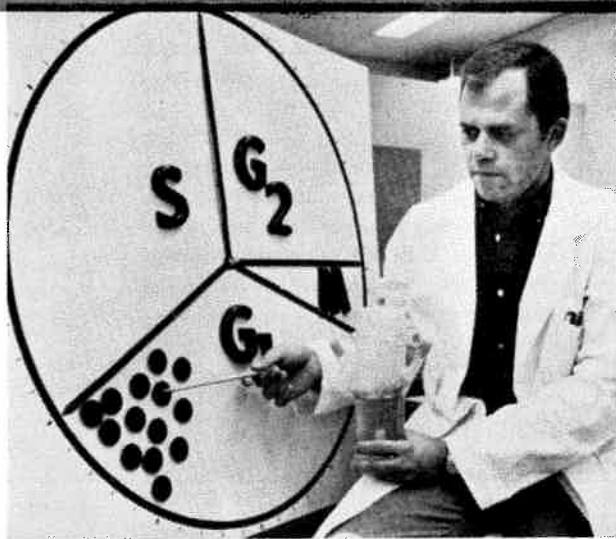


Scientists are People

Out of the Los Alamos laboratories may come great new discoveries with life-and-death importance for us all. But the men of science who work there aren't supermen—nor devils. They don't believe they are bringing in the kingdom of heaven.



Don Petersen shows dial illustrating how cell groups are synchronized in test to go through life cycle together

By RAYMOND TIEMEYER

THE CONGREGATION of scientists to which I minister is made up of people employed in nuclear laboratories at Los Alamos, New Mexico. Robert Oppenheimer and his crew worked on the atomic bomb here. Today we have men in many fields of research—from how to make possible the choice of a baby's sex to a nuclear rocket system that will take astronauts to distant planets.

What is the scientist as a person really like? What effect does his work have on his faith? Does he believe he is bringing in the kingdom of heaven? What questions will the discoveries of the next hundred years raise for the faith of us all? In observing the way of life here at Los Alamos, I've begun to change the answers I would have given earlier to questions like these.

What is the scientist really like? We need to know because many of our youth are entering this field as their life work. A large part of our population will be in it twenty years from now.

Well, he's a person who is likely to be sensitive about being called a scientist, even though he's proud of his vocation. The word is overused by the layman. These men are individualistic and resent being classified so broadly. They would rather be known as biochemists or astrophysicists for example, because there is so much difference between these disciplines. Also, the word brings to mind false images. Many people think it means a sophisticated witch or a bearded, eccentric genius who spends his off-hours in his basement on some Frankenstein project.

He is really much like your neighbor next door.

He does have a few differences though. For one, he is trained to be as objective as possible, that is, to avoid feelings. If he becomes emotional about his work he is distrusted by his fellows, because he could cheat on his project without realizing it.

This discipline is necessary, but it has some problems when it carries over into

home and community life. It's harder for him to laugh with those that laugh and weep with those that weep. Warm friendships aren't easy. It's like the physicist-husband who during a divorce hearing said, "But let's be objective about this!"—as if one could.

This characteristic might be common among any people of considerable education. But the impersonal seems somewhat stronger among mathematicians, for example, than among artists. It could be too that restrained feelings are the reason a person enters this work rather than the result. Either way, I believe the parent, the high school teacher, the college professor and the fellow Christian are serving the coming generations well when they keep alive those emotions that support personal warmth.

IS THE man in research excited about the future? Does he think it possible to achieve the kingdom of heaven by human skill? Well, he's not as optimistic as articles in *Reader's Digest* would have us believe.

After visiting General Motors and other exhibits at the New York World's Fair I was wondering whether science was also predicting such a bright glow for tomorrow. Dr. William Hannum, physicist in the experimentation here on self-perpetuating power, was enlightening.

He said, "All the wonderful new devices are related to only a few major breakthroughs such as electricity, radio, and nuclear fission. Almost all laboratory work

is the application of fewer than ten major developments. Our technological society reflects those basic ideas which have reached a mature development."

Of course one wonders when the next break-through is expected. "The laser is one of the current concepts which can be expected to have a major effect on our lives when it becomes mature in its applications," he said. "But no one can predict how many other concepts may be achieved in the next century. Perhaps there will be none. It is generally accepted, though, that biology is on the verge of important discovery."

Understanding basic cell structure will open as great a field as did the understanding of atomic structure. At this point one is tempted to sensationalize about how common the engineering of human bodies could become, but this would not be the same as engineering cars, and when science views the future it prefers to understate the possibilities.

How is the faith of the scientist affected? "If the nuclear rocket gets us to Mars, do you think we'll find life there?" I asked Donald Sandstrom, who is helping to build the support structure for the reactor core. "I don't know—I really haven't thought about it," he replied. "The problems which occupy most of my thoughts concern the development of technology for an engine that could perform such a mission."

Two days later he came back to say he had given the subject some thought but had concluded that finding moss or algae on Mars, or any life with which we couldn't easily identify, wouldn't excite him. "I can see how it would excite a biologist," he said, "but not me."

"What discovery in all science would excite you most?" I asked.

"Understanding the nature of carbon," he replied. "It has so many phases—from lamp black to diamonds." This reply indicated how much he was concentrating on the material (graphite) he works with most.

That's when I began to understand why a man like this finds his faith relatively unbothered by his work. He gives his inquiring mind more to highly specialized details than to the questions a successful rocket



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might raise. His religious beliefs are probably less affected by his experimentation than the faith of the public is affected by science in general. It is philosophy and religion that deal with the overall implications. These bigger questions are just as much on the mind of the housewife or grocer as on his.

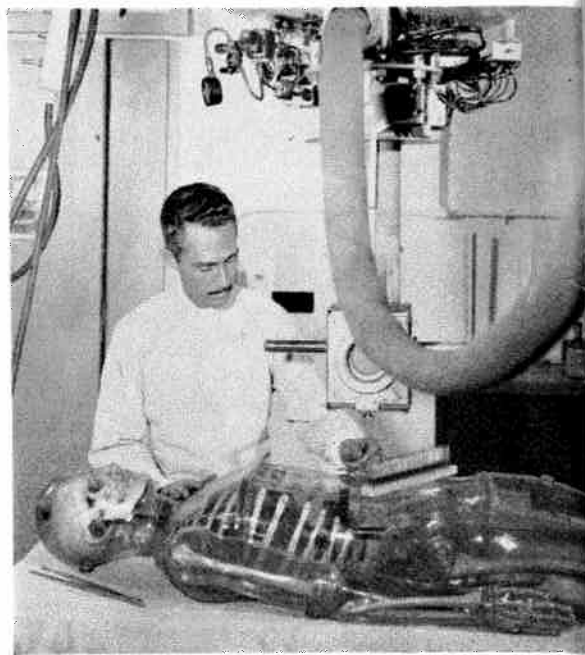
This is probably why the man in the laboratory tends to be more conservative, theologically, than one would suppose. He must accept many formulas which he doesn't have time to test before he can begin his work on that rocket alloy, for example. So he finds it reasonable that the church holds a set of doctrines which he must assume are helpful for living one's faith.

Chemical dogma is probably more detailed than church dogma and less changeable, because it is made up of measurable facts. It's easy for the chemist to become so accustomed to these relatively fixed rules that he expects the church to be just as precise and reliable. For the most part these specialists avoid the uncertainties of philosophy. They enjoy a perfect machine more than abstract art.

They *do* want the church to say, "I believe," rather than, "I know," but they want the members to be quite confident about their beliefs. One of the Lutherans here *did* say too that the point of the Reformation was that only God is absolute, not man, and that therefore man's understandings are fallible and must constantly be tested—even his most basic understandings of God's revelation. This person's insight was exceptional, though. Most church members in the community would probably fear continuous testing for the doubts it might arouse.

ONE HAS to be very careful when trying to make religion relate to current research because it's so easy to be one day behind time. It's worse to be a day behind than a thousand years.

This is what I mean. Religion has too much been the baptism of yesterday's science. As a couple of examples let's look at 1) rules of diet and 2) demon possession. The people of the Old Testament were forbidden to eat pork because in those days it caused illness. Today adequate refrigeration and proper cooking procedures have eliminated



Researcher at Los Alamos uses plastic "man" to study biological radiation effects

the danger, but the ban on pork continues as a religious duty. Yesterday's dietary science becomes today's religion.

And demon possession. In the time of Christ, demon possession was a natural explanation of the behavior of the mentally ill. I'd say it was the science of that day because it was the explanation that grew out of the best observations possible. A tour of any mental hospital, before tranquilizers, demonstrated that. But today we might be tempted to insist that demon possession is the only true way of explaining evil. Yesterday's science becomes today's religion.

Faith should find the meaning that today's discoveries have in Christ. But that's not easy. Suppose, for example, that in trying to relate to our time we explain creation by the observation of astronomers that all stars seem to be moving outward from a central origin. If we do we must beware, for by the time we use the illustration it may have become yesterday's theory and outdated by a new observation.

The people here are especially repelled by an attempt like that to be current because it makes too much of observations which are tentative. As one person said, "When a

minister uses an illustration from science, it never comes out right."

When one speaks to an expert in the terms of the expert, he is always in danger of exposing his ignorance. I realize that being relevant means more than giving current illustrations, but this is a starting point. It is more popular to speak religion in the language of the sciences of three thousand years ago, but that doesn't keep faith alive in the work-a-day world of today's laboratory.

WHAT PROBLEMS might arise for faith from the discoveries of the next two centuries? I tried this question on Dr. Frederick Edeskuty, cryogenics (cold temperatures) specialist, by asking, "What space discoveries will have the most profound effect on our lives?"

"Surprises!" was his reply. "That's what is being said anyway by advisers to our government like Dr. Edward Teller (whom some call the father of the H-bomb). Like Columbus discovering the American continent when he set out to do something else. It's very difficult to discuss surprises because you can't talk about something you know nothing about."

"How can people prepare their beliefs for

the unpredictable?" I asked then. "Tell us to stay loose," he replied. "We might not like this advice because it's easier to learn a nice little catalog of facts and then try to fit into it everything that comes along, but that's not a growing, living faith."

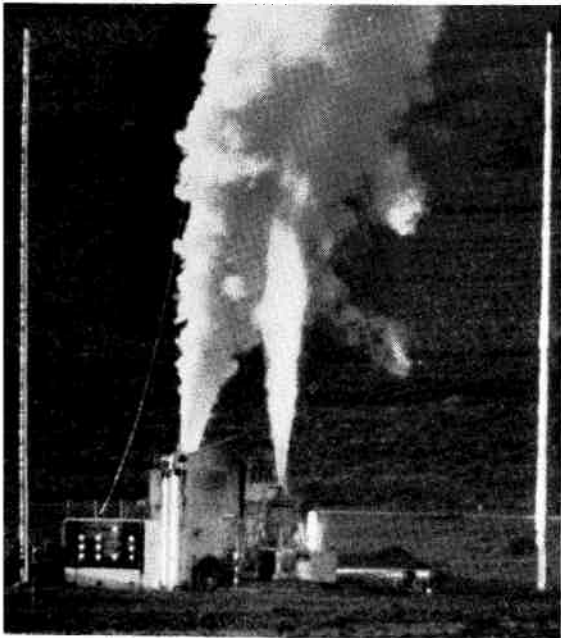
The church must always be ready to re-think its catalog of assumptions. For example, we've always thought that "death and taxes" are certain, but medical success is beginning to test the necessity of death. I can see laboratories turning back the aging process and mastering common ailments to the point of making it possible for most to live as long as they want. This is sensationalism again and probably overstatement, but there is enough talk about the possibility that we should begin facing the implications.

ONE EFFECT, of course, is on our belief about eternal life. Here is a question we might prepare to meet. My only answer to it at the moment is that I foresee no human discovery that will overcome sin. If in two hundred years the medics are able to keep us alive and youthful, there will probably still be countries finding it necessary to discover more effective ways of putting people to death. One can be fairly sure of that when he sees the energies which are spent here in Los Alamos on nuclear weapons.

Biologists, chemists, physicists—these men are mostly realists, not idealists. They see their method neither as halo nor pitch-fork. They are glad we live in the time of a knowledge explosion, but they remind us that we haven't had any morality explosion.

We haven't less crime, we just have better educated criminals. Our recent wars are technologically advanced, but morally primitive. Nuclear energy, as a clean power supply, can save life by reducing air pollution, or, as a bomb, end life by polluting the air. The information gained by science is neither evil nor good; it is subject to whatever use human will makes of it.

The church should neither reverence these people as gods who will bring the perfect day nor condemn them as devils who put an end to the truth. It should see them as humans, saints and sinners who in my parish are themselves the church.



Stationary test of nuclear rocket engine. Objective is super-power from small object.