military targets and whom we had no intention of killing" (page 229).

Amrine says that his "personal observation is that many Asians and Americans thought differently about Western man's supposed respect for human life. These bombs did not improve our reputation and win us allies in Asia" (page 233).

It is a sad story, one that many would like to forget or, if possible, never to learn. But it only involved two bombs of the type, now called conventional, which we stockpile by the hundreds or thousands and recklessly issue to our ally, West Germany, where "ex"-Nazis get greater political power day-by-day. In the meantime hydrogen bombs, which are a thousand times more powerful than the obsolescent toys of World War II, are in the hands of Americans, British, and Russians, and the means to deliver them half way around the world are being perfected by both sides.

Thus there is probably no exaggeration in the assertion by Congressman Charles O. Porter (D.-Ore.) in his May newsletter to his constituents when he says: "Two very prominent authorities, one on disarmament and the other on science, stated in my presence the other day their belief that we would all be dead in 10 years and that the earth would be an incinerated relic."

There is no doubt whatever that the technical means of achieving such a goal do exist at the present. Amrine's story of a few months in 1945 gives one a foretaste of how this larger catastrophe may come about, and not as a result of a free choice by the peoples of the world.

E. U. CONDON

*Department of Physics,
Washington University,
St. Louis, Missouri*

The Sociological Imagination. C. Wright Mills. Oxford University Press, New York, 1959. 234 pp. \$6.

C. Wright Mills is caught up in the present-day dilemma of scientists: the "scientific" and the "moral" are obviously inextricable on the one hand, but on the other they are apparently at odds. Out of the depth of his feeling and the