



BULLETIN

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I don't wish to project my own feelings on others, but I sometimes feel that this is far from the best possible world God could have made. I was thinking that as I was editing the Proceedings from the ITEST Workshop of *Some Christian and Jewish Perspectives on the Creation*. Then I began to play a mind-game with myself. I'd like to pass this game on to you. It can be fun.

Assume that God calls you on the phone one of these days and tells you how much he admires your wisdom. As soon as that happens, of course, you'll know you now have a problem. But God then continues: "I am going to give you a special power. You will be given full power to create a new universe." (Remember, I told you it is a game!) "You shall have the power to choose a group of 20 people and then give them the power to create that universe *ab ovo*." God then discretely departs to let you get on with choosing this group. Whom would you choose?

Would you choose a group of scientists, say, a handful of physicists and chemists, a couple of biologists, of course, and a smattering of psychologists, sociologists and anthropologists? I thought about this, but then I asked myself whether there oughtn't be at least a couple of philosophers and theologians to give some kind of general overview to the work of creation. I thought that would be a good idea, but a little more thought suggested maybe an artist or two would be needed to paint the sunsets and the deserts. If this were to be a universe in which freedom was a virtue (and probably a burden as well) we'd probably need laws, unless we did a better job of picking our first human couple than God did. But if we needed laws we'd need at least two lawyers and one judge. Who knows, maybe the group could use a policeman, too. This still would not include a doctor to tell us what diseases to allow and which to ban from this new universe.

Well, by now you get the idea. What kind of world would you construct? What kind would you like to see a group construct? I ended up more or less quoting Bert Akers' quote of Kurt Vonnegut (it will be in the March, 1991 Proceedings): "Nice going, God!"

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ANNOUNCEMENTS

1. We are including Father Bert Akers' essay for the ITEST Workshop on *Some Christian and Jewish Perspectives on the Creation* in this issue of the Bulletin. Bert is a communications expert at the University of Scranton. We are hoping that including his paper will whet the appetite of those who have not renewed their membership for 1991. The Proceedings, as usual will be sent automatically to all dues-paid members. This volume is at the printer and we hope to be able to get it into the mail by the middle of September.
 2. As we announced at the March Workshop, there will be no meeting in the spring of 1992. Increased costs have made it difficult to have two meetings each year. Spring was chosen as the meeting to be dropped in 1992 because calendar conflicts seem to occur more in March than in October. We hope to be able to send each dues-paid member a copy of a book that is in process. It is being written by Fr. Robert Brungs and Dr. Eva-Maria Amrhein, a solid-state physicist from Germany. They are attempting to put together a solid theological/spiritual treatment of the role of scientists in the mission of the church. Pray that it is finished by March. Collaborating at a distance of several thousand miles can be a slow process.
 3. The Board of Directors has decided that the October, 1992 Workshop will address the question: "Is Technology out of Control?" We hope to have four to six essayists treat this topic. Details will be reported as this meeting develops. Our European membership in particular -- but not exclusively -- seems very interested in this set of issues.
 4. At the request of a couple of our members, ITEST was a co-sponsor of a Symposium on the Shroud of Turin. As our contribution, the ITEST staff is doing the formatting of the papers for publication. Anyone interested in a copy can contact Br. Joseph Marino, OSB, St. Louis Abbey, 500 South Mason Road, St. Louis, Missouri 63141-8500. We hope to have our part of the work done early in the fall. It's difficult to forecast when the volume will be available, but the best present guess is November or December.
 5. We began in the Winter, 1991 issue of the Bulletin to update the Membership Directory in each Bulletin issue. As we noted then, no Membership Directory will be published in 1991. We are printing these updates in such a way that they can be removed from the Bulletin without disturbing the text. We shall publish the next Membership Directory in the Fall of 1992.
 6. As has been stated very often in these pages, the strength of ITEST and the foundation of its ability to help the churches lies in its membership. Any real increase in membership depends on each of you. We have observed over the years that membership gained through various kinds of advertizing is unstable compared to that gained by the personal recruiting of the membership. We would like to know the names and addresses of your friends and colleagues whom you think might be interested in membership. Better, you might mention ITEST to them. We can supply you with brochures. May we be presumptuous enough to remind you of your baptismal obligation to be an apostle? Insofar as ITEST is a modest means of spreading the Good News, responding to this request may be a small step in fulfilling that obligation.
 7. Finally, a reminder that October, 1993 is the 25th anniversary of ITEST's legal incorporation as a not-for-profit corporation. We are thinking about "Beauty" in science, technology, faith and in the way we live our lives as a suitable theme. We shall be developing details of this celebration and we'll keep you informed. We'd like to make this a celebration of the whole membership, if possible.
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- The human role as "master over God's handiwork" evolves from a presumption of privileged stewardship to one of unchallenged seignory. I need not detail the consequences of this fundamental transformation of consciousness. [From "A Jewish Perspective on the Creation" by Rabbi James Diamond, presented at the March, 1991 ITEST Workshop.]
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SUMMER, 1991

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WHO WE ARE



Sister Mary Ellen Murphy, RSM, Ph.D., an organic geochemist, was one of the co-investigators of the Apollo 11 lunar rocks and a NASA consultant on the Viking Project to Mars. Presently she serves as Dean of Saint Joseph's College, Windham, Maine. She formerly was Professor of Chemistry at St. Joseph College, West Hartford, Connecticut, where she taught geochemistry, and analytical and general chemistry. She has co-edited the research text, *Organic Geochemistry* with Geoffrey Eglinton.

She received her Bachelor of Science degree from St. Joseph College, her Master of Arts from Wesleyan University, and her Ph.D. from Fordham University. She did her NASA sponsored doctoral research at the University of California-San Diego under B. Nagy and H. Urey; a NASA sponsored post-doctoral at the University of Glasgow, Scotland with G. Eglinton; and a sabbatical at the University of Strasbourg, France with P. Abrecht

and G. Ourrison and at the U.S. Geological Survey, Oil and Gas Branch, Denver, Colorado with G. Claypool.

Her research interests include lunar rocks, meteorites, oil shales and petroleum source rocks. She is a member of many scientific societies and has served as an officer in the Organic Geochemistry Division of the Geochemical Society. She has received numerous honors including election to the Connecticut Academy of Science and an honorary Doctor of Science from the University of Hartford. She enjoys sharing the scientific results of the space exploration with varied audiences, students, scientists, engineers and the general public.

Sister Mary Ellen became an ITEST member after attending the October, 1989 conference on "Sci/Tech Education in Church-Related Colleges and Universities."

During a session of that conference attended by 50 college and university professors, the participants were grappling with "how" to teach science to non-science majors in an interesting and effective way. Drawing on her extensive background in science and experience in teaching undergraduates, Sister Mary Ellen suggested an approach by stating:

"We have to go back to the first principle of science. We should teach science for wherever we are. In other words, in a rural area we teach it for a rural area. In San Diego, we teach it from the beach. In Maine, we teach it in the snow. We have to have that kind of a perspective. Some higher education faculty aim for something beyond the students. They, the undergraduates particularly, need something beyond them and challenging, but not so far beyond that it turns them off."

p. 255 *Proceedings of Conference on Sci/Tech Ed. in Church-Related Colleges and Universities.*

THE CARBON DIOXIDE PROBLEM AND YOU

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There can be conflicting projections about the effects of increasing the carbon dioxide content of the atmosphere, but there is a certainty that each of us contributes to the problem. Here is a summary of facts which can be easily verified by any person having access to the scientific literature.

1. The atmosphere currently contains about 375 parts per million CO_2 , which is less than 0.04%. The CO_2 content of a person's breath, however, is close to 5% so we are constantly contributing to the problem. Each person exhales approximately 600 liters of CO_2 per day.

2. According to the Congressional Research Service, the average car uses 507 gallons of gasoline per year, and each gallon produces about 19 pounds of CO_2 during the combustion process. Therefore, an average car produces close to 5 tons of carbon dioxide in a year's time.

3. Nature's way of absorbing CO_2 and producing oxygen is by the process of photosynthesis. Based on literature data for "temperate grasslands," a person's lawn would have to cover more than 1.5 acres to absorb the combined production of CO_2

by his breath and his car. Neglected in all of these considerations are the CO_2 production by airplanes, lawn mowers, trucks, ships, cows, etc., so it is no wonder that the CO_2 content of the air is increasing steadily.

4. An interesting sidelight to this problem is the enormous amount of herbicides used for agricultural purposes each year.

Perhaps the control of weeds leads to a net gain in photosynthesis (maybe someone has made an estimate of this), but certain weeds have considerably higher growth rates than other plants, so it is conceivable that their control runs counter to the problem of CO_2 in the atmosphere. A shocking statistic is that the leading herbicide in terms of sales is atrazine; each year almost 100,000,000 pounds of this compound are sold, close to a half pound per person in the United States.

In view of the above it is not surprising that the CO_2 content of the atmosphere has been increasing steadily. As supposedly informed people, we probably should be giving serious thought to the consequences.

LED DOWN THE PATH OF DISCOVERY

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I've never felt that there was anything incompatible between science and the church. But some scientists have forgotten what they've seen and the great part God plays in our sciences. I believe strongly in prayer at the bench! Let me relate an incident that happened to me a bit over ten years ago.

I was personally caught up in the competitive nature of the job in the development of biologicals. I had just been "cheated" out of a patent. I

was new with the company. Being older, I was striving for recognition. Although I worked in the Developmental group, the Research group took the patent credit for my work. I was angry, upset, quite beside myself. Where is the justice in this (I may have still thought there was justice in the world at that time!)? Management "understood" my feelings, but that did not help.

Then I did something I should have done years

earlier. I prayed to Mary to help resolve my predicament. I promised to live a better life if only she would use me to develop an exceptional preparation of human gamma globulin. I was whisked off my feet into activities in our pilot plant. Ideas began to flow full stream and problems melted away. Things fell into place. Everything began to make sense and I was driven with a purpose. A co-worker, who held a Ph D., on observing my activities commented with remarks such as, "You're stupid!" Such comments certainly deflated my ego, but I never faltered with prayer as my support. My own strength lies in an excellent education by dedicated Irish Capuchins. Although I do not hold a degree, I have years of experience in the production of biologicals.

After my new preparation was patented, the company showed little interest in its use. They touted their previously developed product, even to the point of obstructing the publication of papers evaluating that product as ineffective. Finally, management became interested in the product of

my invention. The rest is history. In 1990, the company achieved a profit of \$100 million, and that will probably increase by 20% this year. The cost of the product itself is quite small.

The best news is that in January of 1991, the product of my invention was used in a study by the CBER (FDA) for the treatment of children with AIDS. The study showed such dramatic results that the code was broken and controls were brought into the regimen before the work was completed. There are currently indicated uses of the preparation for ITP and Agammaglobulinemia. It is interesting to note that it may do very well in certain disease states with children and not as well in the same disease states with adults. The product is used to protect those who undergo bone marrow transplants after their immune system is destroyed.

The product has done very well for the company. In fact, the corporation established a Chair for the biological sciences at a university named in honor of the one who led me down the path of discovery.

A WORD FROM OUR CREATOR: A COMMUNICATOR'S LOOK AT NATURE AND NATURE'S GOD

Father Bert Akers, S.J.
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The secular world is strangely touchy about the topic of Creation. The greater the achievements of Science, the more Nature reveals a breathtaking "given-ness", threatening the complacency of the past four centuries. Wonder is not yet worship, and religious answers are officially disbarred. But the perennial questions cannot be. Do such astonishing "givens" as we daily discover make it more or less credible that there is also a Giver?

Idol or Icon? True Man or manikin? *Theos* or *Theios*? One iota of a difference.* Could it possibly matter? It did. It does. To the fevered mobs reeling through the streets of Byzantium, Damascus, Jerusalem, rumbling by torchlight on the back lots

of Alexandria and awaiting late reports from the current doctrinal war, nothing could have mattered more. We think it altogether strange, barely credible, untroubled as we usually are about ultimates and absolutes and theological niceties. Except of course when it comes to this business about Creation. Unlike practically any other philosophical or theological topic in our society, Creation has

* In the Arian controversy, finally settled dogmatically at the Council of Nicaea in 325 AD, the difference between orthodoxy and heterodoxy literally was the difference of an iota: is Christ Jesus theos (God) vs theios (God-like) or homooousios (of the same substance) vs homoiousios (of like substance) as God? The Fathers at Nicaea proclaimed Christ as theos, homooousios.

always had a way of making the News. There was the celebrated Monkey Trial. But only recently a highly respected writer was fired from the *Scientific American* when they found out that he accepted Creation: the assumption was that this would make *scientific objectivity* impossible. Fundamentalists and the textbook publishers are always at it. Natural History museums show us in amazing detail the *Artist's Conception* of any and every Missing Link. There is no hint of a Missing Creator.

MUCH ADO ABOUT SOMETHING

Maybe the fact that as Teachings of Faith go, Creation does seem to have a certain directness about it. Almost inevitably as presented in the popular Media, it does become confused in a jumble of religious, philosophical and scientific misunderstandings. But there is a certain Either/Or quality about it is refreshing. Exclusivity, as everyone knows, is out. Both/And is in. Bridging the polarities. It made President Truman long for a one-armed economic advisor who could not say "On the one hand, but on the other." Inclusivity is in. But every now and then, out of the penumbral fog, one of the great classic formulas reassuringly will gleam with a with a hard and gemlike radiance.

Hydrogen was recently defined on a Public Television program about the Living Universe "as a colorless, tasteless, odorless gas which, given enough time, becomes people." The definition is certainly tasteless and colorless enough, though hardly odorless.

But even by those standards the Master of the Universe put His own special spin, as they say, on Reality: "It is if I say it is." We're one very lucky bunch of atoms just to be talking about it. Whatever *is* belongs to a very exclusive club.

Even the least theological of journalists can stretch to see that besides *nihil* and *aliquid*, there is no third option (*non datur tertium*). No stuff-out-of-which either. Strictly from scratch. Not a little something left over in the great Fridge. Nothing. There was Nothing. *Then* there was something. *Creatio ex nihilo*. And just to make sure, the Greeks and later the Scholastics packed down the

idea, like a shaped charge, that there was a stage (not yet *Time*) when nothing at all existed: "There was" they said, "when there wasn't!"

That kind of directness attracts attention even today. Because there are few voices with that kind of sureness, authority, conviction, courage. And isn't Religion, most of all, supposed to be caring and sharing and Inclusive? Personal, subjective, sweet and soft, with the doctrinal firmness of a Hallmark card? And the last thing in the world to be unpleasant about! Just the opposite is of course the case. There are a thousand angles at which the tower will fall; only one at which it will stand. And the omission of that famous *iota* would have toppled all steeples of Christendom. It might just be that the stark simplicity of this doctrine may touch some long-dormant sense of what Orthodoxy really does mean. The stakes are very high.

A WORK-IN-PROGRESS

Every religious Truth has enormous implications for our world. But none is associated in the popular mind, as Creation invariably is, with all the dramatic unfoldings of the Space Age: with Black Holes, Anti-matter, Evolution, Intelligent Life, and a Mother of All Molecules (DNA) for the human family. Yesterday's Sci-Fi is today's Eyewitness News. Moonwalks. Space walks. Star Wars. Spaceship Earth. Spiritually we are all Trekkies.

Within a generation we've learned to think in vastly different scales of Time and Space. Numbers once reserved for McDonald's beef ("Billions Sold") and Congressional pork ("A billion here, a billion there, next thing you're talking real money.") are used handily to talk real galaxies and real years. Fifteen billion of them since the Big Bang. And all recorded history, Carl Sagan reminds us, represents the last seconds of the last day of the last month of a *calendar year* since the Big Bang happened (*The Dragons of Eden*, p. 11 ff).

He also reminds us in passing that the two scales we use, one for the observable Universe (a 1 with 24 zeros); and Quantum Mechanics for things about a million of a millionth of an inch small are "inconsistent with each other: they cannot both be correct." (Sagan on Hawking's *Time*, p. 9). As once was true of miracles and mysteries in the ages of

religious Faith, a thousand difficulties do not make a doubt. Until recently we have been largely untroubled and unquestioning within this scientific and secular *faith*. That may be what is changing.

It is impossible to imagine that all of this is not having its effect on our psyches. But how much of this translates into a sense of philosophical wonder or religious awe seems very hard to say. Limitation, frailty, vulnerability, yes. Aloneness, thrownness, lostness, certainly to some new degree. The other questions, the classic ones: how did it get here? what are we doing here? what's it all *for*? Is there God? By tacit agreement such questions are hardly ever raised in public.

There are concerns and you take your choice: the earth is warming and the sun is cooling. Not to worry, things may work out: since the earth (slowing) is getting near the sun at the rate of about a centimeter per century. We are almost certainly more aware of the splendors and wonders of our world than any generation before us. There is surely less arrogance and scoffing, probably more sense of mystery and kinship with all *Creation*: a work-in-progress, but not clearly a *work of His fingers*.

PLACARDS IN THE PARK

Actually it may well be those picketers in the park can best help us understand how we got this way. Wrong they well may be on the issue. But they are dead right as usual in sensing the critical importance of the issue, the children of this world being street-wiser about this sort of thing. Whatever form it may take, civil liberties, academic freedom, whatever, the real issue is the same Old Enemy. Incredible to these sons and daughters of the Enlightenment that the bony old hand keeps popping up through the leaves. O well, they say. Let's do it right this time. *Ecrasez l'infame!*

It's a strange lot, the protesters and demonstrators and lobbyists. A roundup of the usual suspects. The crowd you can always count on for political action when there's trouble in the Secular City. They understand as did their predecessors in the parks of Chalcedon and Nicaea, that Truths have consequences. Still, why Creation? With so many unpalatable religious affirmations to choose from,

in a society so largely unaffected by religious teachings anyway, why make a such a public to-do about this one?

Almost certainly because they sense that something altogether crucial is at stake here. It has to do with God and Revelation and the Church, with Education and pluralism, and the Great Wall of Separation. Only far more fundamental. It has to do with Meaning and the Material world. It has to do with Intelligence and Intelligibility. It has to do with Nature. And, one might cautiously assume, with Nature's God.

THE BOOK OF NATURE

Kierkegaard observed that only way to understand our lives is to trace them backwards; but that unfortunately we have to live them forwards. The West lived so long off the accumulated riches of the classic and Judeo-Christian inheritance that is has taken centuries to achieve a kind of spiritual bankruptcy. Conversely, for us, after four centuries of conditioning, it is hard for us to imagine how our modern way of looking at *Nature* could ever have been otherwise. Not very different from our everyday lives; because most people live rather sanely in their world. But very different from our *theory*: from the sort of *explanations* offered in the textbooks.

NATURE'S VOICE

How do we know the fire is hot? To say it *tells* us so is neither projection, nor poetry, nor anthropomorphism. Reality *speaks* by being and doing. "Each mortal thing does one thing and the same. . . Crying what I do in me: for that I came." (Gerard Manley Hopkins, Poem 57¹). No sane philosophy ever doubted it. It is in fact the ultimate criterion for sanity. In philosophy and in people. Reality therapy means looking at, listening to, Reality.

None of the great philosophies ever doubted that things *expressed themselves* by the very fact of being themselves. Their question was rather the mystery of it all. How it could it be? whence it came? where it might be found in its purest expression, this inner intelligibility of things? The universal Exemplarism of Plato, and above all the Greek

understanding of the *Logos* made possible a synthesis in which the Alexandrine Jews, the Fathers of the Church, and Christians for the next thousand years took it for granted that all creatures, great and small, glorified their Creator, each with the voice of its very nature.

For Bonaventure, "The created world is a book wherein we may read the creative Trinity. It is a resplendent mirror showing forth the wisdom of God" (Lacroix, p 26 f). For him and for all Christians, the *Logos* made Flesh, itself the Symbol, the Sacramental Center of the Cosmos, brought about the unity of all things, visible and invisible, in Christendom.

The Finger of God (*digitus Dei*) was not only there (quickenning Adam in Michelangelo's great mural), it left traces, patterns, impressions, calling cards (*vestigia Dei*). If we can tell in an instant that it was John who parked the car and Aunt Flo who made the soup, is it conceivable that things so splendid, so unlikely, so funny, would bear no mark of their Maker.

What is *Nature*? Nature according to Thomas is that:

ratio cuiusdam artis, scilicet divinae, indita rebus, qua ipsae res moventur ad finem determinatum.

The standard translations are not good:

The reason of a certain art, namely, the divine, written into things, whereby they are moved to a determinate end. (*In II Physics* lec. 14. Cited by McCoy, p. 163.)

Despite the translation, what shows through is a theology, a spirituality, a prayer and a hymn of praise. It is also the kind of real philosophy anybody's uncle could say Yup to with a lot of understanding. But it is nearly impossible to translate into English for the very reason that we are talking about here: the severing of our metaphysical roots. Roughly, Nature is the very design, meaning, essence, structure that the maker's art, skill, know-how, builds right into things (a wrench, a light bulb); by reason of which (design, structure, etc.) things do what they are designed to do, achieve the

purpose they were intended for (tighten bolts, light the room). In the case of things not made by us (the sheep, the rose) it is the Divine Artist who puts that *Nature* into things, that power by which they are themselves, *do their own thing*, and achieve their purpose and that of the Artist who made them.

Not without reason the changed relation to Nature in modern Science and Philosophy almost perfectly parallels the very concept of the "artist," human and divine.

THE MODERN SPIRIT

The change was barely perceptible, at first. Most of the early modern scientists were Believers. Often their scientific quest was scarcely distinguishable from their reverential awe of God's handiwork. Each puzzle solved only led them to greater admiration for the *Mind of the Maker*. Above all they were astounded at the correspondence between the way things worked and the mathematics that first explained what happened and then even predicted what would happen, what in fact would have to happen.

The *Laws of Nature* seemed to take care of everything. But for that very reason the sense of mystery gradually diminished. And of course the more admirable the machine, the less need for maintenance, let alone for the Inventor to be hanging around. Not that God was honored less, but that Nature was honored more. So the Creator became at best the God of the Deists, the God of the Philosophers.

As is so often the case, it is the poets, like canaries in the mineshafts, who first express alarm. None were more prescient or more uneasy than John Donne:

And new Philosophy calls all in doubt,
The Element of fire is quite put out;
The sun is lost, and th'earth, and no-man's wit
Can well direct him where to looke for it...
'Tis all in pieces, all cohaerence gone;
All just supply, and all Relation....
For the world's beauty is decayed, or gone,
Beauty, that's color, and proportion.

The metaphysical experience of contingency, stupefying wonder that the Great Clock of the Universe was running so well, or existed at all, was fading fast. Asked by Napoleon where God would fit into such a perfectly functioning Universe, LaPlace gave his reply: "I have no need of that hypothesis." LaPlace would not be the last among the great mathematical and scientific minds who seem to find it almost impossible to distinguish computation from causality. We hear it continually in explanations about Relativity, Quantum Mechanics, Randomness, Chaos. We are taught that the earth's axis is *off*, or its speed or orbit not exact. It is a very understandable mistake, an occupational hazard. But it's a Faustian slip if there ever was one.

Both Aristotle and Thomas had taught that the mode of the natural sciences must be *dialectical*, inquiring, with reserve and tentativeness, because we are not after all the *artists* who made these things. Far different is the spirit of the *New Learning* which sees that Knowledge is Power. Now instead of just listening to Nature, letting her *speak*, we should put her on the rack and make her tell us what we want to hear.

So obvious today. But it was clearly both shocking and exhilarating to the early modern mind. Even for an Immanuel Kant. We can still hear the fascination in this passage which provides exceptional insights both into the methodology of the sciences and the psychology of the modern soul:

It is hypotheses, then, that our reason produces after its own design, and compels nature to reply to [the *rack* theme, by then a commonplace].

When experiment confirms our hypotheses, we are flattered to find ourselves *artists*, as it were, who have made the *designs* which we recognize in nature. But the reason for this is that we increasingly share *in the divine art by which the universe is made*. [Italics mine]. (Preface to the 2nd Edition of *The Critique of Pure Reason*. Cited by McCoy, p. 162).

The view does indeed begin to look familiar, though probably not from this angle. In classic and

Christian philosophy *knowing* (theoretical, speculative science) was the highest occupation; then *doing* (the exercise of virtue); then *making*. But the modern spirit finds that being an *artist* is far more fulfilling (*flattering*) than contemplating the works of the Creator.

What is all important is that this spirit is by no means confined to the natural sciences. In the Arts, creative genius becomes a law unto itself. With Machiavelli, Politics, once the highest exercise of Virtue becomes pragmatic professional technique (both lion and fox, knowing how to be bad as well as good). Not even the traditional Common Good is any longer the norm, but an arbitrary goal established by the Artist/Ruler. Form and Finality, *Nature in her givenness*, all is melting away. This time Tennyson:

O Earth, what changes hast thou seen.
There where the long street roars, hath been
The silence of the central sea.
The hills are shadows. For they flow
From form to form, and nothing stands.
They melt like mist, the solid lands;
Like clouds they form themselves
And go....

So that in its final stage, it is not a question of any sort of further *desacralization* of Nature. But rather its denial. In what would seem to be in obvious contradiction to the very object and dynamism of Science, a denial of fixity, of form, of causality, of certitude, objectivity, meaning itself.

The problem is not really that mountains, thought to be the very symbol of permanence are peaking and trouging like waves; that there is more *space* than *solid* in Professor Eddington's famous table (nor thereby any less a *Table*); or that the cellular structure of the mongoose has *any* bearing on the philosophical meaning of its soul, animating principle, organic Form, Nature.

Agreement (or even disagreement) is difficult since the frame of discourse has been so long neglected. But the problem is almost certainly deeper, a thing of the spirit rather than of the mind. It will not accept *Nature* because it feels that it cannot, whether for reasons of pride or self-respect, accept the givenness of things.

Cannot accept being given, gifted, graced. It is not *flattering*. And then there is always the worry that where there is the *given*, there may also be a Giver.

POST-MODERN WORLD

It is no longer the age of purely *objective* Science in the distorted sense. We are much more aware of how much we do indeed *structure* our world, whether the symbol-system we use is that of myth or metaphor or mathematics. That is just another way of saying that we are living in the *post-modern* world.

Science is rightly esteemed. But the mood has changed. It the age of Hi-Tech. But also of Hi-Touch. It is the age of The Person. And no message will sound like *Good News* to men and women today if it does not contribute to *being a person* -- whatever that may turn out to be. But with *Person* we are drawing very close to the greatest of the Mysteries. *All things* the Fathers used to delight in point out, "are created in God's Image; but only of Man and Woman is it written that they are made also in His Likeness."

And here, in the coming age, our differences from the secular world may grow more apparent. The enlightened secular may realistically doubt that all human needs and desire will ever be satisfied; but seems very confident in knowing what those needs and desires are. The believer is not entirely sure what the depths of his mind and the hollows of his heart are aching to be filled with; but he has no doubt that filled they will indeed be, pressed down, heaped up, and running over. "I shall make them drink the torrent of my pleasures!", saith the Lord who telleth it like it is.

It is not a question of disinterring *that old-time religion*. The gifts are not lacking. We have scarcely begun to open them yet. If we do, we will find them consonant with our greatest hopes and aspirations. Only greater. Greater than our hopes, our logic, our hearts.

For the Theology of Creation, of the Image, and of the Logos is centered on the culmination of all *Nature*: which is Person. It is not as splendid *thing* but uniquely as *person* made in His very Image and Likeness that we are:

HEARERS OF THE WORD

God stands in need of nothing, we would say, protecting the divine sovereignty. But for the modern person, it's not much fun trying to relate to someone who stands in need of nothing. And protecting His sovereignty hardly seems what He was about. Since we are here, it seems much more likely that He wanted somebody to talk to, maybe even talk with. Maybe we're not listening.

SPEAKERS OF THE WORD

In what are we more like Him than in His creativity? Like the Divine Artist, we too have the *creative word* that constructs, fashions our world. Not in *words* only but everything we do, creating our world, creating ourselves. So it is that we are the Lords, *having dominion*. That we are the Scientists, *naming the animals*, knowing their natures. Artists. Charged with *keeping the earth and working it*. Collaborators with God.

SHARERS OF THE SELF

Finally we have learned that the ultimate expression of the Self is the gift of the Self. That's the ultimate *word* that can be spoken. Amazing, as the old joke had it, how much Our Father seems to have learned in such a short time. St. Paul keeps asking what did God know and when did He know it. But the evidence is overwhelming. He knew all along, Paul concludes, planned the whole thing. *That* was the *Mysterion* hidden from the beginning. Even then. The Word was with God. And the Word was God. And the Word was made flesh and dwelt amongst us.

But we will need the grace of asking for the grace of accepting the gift. And so we pray:

Adjutorium nostrum in nomine Domini.
Qui fecit coelum et terram.

Our help is in the name of the Lord.
Who made heaven and earth.

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ENDNOTES

1. Citing Hopkins is always a problem because many of his poems have no "titles." This famous poem is often referred to by its first line ("As kingfishers catch fire. . ."). This standard numerical reference is from *Poems of G. M. Hopkins*. W.H. Gardner (ed.). Oxford University Press. Third Edition, 1956.

RADIATION AND SOCIAL ETHICS

Fr. Thomas Cullen, S.J.

[This is an excerpt from a paper of the Late Father Cullen, published in the ITEST Monograph, 1981. We think you'll find it amazingly up-to-date.]

. . . . Let me now talk of the ethical obligation of the scientific community to inform and educate the general public. If we pay more than lip service to the ideals of democracy, we must admit that the people must decide on the question of nuclear power. Experts have their place, but the people run the risks.

The nuclear industry was the first to present its technology to the public, emphasizing all the elements of risk, because it had no choice. It came to world attention in the form of atom bombs. The task of explaining both benefits and risks to the people has been the task of physicists since 1945. In this duty we have failed miserably.

There are two difficulties: the media experts, and the difficulty of transmitting the ideas. It's not easy for scientists to communicate directly with the public. They might do well in the classroom, but they lack the sophistication of the media. Media experts have acted as a filter to the scientists' message and have distorted it. . . . The sensational will be emphasized at the expense of the commonplace and reasonable. What might happen, becomes more important than what does happen.

They have created what I call "science in the subjunctive mood."

We have behind us now eighty years of radiation history. We have fifty years experience working with radiation protection. It is in the past indicative mood of this human history that we should seek the wisdom we need, not in the subjunctive mood of what might happen. For example, there are some 1800 people with permanent body burdens of radium in their bones, and these include the luminous watch dial painters from the 20's. There are the atom bomb survivors of Hiroshima and Nagasaki. There are uranium mine workers. Here in our own country (Brazil) we have the steady population of the city of Guarapari in the monazite sand zone of Espirito Santo.

. . . in the study of such cases . . . we find what radiation dose produces, for example, cancer. . . . We know that, of the radium dial painters and others with radium in bones, approximately 100 died of cancer; 1700 did not. Those who died of cancer can tell us something important about radium. Perhaps those who did not might also tell us something important.

Besides the impermeability of the news media, however, there is the added difficulty of communicating the subject matter. How can you tell the

public what it should know about a radiation beam, when the units of absorbed radiation are so intangible, and necessarily so. When we think of ordinary physics we can use our imagination. Think of a meter, and you picture a giant step; of a kilogram, and you feel the weight of a book; of a second, and you count slowly. These are tangible.

The units and the concepts of radiation are different, the roentgen, rem, rad, and the new sievert and gray. Like radiation itself they are colorless, odorless, tasteless, intangible and impalpable. How does one explain the cause-effect relation when the units of the cause, the dose, are so unknown?

These are difficulties, the media and the units. But if scientists had been really sincere in fulfilling their ethical duty to inform and educate public opinion, they would have found a way to break through. I recall only too well the painful case of the Brazilian Society for the Progress of Science. In a meeting not too long ago they discussed nuclear power and energy programs. They were only interested in being heard by the government, not in educating the people. They felt they should be heard because they are an elite. For them democracy begins from their level up. . . .

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In my course in Radiological Physics I discuss the interaction of radiation with the DNA molecule and the genetic effects. Every student has already been conditioned by the media to imagine the worst. When I mention the atom bomb survivors of Hiroshima and Nagasaki, I invariably get the push-button reaction: there must have been a lot of deformed children and monsters born there. Weary of this science-in-the-subjunctive, I ask them to look into the reports of the Atom Bomb Casualty Commission and the United Nations Scientific Committee. Any genetic damage would first show up in the item infant mortality. The U.N. Report on that score states: "Analysis of the data has shown that no significant effects of parental exposure on childhood mortality can be demonstrated." In other words, during the generation that has passed, or 35 years, they have not been able to find genetic effects due to radiation among the atom bomb survivors.

If you were surprised . . . at this story it is a clear proof that the scientific community has failed in its ethical duty to inform and educate the public. . . .

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