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# LETTERS

Sir:

PLEASE SEND *Engineering and Science* for one year. We are both engineering graduates from UCLA but our alumni magazine is all football. Thank you.

Mrs. \_\_\_\_\_

Pasadena, Calif.

Sir:

FROM THE ARTICLE, "Summer in the Alumni Pool" in the October issue of *E & S* it would appear that the operation of the summer program in the Alumni Pool returns a huge profit to the Institute.

We have been highly pleased by the enthusiastic response of the Institute personnel and their families the two years that this summer program has been in operation. However, to set the record straight, and to point out that this program isn't the big money-maker that the *E & S* article appears to make it, I must call to your attention some errors contained therein.

Instead of 1000 family permits at \$30, there were 420 such permits, allowing 1316 persons to use the pool for a four-week or twelve-week period, at a fee from \$6 to \$30 per family. Instead of 22,000 single admissions paid, it should have read that the pool was used by various people approximately 22,000 times.

The program has been a decided success both years, and we are happy if we can come close to breaking even financially each year.

Hal Musselman,

Director of Athletics.

P.S. We are happy.

San Marino, Calif.

Sir:

THERE'S ONLY one thing I can think of to gripe about as far as Caltech is concerned. Why don't the alumni take a more active interest in football and get it on a more competitive basis at Caltech—or have it

cut out forever? Watching Caltech football teams in action now is even too painful for me; we are so much purer than the purest of the PCC that we actually smell bad.

—Stuart L. Seymour '26.

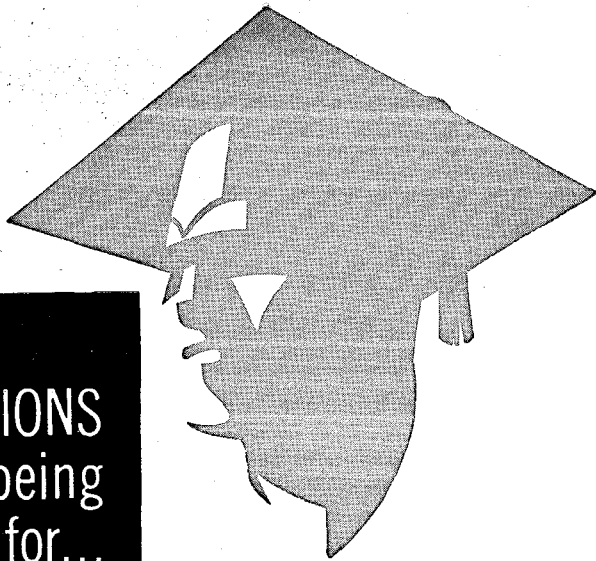
St. Louis, Mo.

Sir:

DR. FEYNMAN'S article, "The Relation of Science and Religion," which ran in the June issue of *E & S*, sets up an urgent problem for which we appear to have no answer. The contemporary scientist, as well as intellectual leaders in many other fields, is unable to accept what may be called the metaphysical foundations of religion. He finds, however, that most of the moral teachings of the Western religions can survive the loss of their metaphysical underpinnings. As a disbeliever, the scientist may still make moral judgments that are basically the same as those of the religious man. He finds he lacks, however, that "strength and courage and inspiration" that helps the believer to do what he knows is right.

Here lies our problem. For the believer, these metaphysical, moral and inspirational aspects of religion are all interrelated. The metaphysical—for example, the existence of a personal God—supports the moral since the commandments are seen as the "word of God." The inspiration needed springs forth from the metaphysical assurance that God is with those who try to do His will. Once the reality of God, man's immortality, or Christ's divinity has become a myth, the ethical and inspirational aspects, which we still wish to retain, no longer have any justification or basis in the way things are.

"I don't know the answer to this central problem," says Dr. Feynman, "—the problem of maintaining the real value of religion as a source of strength and of courage to most men, while, at the same time, not requiring



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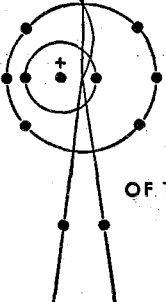
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**Letters . . . CONTINUED**

an absolute faith in the metaphysical aspects."

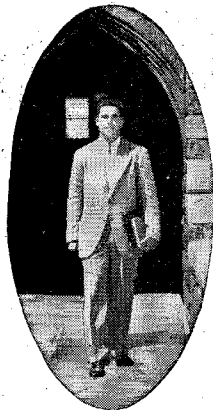
I have no easy solution to offer either. However, since this article was presented as a starting point for discussion, I would like to present a few considerations that occurred to me as I read and reflected upon Dr. Feynman's "fresh observations on an old problem."

My present position as a Jesuit in training for the Catholic priesthood shouldn't invalidate me with regard to this problem of the disbelieving scientist. Frequently, during my own scientific training, both as a layman at Tech and at Notre Dame, and now as a Jesuit at St. Louis University, I have had to face conflicts between my scientific attitudes and my religious commitment. These personal experiences, coupled with a sincere appreciation of the reality of this problem in the lives of many other scientists, should allow me to at least suggest a few further questions and perhaps open up a few avenues of approach not touched upon in Dr. Feynman's talk.

**Attitude of uncertainty**

As the problem has been stated, it does seem impossible of solution; neither religion nor science would seem able to yield an inch without destroying themselves. If we grant that young scientists, as well as those in other fields affected by the scientific approach, do tend to develop this "attitude of uncertainty" that makes it impossible for them to accept religious teachings with that "absolute certainty that religious people have," it seems that the strength and courage that depend on "absolute faith in the metaphysical aspects" of religion is closed to them. . . . If we likewise grant that, in comparison with the picture of the universe that grows out of the sciences, a religious theory "that it is all arranged simply as a stage for God to watch man's struggle for good and evil seems to be inadequate," then I don't see how any inspirational motivation built around the religious

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Letters . . . CONTINUED

picture can be anything but dissatisfying to the scientist.

If the traditional religions have grounded their enthusiasm in a conviction about the way things are, about the metaphysical structure of the universe, it seems that their inspiration cannot be transplanted into other metaphysical soil and still survive. Certainly the scientist doesn't want enthusiasm with *no foundation* in reality, a groundless faith in faith itself. If he found this meaningless sort of encouragement sufficient, he wouldn't be asking our question.

In the face of this, I don't see how the modern church could be "a place to give comfort to a man who doubts God—more, to one who disbelieves in God." If the modern church retains any of its Jewish or Christian traits at all, it will be building its comfort on a religious view of the world, and that can give little consolation to the disbeliever. Of course, the churchmen must offer another and extra-ecclesial comfort; they must be willing to respect the sincerity of the disbeliever and the reality of his problem. Through mutual discussions some way to adjustment might open, although any reconciliation may at first seem impossible.

**The modern predicament**

There seem to be two directions we could take in at least starting towards some resolution of the problem. Both begin with what we have at hand—the modern predicament, as some call it. The fact is that we have come to think "scientifically," which involves a continual freedom to doubt and explore, joined with the acceptance of the world of "scientific things" as the *real* world, the only *objective* view of the universe.

It would be too simple to say that while pretending to doubt all, the modern thinker, in fact, accepts the new scientific picture as a dogma more certain than all those of the fading religions. There does, however, seem to be some touch of paradox here. The other fact is that we

ENGINEERING AND SCIENCE

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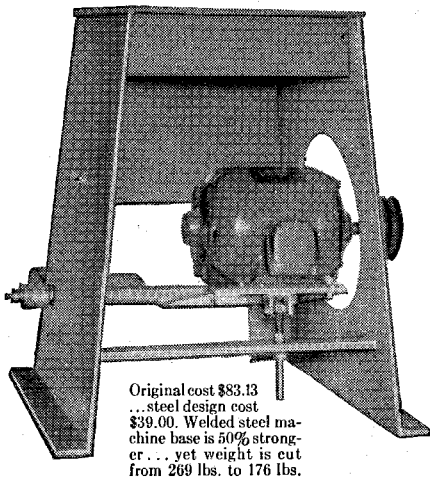
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## Letters . . . CONTINUED

continue to have moral convictions, which, as Dr. Feynman's analysis indicates, are not reducible to scientific statements.

The first approach involves a deeper investigation into the foundations of our moral judgments. Perhaps this further analysis would lead us to a source for our inspiration, as well as for our morality.

### Two separate worlds

It may be that the scientific worldview, in terms of "a vast evolving drama" with "the atoms of which all appears to be constructed following immutable laws" and an "objective view" of man "as matter," seems logically consistent with our experiences of moral conviction. This can only mean that on the surface of it the logical formulations of one experience do not directly clash with those of the other. Going further, however, we see that neither is there any logical entailment here; we are living in two separate worlds. We can say, "All is really the result of the concourse of atoms" and "I judge that this is good for me," but we cannot insert a *therefore* between the two assertions. One cannot be understood in terms of the other; perhaps we may even go so far as to say that one is meaningless.

If the scientist were to probe more deeply into these convictions about the "good," he might be able to render them meaningful in such a way that he would find his needed inspiration. If he can't ground his convictions of conscience in his "scientific things," he may be forced to reconsider the unexamined presuppositions that uphold his whole scientific attitude.

This is the second approach to resolution, involving a critical self-reflection on the very climate of opinion which seems to be essential for the survival of the scientist and his work. A man who never felt the need of inspiration and who was at peace before the "mystery" of matter that somehow experiences moral compulsions, won't be facing our

dilemma; he has, apparently, no need for religion, though we could not be sure of such a man's stability in a moral crisis. The scientist who does want to resolve this problem might take into consideration the difference between the simple statement of the *fact* of having these convictions as a scientist and the assertion that these are *justified* by a critical investigation of their foundations.

For example, it is one thing to claim that we scientists have to be free to doubt everything and another thing to carefully search into the basis of this claim and its possible limitations. If we want to retain our scientific humility and our intellectual honesty, we should try to pinpoint exactly for ourselves where this doubt is, why it comes in, and whether it is as extensive as we think.

### More than one answer

Of course, we might look into the claim that *only* this scientific method, which never has absolute certitude under any aspect, is to be allowed to answer all of man's meaningful questions. Already we might suspect that there are other meaningful answers available to other methods of approach, since we have divided off the moral realm from the scientific. Certainly, even the scientist *lives* with firm assurance, though he may theoretically claim to dwell in a realm of "only highly probable."

Corresponding to this questioning of the basis and limits of his *method*, the scientist may want to turn a critical eye on that world of "scientific things" that he and his contemporaries so easily take for the true picture of what things really are. These "facts or partial facts"—what are they really? It would seem necessary to restrain our enthusiasm and draw a clear line between strictly scientific answers and that "philosophizing," poetic extrapolation and pure science-fiction that fills in the missing details.

It seems to be a very human failing to fill in the picture, even though

CONTINUED ON PAGE 48

ENGINEERING AND SCIENCE

we have at hand only the barest hints. It would not be so destructive if we did not also take our myth as the whole and only explanation of how things really are. The Greeks built for themselves a beautiful heaven of concentric, crystalline spheres, in terms of which everything here below was meaningful. It may have been a good scientific hypothesis for those times, capable of "saving the appearances," but they took it for reality, instead of a partial shadow. Our great simple picture of a universe of *nothing but evolving matter* may be likewise deceiving us. It seems to be quite a logical leap from the strictly scientific question, "If I do this, what will happen?" to a complete picture of the universe.

Our discussions and re-examinations should not be confined to the area of scientific method and content alone. If we want to salvage part of religion, we should have a deeper

understanding of its inner structure and its attempts at self-justification. I fear that most of us come to our scientific studies with a rather primitive understanding of the content and method of discovery that are involved in our home religions. If we never consider a treatment of a religious question at a level of sophistication somewhat comparable to that at which we do our scientific thinking, we are bound to find religious explanations dissatisfying. If we take a kindergarten expression of a religious view and confront it with a highly evolved scientific statement, we are forced to turn away in wonderment at the religious story's naive simplicity.

#### A professional viewpoint

If, however, religion can present itself on a theological level similar to that of a specialized science in its professional attitude (though it does

not use the same type of starting point or the same method of procedure), then it would seem only sensible to examine its claims in terms of this more fully-developed statement of their grounds.

It may be that religion, when it has made careful self-reflections, can justify itself as a complementary approach to reality which in no way conflicts with that of science. As long as scientists do not use their science to answer questions beyond its powers, and religionists likewise do not force their religion to give them answers that it has no ability to provide, they might be able to avoid the apparent clash which comes from "trying to answer the same questions in the same realm."

. . . The major block in the way of any reconciliation of science and religion today seems to be the lack of an adequate metaphysical method. Any development of religion or of

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ENGINEERING AND SCIENCE

science, and any attempt to relate the two must involve certain metaphysical presuppositions, but we rarely have taken the trouble to justify these or even to become aware of their existence. Religion, in the absence of any really philosophical methods, tends to become anti-intellectual and to take flight into the realm of an emotional faith in faith itself. Science suffers too; not having a sound philosophical approach to supplement its partial considerations of reality, it tries to fill in and "philosophize" without the proper tools. Thus, while Dr. Feynman says that he does "not believe that science can disprove the existence of God," and I suggest that science proper can't answer many other questions that perplex us, still it is used by many to try to answer the "metaphysical" questions, and the result must be myths and uncriticized half-pictures.

Some few attempts are being made

today to present the case for a really metaphysical knowledge of the world. This must involve not just statements or grand assertions of the way things are, but also careful and critical presentations of the source of this knowledge and the way in which it is elaborated. The methods of procedure must be open to discussion and criticism, if this is to be a way of knowledge available for common use.

**A philosophical approach**

Among those working for the establishment of a valid metaphysics are the American Metaphysical Society and the Association for Realistic Philosophy. This latter group has published *The Return to Reason*, an anthology of articles on various facets of philosophy, and is producing a series of textbooks in realistic philosophy. The *Review of Metaphysics*, published at Yale, pre-

sents a cross-section of various contemporary attempts at a respectable metaphysics—a philosophy which is neither merely analysis of language nor a collection of the findings of the special sciences elevated to the status of a *Weltanschauung*. American Catholic philosophers are re-discovering the metaphysics of their past and stating it again in the light of modern science and modern philosophy. Even among the Naturalists and the modern Materialists there are beginnings of a strictly philosophical method of approaching reality.

It seems that if a scientist can't find the time to investigate these claims of the metaphysicians of our day, he should at least hesitate to say that they are meaningless. Even the scientist is dabbling in metaphysics if he says that all things *are* material. The difference between his metaphysics and that of the full-time

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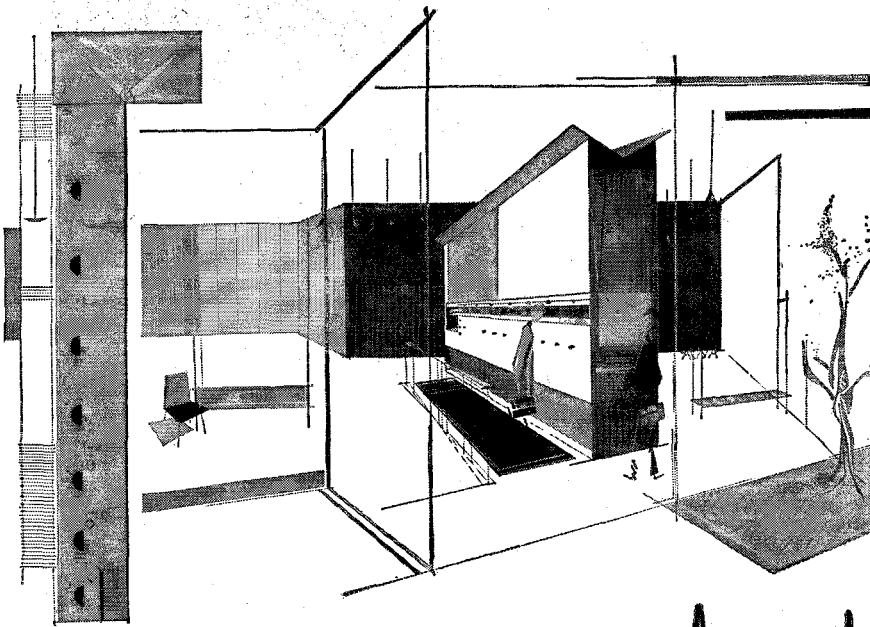
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metaphysician lies in the fact that the scientist merely asserts, or feels convinced, of a position, while the professional metaphysician has at least made an effort to establish the justification for his position.

But a scientist should not despair of understanding these metaphysical methods; it is not impossible for a scientist to penetrate a little into the work and sympathize with the spirit of this foreign field. For example, E. F. Caldin, the British chemist, has been able to write *The Power and Limits of Science*, which shows a keen appreciation of the methods of both science and philosophy.

### Critical reflection

. . . If there is any basis to my suggestions that maybe moral judgments can be made meaningful in terms of the metaphysical structure of man, and that maybe there are limits to the scope of the scientific approach and its uncertainties, then it seems that the scientist who is sincerely looking for a foundation for his morality that will give him the strength and encouragement to follow his conscience, should want to do some critical reflection.

It is perhaps here that contacts between men of science and those of religion, with the aid of mediating philosophers, would prove very fruitful. All efforts to really appreciate another point of view seem to be fore-doomed if there is no living contact or opportunity for prolonged discussion. Perhaps underlying the central problem of the conflict of science and religion is the departmentalism which segregates thinkers in one field from those in another and leaves little room for real appreciation of the work the other man is doing. I feel that the first step to any reconciliation of religion and science depends on the religionists and the scientists getting to know each other as human beings. From this common ground we can begin our discussions.

Donald P. Merrifield, '50, S.J.  
 Los Angeles, Calif.