



Our Director and CEO has graciously yielded this page to the workings of the editor for this special edition of the ITEST Bulletin on Christian women in science.

From time to time I'm asked: "How many women scientists do you have in ITEST?" I've learned to have those statistics on the tip of my tongue since the question is not always phrased in friendly terms. My response: "Women in science/technology (teachers, researchers, physicians and so on) represent approximately 14 % of the total ITEST dues-paid membership." That's not bad, considering the ratio of women to men in the sciences and in medicine — though that imbalance seems to be leveling off with each succeeding year. With those things in mind, and after reading a summary of a National Research Council study on female scientists: sexism in the workplace and lower pay for women in industry, I decided as editor that it was time to devote an entire issue to women in the sciences.

How could I *entice* busy women in various areas of science/technology to write about their professional experiences? Just a friendly letter or a general invitation in the announcement section of the bulletin? The latter probably wouldn't work. The personal approach would insure the best results.

In early November, 1993 I sent a list (page 3) of 13 loosely constructed questions to 39 women asking them to respond by March, 1994 as they saw fit. I thank the 12 women who responded and urge the remaining 27 to make their voices heard as well. Some selected specific questions to answer; others answered in a general way. The questions were not designed for easy statistical interpretation. Because each response was unique and personal, I decided to publish the reflections in full, with only slight stylistic editing.

I treated issues of Christian Faith specifically in questions 9 and 11-13. One of them: "How do you see yourself as a woman of faith in the light of your profession?" elicited a myriad of responses. One short yet concise response speaks of a faith deeply integrated with living. Mary Lou Caspers writes, "Trying to incorporate faith into daily living helps me to be a better person and, hence a better scientist." So say we all! I welcome your comments (irenic or polemic) on this issue.

S. Marianne Postiglione, RSM

The ITEST Bulletin: Publisher, Robert Brungs, S.J.; Editor, S. Marianne Postiglione, RSM

ITEST Offices: Director, Robert Brungs, S.J.
Director of Communications, S. Marianne Postiglione, RSM
221 North Grand Boulevard
St. Louis, Missouri 63103 USA

ANNOUNCEMENTS

1. *The Science and Politics of Food* will be the topic of the October 14-16, 1994 workshop. Please note this date on your calendars. Dr Robert Collier, director of the Monsanto Dairy Research Division, an ITEST board member, has assembled a group of essayists: Brendan A. Niemira, who will treat plant science in agronomy; Dr. Jean-Robert Leguey-Feilleux, international aspects of food production; Lutheran Pastor Steven Kuhl, theological considerations; Sister Thomas More Bertels, OSF, agriculture's human resources: strong on science, weak in politics and Robert L. Morris, marketing and distribution.

2. Our request for information on "news" of ITEST members seems to be working. We remind you again though to let us know if you or any ITEST member has recently published or has received an award or recognition for your work, ministry, or notable achievement in your current profession. We would be happy to publish that notice in the bulletin.

3. We also welcome articles for future issues of the Bulletin. Try to limit the article to 3000 words; shorter articles (any length) are also welcome.

4. The vast majority of attendees at the 25th anniversary Convention expressed a desire to have a similar celebration for the 30th anniversary in 1998. If any of you knows of a beautiful locale (with reasonably priced facilities), convenient to travelers, please let the ITEST Staff know. We would like to hold this meeting in such a place. We shall begin work on this meeting in early 1995. Any help we can get in locating "the ideal meeting place" would be gratefully received.

5. You should be receiving the Proceedings of the 25th anniversary Convention soon. It is late because of delays in receiving copyright permission from the National Museum in Washington. The volume will also include an up-dated ITEST membership list.

6. ITEST and the directors of campus ministry programs at Kansas University (Fr. Vince Krische) and Iowa State University (Fr. Jon Seda) have launched the first phase in producing a campus ministry study guide for small group discussion in science/faith issues.

We asked 40 people to write articles on suggested topics, for example, different paths of truth — scientific method vs. the artistic path; apostles to the scientific

community; secular education and its (in)adequacy for the pursuit of truth in science; and others. Designed in a magazine format (similar to the style in *Time* and *Newsweek*, for example) the guide will contain approximately 10 to 20 topics or questions for discussion. Response from the writers has been encouraging although far from our original expectations. If all the writers meet their deadlines, we will have a "pilot" guide ready for the Fall semester of 1994.

Let us know if you are interested in possibly contributing an article for this guide (we plan to update it every year or so). Personal witness is important. For example, the guidelines state: "How have the authors grappled with the issue in their own work and lives?"

The ITEST Staff and Board encourage efforts with campus ministry, especially on campuses of secular universities; many Christian students interested in seriously pursuing a career in science will probably choose these institutions.

7. PLEASE NOTE: A few members have asked us to charge their yearly membership dues to VISA or MASTERCARD. It is not cost-effective for us, as a small organization to "buy into" the credit card business at this point. Therefore, we ask members outside the United States to pay with an international money order or personal check. Some non-U.S. members find it convenient to pay for two or three years at one time. We have mechanisms in place to note that on the membership records.

8. PLEASE NOTE ESPECIALLY: We have received the volume *Beauty in Faith, Science and Technology* from the printer. The volume is very far from what we had hoped — the black and white photo reproduction is horrendous. It is clear that we cannot afford to have the whole volume redone. Also, since neither the text nor the Membership Directory presents any problems, we are planning to mail the volume as it is. We are, however, negotiating with the printer to re-do those pages with the black and white photos. If we are successful in this negotiation we shall send out to all dues-paid members a supplement with these pictures and slides done correctly. We deeply apologize for the flaws in the volume and we shall do our best to see that such a fiasco is not repeated in the future. We apologize to those especially whose glowing countenances have been treated so cavalierly.

SOME QUESTIONS FOR WOMEN IN SCIENCE

These questions are only suggestions to help you "get started"; feel free to use them or to disregard them completely. Answer only those that appeal to you and/or "irritate" you.

Your reflections on what it means to you to be a woman in science:

1. Does it make a difference?
2. Has it made a difference that you are a woman in your field?
3. Do you as a woman bring something different to the discipline of science?
4. What is most rewarding to you personally in your field - the least rewarding?
5. Is it a man's world? Is there equal opportunity? Is there equal chance for advancement in your field.?
6. Would you encourage other young women to enter your field? Would you be willing to help them in their careers - by moral support, networking or even some financial assistance?
7. Are you uneasy about this request? Why?
8. Would we ask a woman in history, art, music, social work these same questions?
9. Do you let your colleagues know that you are a believer? Do you see that as important?
10. Even if you are not "in the field" right now, how do you see your past experiences as a scientist/teacher/physician/researcher? Were they experiences you would like to re-live? If not, why not; if so, why so?
11. How do you see yourself as a woman of faith in the light of your profession?
12. Are you a better scientist/teacher/physician for being a Christian? Why? Why Not?
13. Do you see evangelization of the scientific community part of your Baptismal commitment? Why? Why not?

ITEST - NOVEMBER, 1993

Sister Joan Acker, H.M.

Are Scientists Being Dragged Kicking and Screaming to Acknowledge God?

Why have I been so interested in science/religion interfacing for at least thirty-five years? I think it is because I wear two coats. I am a Catholic religious whose life has been dedicated to God for 45 years. I have been a scientist and science teacher for even longer. Truly, I have at times in my science career felt that I've met God in the laboratories of creation. Science does not conflict with my Faith values. How could it? God is the author of both. Yet, in this age when 90 percent of all the scientists that have ever lived are now alive, so many think it is impossible to be an authentic religious in a lab coat. How could I, for instance, teach evolution in geology class and then follow it with the Genesis accounts of creation in Scripture class in the next period? Let me clarify my stance.

A ten week summer National Science Foundation astronomy grant provided just the incentive to sort out in my own mind the science/religion connection. The points which I felt intuitively needed better articulation. One of my sincerely questioning professors was fascinated by having a professional church person in class, even though he maintained a typically agnostic stance toward any God-talk, especially when it came to cosmology. He sharpened my understanding of a doubting scientist's point of view. "Subtle is the Lord," was one of many astute comments by Albert Einstein. How could I express to this friendly yet thoroughly agnostic professor some aspects of that subtlety revealed through the methods and findings of both the physical and biological sciences?

I had to clarify my professor's stance first. He and his colleagues were working with empirical thinking constantly and tended to discount any other thought processes or conclusions. Inductive and deductive methods, buoyed by powerful creative imaginations and predictions, had made them typical "I'm from Missouri" types. They believed only what they could *see* and excluded any possibility of other forms of knowing. Furthermore, Church dealings with science in the past had been misguided and often motivated by power, fear and sometimes improper understanding of the Biblical message. My professor honestly abhorred what he felt was authoritarian underhandedness and superstition on the part of the ecclesiastical system. To him, the scientific method seemed the only reliable path to knowledge, constantly correcting itself, never infallible. He was sure that, ultimately, all phenomena would someday be explained in terms of material concepts.

Like fellow astronomer, Carl Sagan, he subscribed to the idea that "the Cosmos is all that is, or ever was, or ever will be." The universe is ETERNAL.

Not only was his thinking a kind of reductionism but also a form of pantheism, a worship of matter. This craving for eternalism was a religion in itself, for it made him and his colleagues feel accountable to no one. They were, in effect, their own gods. It is a common error of scientists (and especially of cosmologists, I discovered) to trust only scientific methods of knowing. No wonder organized religion has been tempted to an overcautious attitude toward any science/religion dialogue!

In a series of letters after that summer session, I attempted to show him that the days of a science/religion conflict were on their way out. Indeed, many scientists today were beginning to arrive at the realization that eventually science must come to terms with *why* as well as *how* questions. These were the days of wholism. An integrated understanding of the origins of the universe needed deeper answers than the scientific method alone could provide. In many ways, it seemed to me, scientists were being dragged kicking and screaming, to acknowledge that they could be people of faith and people of science at the same time. A complementarity can exist, indeed *MUST* exist; the two disciplines are not mutually exclusive. In fact, they have more in common than is at first apparent. In the manner of a scientist, I enumerated my points.

1) Science, Like Religion, Is Helping Us to See Mystery in the World.

I speak of mystery, not in the sense of a solvable detective story, but mystery in the sense that theology sees it, something whose depths we will never plumb fully because it is beyond our complete understanding. Every time science opens a door, new doors loom behind it to be unlocked. The more we learn about the atom via our models, for instance, the greater complexity we find. In fact, we have learned to glean valuable information from scientific models but not to take them too seriously. Is the quark really the fundamental particle? Now quark models have to be described by way out terms: *up - down - charmed - strange*. It seems that the micro atomic world has properties we can't even imagine in our macro world. How does an electron, the negatively charged particle in an atom, jump from one energy level to the next without going through the intervening space? The probability of finding it between energy levels is zero, says the quantum mechanical model. How are light and time connected? Relativity laws tell us that the velocity

of light is the cosmic speed limit. As a material entity nears 186,000 miles/sec, time slows down for it, while it approaches infinite mass. When it reaches the speed of light, timelessness takes over. Is this discovery a hint of an explanation regarding God, eternal Light? My intuition tells me the God-as-light theme is something to ponder further. Perhaps it is more than a metaphor!

I will never be able to prove it, but science has taught me to listen to my intuitions. They are sometimes suprarational. The mysteries science reveals show me that the world is so constructed that if we add to the known, we do not subtract from the unknown. The paradox is that the more simple general laws and theories get, the more complexity they reveal. There's the *Mystery!* Religion and Science are on common ground.

2) *Science's Business is to Find Patterns and Regularities. Their Discovery Makes Its Finders Question, "Who Put these Patterns into Play?"*

Science has a large body of primary statements that never change; the scientist cannot alter them. The chemical handbook, for instance, is full of them: the density of each of the elements, the spectral lines which are their footprints here on earth or in the stars (it doesn't matter which), the boiling and melting points of liquids and solids at characteristic pressures. When the scientist *finds* these and realizes their unchanging reality is not just a construct of the human mind, he or she feels a great awe very similar to a faith experience. Matter and faith both transcend the human mind. The tendency to integrate faith and science is strong and again not solely rational. Heisenberg, the architect of science's Uncertainty Principle, said that when scientists *discover* one of these unalterable concepts, they even feel for a moment that they have invented the regularity. Wolfgang Pauli put it another way: "The subject matter gives a lot away." Matter seems to self-communicate by its patterns and regularities. If humans did not make the patterns, then they know they have been placed in a created and contingent world. They are awe-struck. Their Creator must be the Someone larger than life whom people call God.

3) *Both Science and Religion Teach Us Humility.*

Science continually reminds us that we are still ignorant; there is much yet to learn. No room for hubris here! In fact, there is a kind of infinity about learning which brings with it an invitation to humility. Today, for instance, the new science of chaos is showing us that even in extremely complex systems, like the weather, a certain self-order comes about. To cite another example — biological evolution today reminds us

that even natural selection, which looks as if it were a product of chance, really has a direction. "All chance is direction which we cannot see," wrote Alexander Pope in his 18th century *Essay on Man*. Barbara McClintock's research with "jumping genes" shows us the wholistic view that the environment *and* the subject interact in determining gene activity. The subject's DNA alone does not control heredity; that was a male-designed model. It took a woman with a feeling for the whole organism of Indian corn, researching in obscurity for 40 years when no university would give her tenure, to *find* this important revelation which living matter gave her. Chance and humility favored her prepared and open mind.

Humility is necessary for faith too. Though faith is a gift of God, it is not blind, but amenable to rational foundation just as science is. It is by no means a leap in the dark on null evidence. Theology is not a call to reject common sense.

4) *Science Like Religion is Future Oriented*

All contemporary sciences have discovered that evolution is the bottom line. This is not surprising when one considers that TIME "was the first creature." Evolution is crucial for models in Astronomy, Geology, Biology, Chemistry, Physics, Meteorology, and Anthropology. Contemplating TIME, we now realize that our created universe is moving forward, is incomplete, dynamic, still in the process of becoming. As a balance to the entropy law of physics which says that there is a constant degradation of utilizable energy in the universe, Fr. Teilhard de Chardin has pointed out that in the course of time, matter has mysteriously oriented itself toward more and more complex, energetic, and improbable states. The final state evolved consciousness and ultimately, the crown of creation, HUMANS, who know that they know and can guide evolution. Who engineered the plan to give evolution a direction, an Omega as well as an Alpha?

Unquestionably Teilhard could so readily find God (Omega) in matter's future evolution because he already knew God by faith. But, in a kind of modern design argument, many cosmologists are finding hints of some sort of intelligent Mind transcending the contingent universe, like it or not. When they realize the universe's past, present and future fine-tuning, they are driven to admit that this architecture is at least *consistent* with a God-hypothesis. Unthinkable even 10 years ago from an empirical point of view, scientists are also now proposing a creation *ex nihilo*, creation from nothing. Shades of scholastic theology!

5) *Science, Like Religion, Must Have Recourse to Analogy to Deliver Its Message.*

Science relies on simile, metaphor, symbols and images to give its vision of the truths of matter. Religion must do the same when contemplating God and divine truths. Just as Christians must say that a person is *like* God, so, too, science must talk about reality in *as if* terms. In explaining gravity, for instance, Newton said two bodies behave *as if* they were impelled by a force inversely proportional to the square of their distance and directly proportional to their masses. To give another example, since the atomic world cannot be directly observed, and its behavior suggests that it is very unlike the world we observe everyday, models take over when we try to grasp micro realities. Models are nothing more than fully-developed metaphors and are always incomplete. Thus the bees-around-a-hive-of-honey model of the atom, or the wave/particle complementary models of light. Like religion, science realizes that humans can never completely know things as they are in themselves. "Now we see indistinctly, as in a mirror; then we shall see face to face" (1 Cor., 13,12). Mathematical symbols and formulas are often the language by which scientists speak to each other. They are as real to them as the Gospel parables are to Christians. Their message comes mediated by analogy. Often by picturing concepts mentally, both scientists and people of religion experience *ah-ha* moments when views become lucid and the numinous comes very close. Religion and science are not far from each other here.

6) *Science Leads to Boundary Questions with Religion.*

In a kind of negative conclusion, science thrills me because it proves nothing absolutely. On the most vital questions of consciousness and free will, it does not even produce evidence. There it stops. Rational, free humans, the final effect of creation, cannot be greater than their Cause. How do we know that we know? Because this is a *why* question, science is silent, but it should not be a silence of disdain. This is a BOUNDARY QUESTION. The scientist who can deal only with observables has to remember that there are other ways of knowing. In science, I believe when I see. In Faith, I see when I believe. WE MUST FOLLOW SCIENCE WHERE IT LEADS, BUT SCIENCE MUST PAUSE TO ADMIT A FAITH.

Sister Joan Acker H. M., M. S. has been a sister of the Humility of Mary for 45 years. She has taught high school English, theology, chemistry, geology, astronomy and physics for 30 years, college science to seminarians for 11 years and done hypertension research at the Cleveland Clinic for a year and a half. At present she is science/religion lecturer and chemistry lab monitor at John Carroll University, Cleveland, Ohio and is a re-

viewer on the Animal Ethics Committee at the Cleveland Clinic which each month juries the protocols for animal research.

Eva-Maria Amrhein

I just mention my experience as a woman physicist (mainly in Europe, some years in the States). (Questions 3, 4, 5)

Science, especially research, certainly is "a man's world." It corresponds to a mindset that likes to play with things, numbers and ideas, and pushes ahead to explore, to risk, to achieve. As far as my experience goes, women have equal opportunity, i.e. equal chance both for education and professional advancement. The main reason for the small number of women in science, then, is not *discrimination* but the simple fact that this work, for most women, is "not to their liking." They prefer to deal with persons, with life in its wholeness. (I personally like both.) My working in "a man's world" taught me a lot about the difference in mentalities.

One of the rewarding experiences of my profession was the team spirit or 'comradeship' that accompanied our research. I never would have joined a group without this spirit. I enjoyed the give and take; I learned from my male colleagues "not to get excited" about things I could not change and to stand on my own. In return, I tried to teach them a more intuitive and more optimistic approach. The latter has to do with my faith as much as with my being a woman.

My experience as a woman believer: (Questions 9, 11-13)

There never was a need to "let my colleagues know" that I am a believer; they noticed it, and I was and am grateful for any opportunity to speak about matters of faith within the scientific community. From my experience, a religious — especially a Christian — outlook broadens the horizon, sensitizes the person to other dimensions of life, to the needs of the people, to responsibility and to an objective scale of values. I consider this extremely important for the scientific community, especially in this age. Science is not a "closed system." I think we need many more Christian scientists interested in the long-range consequences of their work and in public affairs, if we do not want progress to end up with the "abolition of man," first of the "weak" and later of the entire race.

Does it make a difference? - (Questions 1-3, 12)

I do not believe that there is a difference regarding the

professional qualification, the "discipline of science"; I am not a better physicist because I am a Christian or because I am a woman. But inasmuch as science is a personal activity as well as a communal activity, directed to the good of the community, I believe there is a difference. Women in general have a better intuition for what serves life and the person; they can make a great difference in the "working climate" as well as in setting priorities regarding the goals of research.

However, there are few women in science. To make a positive difference, they need inner security, awareness of their special gifts (if not to say *calling*), independence of the prevailing values in their surroundings. In short, women need a sense of identity as a woman that I personally feel I owe to my Catholic faith and spirituality. I would like to sum up this experience (this "reinforcement") in the following way: Being a woman makes a difference; being a believing woman makes a big difference.

Dr. Eva-Maria Amrhein was awarded a PhD in physics at the University of Wurzburg, Germany and the Venia Legendi at the University of Marburg. She was on the faculty at the latter university until she moved to the U. S. in 1971. She did research and taught at the American Foundation for Biological Research (Madison, WI), the U. of Missouri-Rolla and the U. of Puerto Rico. She has about 40 articles on non-crystalline solids and microwave spectroscopy. She is a member of the Schoenstatt Sisters of Mary, one of the nucleus communities of the international Apostolic Movement of Schoenstatt.

Anonymous

I am a woman in TECHNOLOGY! It is interesting to me — and telling — that technology is not one of the choices for women posed by this project! The project addresses women in science, medicine, teaching, research — but not technology. The first categories are certainly where most women are, and probably areas where most women ITEST members are, but there are a few of us out here in technology. There will be more!

Does it make a difference to be a woman in technology? Has it made a difference that I am a woman in this field? Not really. But perhaps that's because I'm in high-tech: semiconductors, computers, data communications, software comprise such a multi-national, multi-ethnic, multi-cultural world that all that matters is knowing the technology, the markets, the players. Gender doesn't matter. Even language hardly matters.

Do I bring something different to technology? Not to

technology *per se*, in that technological advancement appears to have no relationship to any personal or physical characteristic. However, I do bring something different to the workplace that develops and exploits the technology. The thing that I bring — in a technology business sense — is the ability to coordinate developments among our offices worldwide. I can get our folks in Japan to talk to (and work with) our folks in Boston, London, Silicon Valley, Seoul and Paris. Of course, that's a skill women typically develop — persuasion, cajoling, soothing, getting family members — or product developers — to work toward a common goal. It's a characteristic far more common to women than to men — and it definitely helps me in my job.

What is most rewarding to me? Without a doubt, it is seeing the people who work for me grow and develop. I love that part. Showing them by example. Setting them up for situating where they will have to stretch — they are so proud when they accomplish something.

The other rewarding thing is to see a new product do well in the marketplace, especially when it's a product that I had a hand in developing. It makes me feel good to think that the customers like it — and that we are attaining our revenue goals.

What is least rewarding? High stress levels. Fast pace. No time to get to know people as people. Corporate politics, or having to follow a corporate policy that I know is not effective but that's what it is.

Is it a man's world? Is there equal opportunity? Is there an equal chance for advancement? That's a hard question and I've thought about it lots. I want to say that there is an equal chance, but if there is, why don't we have more women at the top levels of high-tech companies? So obviously, it isn't. I think in one sense that high-tech presents more opportunities for women than more traditional fields such as science and medicine because this is a new area and it's constantly changing. Still, women — and men — in high-tech must have education, ability, and lots of energy!

Would I encourage young women to enter high-tech? Would I be willing to help them? I absolutely would encourage women to enter this field, and lots are doing it — especially Asian women. I do try to help them, by hiring them!

Am I uneasy about the request? No. But I think I don't get what you are driving at. Would you ask women in liberal arts these same questions? Well, I often see such questions posed to women in all walks of life. In some cases there are common issues for

women, such as how to learn skills that we were not taught as young girls but which are important to have. I'm thinking of skills that I use in a business negotiation, for example. But then there are other issues that are specific to one's area of work. One example would be the importance of advanced technical education in my area. But I think that the underlying issues — do women have a different set of skills or abilities or handicaps from men — applies to women in all areas.

Do I let my colleagues know that I am a believer? Do I see that as important? Yes, I let them know. But I think about how. If I shout it out and come across as a born-again Christian, I will be discounted. (We have one of them in our department and no one listens to him.) However, I speak openly of my faith. I'm sure that most of my colleagues who care know of my faith. I see myself as a witness, as leaven. I am consciously aware of living my faith — often. Usually I stop and think of it around issues of what's fair, or treating people with respect, or not taking advantage of someone. I see it as very important.

Am I a better technologist for being a Christian? No. I happen to be a Christian mainly because that's what my parents are. I was baptized and became a Child of God. And that's how I came to be a Christian. But I work with people who were born into families with different parents so they never became Christian. They still believe in God just as I do. They worship in their way and I worship in my way, with a congregation.

Perhaps a better question: Am I a better technologist because I believe in God? Then I would say that it depends. Am I a better technologist in terms of technology development? Probably not. Am I a better technologist in terms of coordinating technology development and addressing questions of its use. Most definitely. It is a belief in God, in God's message of justice and fairness and love and faithfulness that provides guideposts to me. Without that I would approach the uses of technology in a completely different way.

Do I see evangelization of the technological community as part of my Baptismal commitment? Yes, I see evangelism in terms of my being a model. Or if I can't be a model, if that's too strong, at least being leaven! However, I wish that my leaven didn't have quite so many holes in it!

I appreciate your doing this study and I look forward to the finished product.

Mary Lou Caspers, Ph.D.

On Being a Woman Biochemist

Biochemistry is a field where there are a fairly large number of women — relative to the physical sciences in general. Therefore, I have not felt any overt discrimination based on gender. I was a graduate student in a department with 3 women senior faculty members out of approximately 15. My class was composed of about 50 percent women. My dissertation advisor was a fatherly type who mentored his students without gender discrimination. I am currently a full professor in a Chemistry department of 7 chemists — 2 of us are women. I was recently asked to apply for the soon-to-be-vacant chair position. I turned down that offer because I am not ready to move into an administrative position at this time. Thus, in my own situation, being a woman has not affected my chances for promotion and advancement.

Being the only biochemist in the department, I have felt some bias against biochemistry from a few of my chemistry colleagues — as if it wasn't a *true* science. Also, I have had a few encounters with individuals who felt that women didn't have the *abilities* to be scientists but these people were not in positions of authority, nor were they well respected. Perhaps I have been lucky! I have heard the horror stories of women colleagues of mine in Medical School departments — few women gaining tenure, let alone attaining senior positions or chairs of departments.

Personally, I feel that science is science and that women and men follow the same scientific method of inquiry. Thus, the actual thought process is not different between men and women. Some individuals have this talent and others do not. However, men and women do differ somewhat in interpersonal skills. Keeping a lab group functioning efficiently and productively involves keeping people relatively happy. This involves listening and nurturing — traits that are generally perceived as *feminine*. Again, there is a lot of individual difference here between men and women.

I am in a relatively small, Catholic university and our mission is teaching and research — in that order. The most rewarding aspects of the position are teaching and working with undergraduates as well as the research. Most frustrating are those committee assignments that don't seem to accomplish much.

My colleagues know that I believe in God and practice the Catholic faith. Several of the other chemists do also. It generally does not evoke much discussion —

people who are hired here are expected to promote our Mission even if they are not believers. At the secular institutions I worked in (for a sabbatical year) people openly discussed their beliefs or lack thereof — we were a very talkative bunch and people felt at ease regardless of their beliefs. My favorite question was, after explaining I worked at a Jesuit university, "Are you a Jesuit?" I explained I couldn't pass the physical.

Being a believer has never raised a conflict with my profession. Studying the chemistry of living cells is fascinating and, though faith is not dependent on it, it reinforces an appreciation of the beauty of creation. Trying to incorporate faith into daily living helps me to be a better person and, hence, a better scientist.

Dr. Caspers is Professor of Biochemistry — in the Department of Chemistry — at the University of Detroit-Mercy.

Rosemary Connell, CSJ

Does it make a difference to be a woman in science? I think that today it does make a difference. When I went into science, it made more difference that I was a woman religious. I did graduate work at Notre Dame, an institution really dedicated to improving Catholic education by improving the training of Catholic school teachers. Within the Biology Department we were pretty much treated like everyone else. When we went into the larger world of science, we were an anomaly to many. One of the hopes of graduate school faculty members was that each of us would continue research when we returned to our various institutions. I did this for a short while, and at least once attended a professional meeting with some of the group with whom I had worked at Notre Dame. I also had two summer grants at research institutions (NSF). I had no trouble fitting into the research work, but was often questioned about the Church and religious life.

As a faculty member, I did not find that gender made any difference. However, I think that in higher education in the US today and in science (and probably in most other fields), it is a white man's world. I think that there are few places in which there is equal opportunity. Despite this, I did and would again encourage talented, hard working young women to enter the scientific field. I think that progress has been made since the 60s and 70s and it will continue to be made in regard to equality. I found that the medical schools were more open to women earlier than the research institutions. Yes, I would help them because I am convinced that this is an important aspect of dismantling

racism, sexism, and so on. I am not uneasy about this request. I think it is important that it be made.

In my experience and limited observation, I think that women bring "something different" to the field of science. Some of it may be due to the left brain-right brain differences, since most girls are encouraged to be creative, even those who also encouraged to be intellectually disciplined. There is often a way of looking at reality that is described as feminine, which enables all involved to broaden the view of that reality. It is the kind of thing women in Congress find. As a group they are not numerous enough to be powerful; as individuals, they push others in committee to look at different aspects of a question. Women tend to work well collaboratively. Now, most projects are done in collaboration; the tendency to work together for the best results rather than for one's own glory is a plus. But in a world in which the male paradigm is one of hierarchy rather than an equal collaboration, this hardly seems possible.

I think you would ask a woman in history these same questions. Maybe in art, probably not in music. Where artistic talent is great, it is almost always recognized today. I think you would not ask the same questions of those in social work — most often, like nursing, considered "women's work."

Most of my experiences I see as good. The frustrating aspect was always that science was considered to be of no importance as part of a "Liberal Arts" education. There was a great hue and cry when the state requirements in science for education majors were increased. The important departments really were the Fine Arts. Among the five Carondelet Colleges, this was not the same reality, so probably there are many other places in which science held an important position.

There is more than one way of looking at "better." Being a Christian did not increase my talents in any way. On the other hand, being a Christian has been my motivating life force. My religious commitment probably kept me doing work that was not always easy. I know it motivated me to continually try to do better the things I did. For me, it is more a question of dedication rather than being a better lecturer, and so on. In regard to science, I had to formulate my science/religious positions, try to integrate the two in my own life and thought and share them with students. I was never asked by persons designated as agnostics or atheists how I, a Christian, could believe in evolution. I was asked that question by a fundamentalist Christian. In general, I think that we Christian women were good role models. Girls were not supposed to be interested in science and medicine; teaching was OK. Even-

tually Med Tech was considered good. Out of my academic background, I was able to encourage students to go to graduate school or medical school, or look for jobs in research.

I know that the question of evangelization has come up in ITEST. I don't remember being present for a structured discussion. My answer is: "Of course, why not?" If the Vatican II document on The Church in the Modern World and Paul VI's apostolic exhortation "On Evangelization in the Modern World" mean anything, is it not that all of us in the market place have the obligation to make Christ present there? Part of me wants to say, "Why do you ask?" In addition, today seems the time when some scientists are most ready for evangelization. In many areas of science and medicine at least the application of knowledge also needs to be re-thought.

To address another aspect of what is happening in the world today, I think it is very important that believers are also people of science. I think that it is important that young people are taught good science and religion. Many of the questions ITEST has dealt with over the years, which seemed a little esoteric at the time, are things that ordinary people are concerned about today.

The science that I do today is somewhat marginal, so I think I am probably not "in the field." When I did science and taught, I did what I thought I should be doing. I regret that I never let some other things go and really did research. Other than that, I guess I would be glad to re-live them. There are so many other things about life that I know now, I hope that I would do a better job!

Rosemary Connell CSJ, formerly a teacher of college biology, is the Social Justice Coordinator for the Sisters of St. Joseph of Carondelet at Fontbonne College in St. Louis, Missouri.

Dr. Evelyn Crump

Some Reflections about Women in Science

Because of what may be a relatively atypical background, the springboard for this essay is the fifth of the "trigger" questions: Is it a man's world? Is there equal opportunity? Is there equal chance for advancement in your field? My own personal experience, which may be quite different from most of the women in ITEST, colors virtually all of my thoughts on the topic of "women in science." Mine may be a maverick viewpoint, but that's all right; it is my honest opinion. I do not believe it is a man's world. I believe equal oppor-

tunity and equal chance for advancement exist.

I myself have had nothing but positive experiences, but I must say candidly that that may be due in part to the fact that in many ways I have more of a male than a female outlook. Since I had two older sisters, for the first eight years of my life I was "Dad's boy," and by the time my brother was born the early acculturation had become firmly fixed, and I was his "big brother," the two of us counterbalancing our two older sisters.

My first love in recreation was, and still is, sports. I enjoyed several sports and had every opportunity to participate, though usually under city recreation department or CYO auspices. In those days schools were not held responsible for providing as many extra-curricular activities as they are now. So-called "city leagues" provided opportunities for participation in athletics, often using school gyms as the sites for indoor sports.

When I entered the convent with seven years of full-time employment behind me, I usually was assigned work commensurate with my experience and previous responsibilities. (As a result, I saw very little laundry duty and almost no housekeeping chores — which may help to explain why my house is always such a mess!) My graduate study, except for the first year, was financed by a NASA fellowship, won in competition with other graduate students, men and women, working in radiation-related research.

Two of the other questions asked whether being asked to do the survey created uneasiness and whether or not being a woman in science makes a difference. While I'm not uneasy about the survey, I don't like it. It bothers me no end because I don't like the whole idea of dichotomizing the human race according to gender. Persons differ so much, regardless of gender, in terms of character, personality, background, culture, likes and dislikes, ways of interacting with others that it would be impossible to make any real distinctions based on gender. The very first rule of good scientific experimentation is to test only one variable at a time. With all the variables inherent in any group of human beings one could never run a one-variable, carefully controlled "experiment." What — who — would one use as a control? And how, then, could one determine whether or not being a woman, in science or in any other field, makes a difference? Given today's social climate in this country with radical feminists whining about equality when what they really want is special consideration, it doesn't seem to make any difference which area of endeavor a woman chooses to pursue. I'd like to think that the rational, objective approach of the scientific

method would make "women in science" less susceptible to the subjectivity that seems to govern the feminist agenda, but I'm not very sanguine about the likelihood that this is true.

It has been my great good fortune to have spent, except for one year, my entire professional life teaching in church-related schools. Whether or not that has been a factor in the lack of any trace of discrimination I have no idea. I know only that salary scales, tenure requirements, promotions and merit pay were in no way affected by gender.

Whether or not my being a woman in science has made a difference I have no idea. Who of us can judge whether or not we have made a difference, let alone a difference due to gender, in our field or in any other aspect of life? I'd like to think, at least, that in my dealings with my students and faculty colleagues I may have been an instrument God used to help or enlighten them somehow; all we can do is our best and leave the rest to God and the free will of the other person. I do know that when we were taking applications for someone to fill my position after my retirement an alumna commented that she hoped we'd hire a woman. She thought it was important to have a woman in the department. It had never occurred to me even to consider gender in our choice.

For me the only possible response to the question "How do you see yourself as a woman of faith in your profession?" is: I don't. I'm just me, the whole package, a born Catholic who wound up, through God's providence, teaching science. I don't see myself as a woman in science but as a member of the Mystical Body of Christ trying to make this world a better place as I travel the road to eternity. I'm not "a woman" or a "scientist" or even "a woman in science." I'm me, with all the faults, foibles, facets of character and personality that make up this particular person influenced, formed, and shaped by the experiences of a lifetime, among which gender and profession seem, to me, to be relatively insignificant.

Along the way, as part of my professional activity, I have had many opportunities to encourage students, men and women alike, to go into science in one form or another. I have never even tried to keep track of how many letters of recommendation I have written for students seeking to enter graduate studies, medical or dental school, other health professions, or work in research. We have a coterie of alumnae at Abbott Laboratories, thanks largely to a mid 1970's alumna who was hired there, did an excellent job, and soon was in a position to recommend, if not actually hire,

new employees in her department. She is the door into research for many of our graduates.

The two of us who were responsible for pre-med advising developed excellent rapport (and a reputation for thoroughly honest evaluations) with one medical school in particular and had unbelievable percentages of our applicants admitted there. On more than one occasion I advised young ladies who were ready to settle for a career in medical technology to try for medical school instead.

Offhand, I can think of at least four young ladies in medical school or in residencies, one working for a PhD in immunology, and one pursuing a Master's degree in industrial health and safety. I think also of at least four who have taken a hiatus from promising careers in research to stay home and be full time mothers to growing families. They have my most enthusiastic encouragement and support, since I'm convinced women contribute infinitely more in the home than they ever could in a lab, however talented or influential they might be as researchers. Some of them will probably go back into research when their children are a bit older. Some of them already have their youngsters thoroughly tuned in to science and, one might hope, on the road to their own careers in science.

Regarding either a particular field of work or religious belief, I don't see how anyone could — even if he wanted to — not let others know, by his enthusiasm, how excited he was. If a person is truly a believer and working at being one, he or she ought not have to make any conscious effort to "let your colleagues know." It seems to me the worst indictment I could encounter would be for someone — anyone — who had known me for any length of time to say, "Oh, I didn't know you were a Catholic." We're supposed to let our light shine, to spread the Good News, not to go through our life, professional or otherwise, incognito.

Pardon me, please, if I can't get excited about a "commitment" to "evangelize the scientific community." The way I learned it, as members of the Mystical Body of Christ our job is to be the light of the world, the salt of the earth, the leaven that will raise society.

Our mandate is to preach the Word, spread the Good News, to whomever we encounter, scientist or not. Having taught only in church-related schools, I have had the great pleasure of working with people who had already heard the Good News and were living it, often better than I. Afternoon coffee in the science division office was a delightful time when, as often as not, the topic of conversation was religion in one form or an-

other. In advising students, no one hesitated to suggest that they pray over whatever difficulty they were having or whatever doubts bothered them. Occasionally class discussions of evolution resulted in some students coming after class, trying to reconcile life-long beliefs in strict literal interpretation of Scripture with even a theistic view of evolution, to say nothing of Darwinian evolution — or what usually is passed off as Darwin's idea of evolution.

Seeing students grapple with new ideas and grow through the experience is probably the most rewarding aspect of teaching science. It's fun to see confident, capable seniors who just a short four years before were scared, hesitant freshmen. It's more than worth the long hours of constructing tests and correcting papers! Perhaps my most delightful experience was the day a student came to take a make-up test. He came to the office, picked up the test, and asked where he should go to take it. I told him to go wherever he'd be comfortable: the lab, the library, wherever; but he could have only the usual 50 minutes in which to do the test. He came back in slightly less than 50 minutes, literally *threw* the test on my desk and said, "You make me so damn mad!"

"Why, Tom? Did you think the test was not fair? Too long? Not clear?"

"No" he replied, "I'm mad because I had my crib notes all made out, but you let me go off by myself to take the test." He went on, "You trusted me, and I couldn't cheat then."

Was Tom a better student because he was a Christian? Am I a better science teacher for being a Christian, a Catholic? I haven't the faintest idea. I sure hope so, but who knows? Would I, without the solid foundation of a Catholic grade school education have been as good a student? Would I have learned to "offer up" difficulties and disappointments? Would I have learned the discipline and self-denial it takes to become really good at anything? What unseen and still unknown graces did the Holy Spirit pour down on us youngsters squirming through daily Mass before school? Would I have done as well without the "J.M.J." ["Jesus, Mary, Joseph"] that was written on so many of our papers?

Would I have had the motivation to keep going if I had never heard the Jesuit motto, *Ad maiorem Dei gloriam*? Did "Work as if everything depends on you but pray as if everything depends on God" make college work more manageable? My Catholic faith was so much a part of my growing up that I can't imagine what sort of education or motivation I might have had

without it. Unlike today's young people, though, I grew up in a time when every youngster: black or white, Jew, Protestant, or Catholic, came from a home where solid moral principles were imparted, more or less taken for granted and lived. Most of my classmates have done well. Could I have been as good in my profession without the benefits of a Catholic family and a Catholic education? Maybe, but I doubt it.

So what does being "a woman in science" add up to for one who is no longer "in the field"? By now surely the reader has caught on to the fact that for me being a woman in science is irrelevant. I'm a person who, actually due to religious obedience, happened to become a teacher of science, a scientist. How do past experiences look to one no longer in the field? They look great, though I doubt that I will ever consider myself no longer in the field. With any kind of luck, I'll always be in science in one way or another.

I'm tempted to say that I loved every minute of my professional life in science, but that is from a retrospective viewpoint. At times not everything looked rosy — as when my research director died very suddenly when I was about halfway through my dissertation research or when the religious community to which I belonged went overboard in its efforts to be more modern than Vatican II — but it has been great nonetheless. Would I like to relive it? No. The "formal" professional part of my life is over, in theory at least, though it never will be fully so in actuality. Friendships with colleagues and students are still very much part of my "post-professional" life. Without the active professional life of several decades, retirement would not be nearly as rewarding as it is; retirement is a rewarding experience to be enjoyed. There is time now: time to read, time to write letters, time to do volunteer work, time for leisurely lunch with friends, time to help around the church, time to enjoy the growing younger generation in the family. The teaching continues, whether it's leading a Bible study group in the parish, teaching CCD, showing a wide-eyed four year old the tiny embryonic plant in a maple samara or an apple seed, helping a junior high youngster explore possibilities for a science fair project, or just playing Boggle or Scrabble with the great-nieces and great-nephews. There's time, even, to drive down to ITEST meetings and be an active participant.

Dr. Crump retired in 1989 after 20 years as a faculty member of Carthage College where she taught General Biology for majors, Cell Biology, Human Anatomy and Physiology, Immunology and Current Questions in Biology. She received her Bachelor of Science degree in Education from Alverno College in Milwaukee and did her graduate studies at the University of

Notre Dame and the University of Colorado. Dr. Crump received her PhD in Biology from the University of Notre Dame.

Mrs. Amy Galen

I have been writing occasionally on the interface between theology and science and I do keep up with the literature in my former field. Since I am not in an institutional corporate setting involving science (I consult as an ethicist on business matters through a group here in Cleveland), I feel that I can not appropriately answer your questions.

I would like to remark, however, on Questions #12, that I was not a believer when I studied palaeontology. Since becoming a believer, I reflect on my education with a far broader, deeper and more reverent attitude. I am currently researching and writing a paper on evolution and the concept of original sin.

Trained as a palaeontologist, Mrs. Galen is currently completing her work toward a master's degree in systematic theology at John Carroll University.

Hanna Klaus, MD

Question 4: Most rewarding is helping women give birth to their children and take charge of their own labors rather than to be passive and let the obstetrician do most of the work. It is also rewarding to have prepared childbirth and have the couple work together, and to see the response when their child is born.

Least rewarding is that women are far more often still considered second-rate. Curiously more so in the West than in a country where only women can take care of women, and therefore the woman with the most skills is respected the most.

Question 5. Is it a man's world? Yes, indeed. Equal opportunity - No. In my time, a woman had to be twice as good as a man in order to get a lower grade than the man for the same accomplishment. The bias was still maintained in academic medicine so that the 1974 GAP Study found that women in academic medicine received two-thirds of the pay of their male colleagues at the same academic rank. I'm not sure this is much better now. Most of my colleagues had to fight like anything to reach full professor regardless of their accomplishments and skills. Very few women are Chairpersons of their Departments, most especially in Catholic Medical Schools.

Question 6. Given the tendency towards eliminating any "Pro-Life" medical student candidates and especially residents in Obstetrics and Gynecology, I would not discourage any candidate, but would do my best to delineate the obstacles she's likely to encounter. I would also want to work with her to make sure she understands the theological basis for the Roman Catholic Church's teaching in this area, and can present it capably. I could not offer financial aid.

Question 10. My past experiences as a scientist-researcher were probably no different from anyone else's, but when trying to present the field to which Providence drew me — Natural Family Planning — I ran into tremendous ideological resistance. In attempting to write papers, I found very quickly that a woman's point of view was not acceptable to editors of either scientific or theological journals, and it was necessary to recast my thought processes in the way that a man would approach a subject. I would not want to relive anything because one can't go back, and I'm frankly happy to have come this far. I do think it's very difficult for a woman to be a woman in any "man's field" because men tend to think that their way of looking at the world is *the* way and overlook the contribution which women can bring in complementarity.

Question 11. Since my faith has directed my professional direction, ever since I came into the Church while a resident in Pathology, I see no *before* and *after*. On the other hand, I see my professional activity as an expression of my faith and the love that God wants me to bring to his children.

A Medical Mission Sister, Hanna Klaus, MD worked with women in Pakistan for eight years. Upon her return to the US, she taught at the St. Louis University Medical School for several years. She is now the Executive Director of Teen STAR (Sexuality Teaching in the Context of Adult Responsibility) program at the Natural Family Planning Center of Washington, DC.

Mary Ellen Murphy, RSM, Ph.D.

Question 13: Do you see evangelization of the scientific community as part of your baptismal commitment?

I consider the promotion of gospel values as a commitment to the scientific community of which I have been a part. This may be a different definition of evangelization, but universal values such as dignity and respect of person, ethical behavior, enabling others to be their best selves, pursuit of justice and peace, care and concern for those who need our compassion and help are foremost in my effort to be present to others.

In my experience, it seems to be in a one to one situation where individuals will talk about values deepest to them. Being a religious often publicly identifies me as a woman of faith, but I can honestly say that Nobel prize winners, scientific colleagues, international friends, former students, secretaries, salesmen, delivery persons, all seem at one time or another to mention significant events in their own life or in their families which indicate their acceptance of these universal values. Very often initial questions about the care in a Catholic hospital or the education obtained in a Catholic school will lead to further questions of belief, faith and goodness.

Question 12: Are you a better scientist, teacher, physician for being a Christian? Why?

I would hope that I am a better Christian for having been a better scientist, since all of my higher education and professional life has been concerned with science. I believe that I am an integrated whole person. I believe that faith gives a perspective to life and work. Scientific research and the search for truth in the physical sciences, in my experience, does raise questions about the purpose and meaning of life. Being a Christian also brings with it social responsibility to help others in need. Those of us in education have a special opportunity to influence our students and future scientists. We impart knowledge and also have the opportunity to indicate the moral responsibility of scientific research and the care and concern we have for people and the environment. This search for truth brings us closer, in small and unusual ways, to see revealed the magnificence of creation. This is expressed poetically by Teilhard de Chardin in *Building the Earth*: "Until now, we have rightly been passionate in seeking to unveil the mysteries concealed in matter infinitely great and infinitesimally small mysteries. But an inquiry of much greater importance to the future will be the study of psychic currents and attractions; a science of spiritual energy. Perhaps, impelled by the necessity to build the unity of the World, we shall end by perceiving that the great object unconsciously pursued by science is nothing else than the discovery of God."

Dr. Mary Ellen Murphy, RSM has a background in industry and in academia. She was a member of the NASA group selected to study moon rocks. Currently she is Dean of St. Joseph's College in Windham, Maine.

Mary Virginia Orna, OSU

In response to your questions regarding women scientists and women of faith, it is difficult for me to answer

the questions as phrased, so I will just let some free form, stream of consciousness materials roll off the "tip of my pen."

First of all, I was encouraged from the very beginning by my parents who saw great potential in me. I was not encouraged by my teachers until seventh grade; up to that point, I thought that I was the dunce of the class. My parents made me feel that I could do anything I wanted and gender was never an issue.

Since I attended a Catholic high school where the ratio of girls to boys was 12 to 1, I viewed the boys as being coddled and spoiled (and run after by the girls). The boys never excelled academically; they were always the star basketball players, but the girls were on the Honor Roll and the valedictorians. I then attended an all-female college where I felt that I received an adequate, but not challenging, education. In graduate school, I found I was very much encouraged by a number of the professors. There was only one woman on the faculty (which was a lot, in my day), but that never seemed to bother me. I always felt that I could become a faculty member at that institution if I wanted to.

I do encourage other young women to enter my field because I teach chemistry majors every day at an all-women's college. I let them know that there are pitfalls, but that they are as good as anyone else and that gender should never be an issue.

As far as faith is concerned, I try to transmit a sense of wonder and beauty to my students. They know that I am a religious with a faith commitment; I try to let that shine out, but unobtrusively. The important thing is to try to love, respect and esteem everyone I come in contact with, and the faith will be transmitted.

Sister Mary Virginia Orna, OSU is Professor and Chair of the Division of Natural Sciences and Mathematics at the College of New Rochelle. She received her PhD in analytic chemistry at Fordham University. She is a 1984 recipient of the Chemical Manufacturers' Association Catalyst Award for excellence in college chemistry teaching and a 1989 recipient of both the Merck Innovation Award and the CASE (Council for the Advancement and Support of Education) New York State Professor of the Year Award and National Gold Medal.

Sister Mary Jane Paoletta

I have had the privilege of teaching college-bound young women in Catholic high schools for the past 19 years, and I also enjoy instructing teachers during the summer months. I majored in biology on the under-

graduate and graduate levels; and as I continue to study science, I love to impart what I learn.

In an all-girl, Christian environment, open discussions on controversial biological issues are especially common in female-taught science and religion classes. The girls are comfortable studying and researching topics relating to reproduction, genetics and biotechnology; they feel very free to question because they want to fully understand the issues and because they are seeking to verbalize and support their own (hopefully) sound, moral decisions. These young women are encouraged in their study of the required physical or integrated sciences, biology, chemistry, and physics. Most students choose to pursue several science electives. Most of the girls I have taught over the years graduate with a minimum of 3.5 years of science which exceeds state requirements. Science faculty in these schools have been comprised of more women than men and I believe that the witness of the female faculty who are excited over the subject matter, happy with and successful in their careers, has inspired the girls to choose more science courses. The students are eager to apply for summer scholarships or participate in contests, workshops, or research because the female science faculty members do the same and we encourage the girls to get involved. Colleges and universities are offering more opportunities for women, and our students know they can compete and receive recognition.

My own greatest satisfaction lies in witnessing the numbers of these young ladies who choose a science or allied health field upon graduation. They often acknowledge that they chose a science major because of one of us. Former students have completed their student teaching in biology under my direction. They return to lecture to our present students on their high school science experiences as well as their current careers.

During the summer months for the past several years, I have worked with a professor of biochemistry and molecular biology [Jack Chirikjian, Ph.D.] at a medical school [Georgetown University School of Medicine]. After studying biotechnology, I was invited to present workshops with him on this topic to high school and college teachers from various parts of the country and a wide variety of school environments. I thoroughly enjoyed my studies and am honored to share my knowledge with other instructors. The medical school's department of biochemistry is composed of more men than women but everyone is welcoming. It is a privilege for me to work with them. I am respected as a woman and as a religious sister. In fact, I believe that my presence encourages others, biochemistry professors and workshop participants alike, to openly discuss

issues surrounding biology and biotechnology. They are curious about my beliefs and are as eager to listen to me as I am to them. I certainly have experienced understanding and acceptance and I frequently receive phone calls and letters for further information and/or guidance. I cannot be more pleased.

I am grateful to God for my vocation, my congregation for my degrees in science and my students and colleagues who inspire me as a science instructor.

S. Mary Jane Paoella is Science Department Chairperson at Sacred Heart Academy in Hamden Connecticut.

Angelice Siebert, OSU

Thought Questions for Women Scientists/Physicians

Before I became a religious at age 20, I had considered whether I wanted to become a nun, scientist or politician. I have ended up being all three!

1. Yes, it has made, and continues to make a difference in my life that I am both a woman and a scientist. In fact I feel it has provided me with many advantages in all of the interests of my life. I have never felt discriminated against during the years that I was a student, and later, a professor of science and a researcher in biochemistry.

2. I have had the privilege of working in the laboratory of the Nobel Prize Winner, Prof. Ed. Doisey, at St. Louis University when I was a Damon Runyon Fellow there in 1953-54. I have repeatedly throughout my professional career found myself as a minority (sometime of one) when attending science meetings and giving scientific presentations; but I did not feel that I was discriminated against. Why were there not more women in the field? The answer is complex.

I was also competitively successful in being awarded a Fulbright-Hays Fellowship as Visiting Professor of Biochemistry at the University of Galway in Ireland. Even in the recent ITEST publication, *Transfiguration*, I found myself one of only two women who contributed to that publication — with the exception, of course, of its editor. Perhaps there were dozens of other women scientists who wanted to contribute??? [Editor: Please note that, while only two women wrote an essay for that publication, several other women were approached to do so, but felt that they were unable to accept the invitation.] I believe that the impetus and willingness to compete must come from the individual woman.

3. I do believe that women can, and should, bring an *essential* "feminine mystic" to the field of science . . .

4. I have always been pleased to be a woman, religious and scientist. I have loved and pursued the study of the philosophy of science and the field of bioethics. In the late sixties, I became very active as a woman/scientist in the field of pro-life education. I presented the cause of the unborn at various forums, but always from a woman *scientist's* point of view. I found my audiences most responsive to my explanation of the human nature of the embryo and the need for its protection.

5. Yes, it is still a "mans'" world; but we have come a long way to influencing it for the better. Much more still needs to be done by the women. Too many of us try to do it the "male" way.

6. I do believe that as a woman I bring an important element to the discipline of science. Don't ask me to explain this. Currently much of my professional ministry is in the field of bioethics (values/science) and I find this approach very rewarding since, at age 72, I am no longer active as a professor or in lab research. I would definitely encourage other women to enter the field and certainly am willing to help by moral support.

7. My only "uneasiness" about this request was the "time" needed to respond.

8. I am not sure whether we would ask women in other fields these same questions.

9. My colleagues have always known that I am a women religious. Once at a Cold Spring Harbor Symposium (when I was still in full habit) I had a young man from one of the Ivy League universities ask me how I could possibly be a scientist and a nun. We had a long and challenging conversation. I think I convinced him that there was no conflict.

11. One can and must be a "woman of faith" if we are to influence others.

12. Yes, because I have used my religious beliefs to help me in my relationship with my God and with all of creation.

13. Yes, though I fear I have done much too little of this. Too many scientists tend to leave God, the most important element of their profession, out of the picture.

Sister Angelice Seibert, OSU is currently Associate Director of the Ursuline Campus Office of Advancement and was a Fellow (1988-1989) at the Pope John Medical/Moral Center in Braintree, Massachusetts. Among her publications in the field of bioethics are, "Genes and Ethics," (in Ethics and Medics, 1991) and "Durable Power of Attorney," (Ethics and Medics, 1989).

The Most Reverend Mark J. Hurley, a longtime ITEST member, recently received the *Archbishop Alemany Christian Achievement Award* from The Dominican School of Philosophy and Theology at the Graduate Theological Union, Berkeley, California.

Following his ordination to the priesthood fifty years ago, Bishop Hurley was appointed Assistant Superintendent of schools for the Archdiocese of San Francisco. He was the founding principal of Bishop O'Dowd High School in Oakland and later served as Principal of Marin Catholic High School. He was then named Superintendent of Schools in the Diocese of Stockton, California.

In 1968 Bishop Hurley was ordained Auxiliary Bishop of San Francisco and the next year was appointed Bishop of the Diocese of Santa Rosa, California.

Thereafter, he served on many committees for the Vatican, the American Bishops, the State of California and the nation. He was a Member of the Vatican Secretariat for non-Believers for ten years (the only group in the Vatican that formally considered Faith/Science work in those days). He has also served as a consultor to the Congregation for Christian Education in the Vatican.

Bishop Hurley has been a visiting professor at the *Angelicum* in Rome, Catholic University, the University of San Francisco and others. Let us salute Bishop Hurley for his decades of interest and work in the Faith/science apostolate.

NEW MEMBERS

BERGER, David O.
801 De Mun Avenue
St. Louis, Missouri 63105
U.S.A.

(314)-721-5934
Dir. of Library Service
Concordia Seminary
Technology, effects on thought/behavior

CHILDS, Dr. James M.
2199 East Main Street
Columbus, Ohio 43209
U.S.A.

(614)-235-4136
Academic Dean
Trinity Lutheran Seminary

DELE-OGURINDE, Ms Folasayo
3308 South Duff #26
Ames, Iowa 50010
U.S.A.

Student
Iowa State University

HADDIX, Dr. Pryce L.
6563 Winona Avenue
St. Louis, Missouri 63109
U.S.A.

(314)-645-2561
Microbiologist
Washington University
Small group ministry

HARTNETT, Dr. James
3419 Pebble Ridge Drive
York, Pennsylvania 17402-4349
U.S.A.

(717)-755-1371
Prof. of American Hist. (ret.)
York College of PA (Adjunct)

INCERA, Matthew
Linden 241 Merrill
Ames, Iowa 50013
U.S.A.

(514)-294-4006
Student
Iowa State University
International relations and issues

MURPHY MD, ScD, Edmond A.
4300 N. Charles St. Apt. 8C
Baltimore, Maryland 21218
U.S.A.

(410)-235-3862
Medicine
Johns Hopkins University
Fundamental theory of pathogenetics

NANTAIS, David E.
4112 Lincoln Swing - Apt. 312
Ames, Iowa 50014
U.S.A.

(514)-296-0297
Grad Student — Biochemistry
Iowa State University
Music, sports, reading

RIGALI, Most Rev. Justin F.
4445 Lindell Boulevard
St. Louis, Missouri 63108
U.S.A.

(314)-535-1887
Archbishop
Archdiocese of St. Louis

SACHS, John
915 Maxwell Avenue
Ames, Iowa 50010
U.S.A.

Student
Iowa State University

SKEHAN, SJ, Fr. James W.
Weston Observatory - 381 Concord Road
Weston, Massachusetts 02193
U.S.A.

(617)-552-8312
Director emeritus
Weston Observatory
Geology, creationism

IN MEMORIAM

Dr. Jerome LeJeune

Archbishop John L. May

We ask that each of you pray for these two ITEST members. We ask also for prayers for several members who are ill. May Dr. LeJeune and Archbishop May rest in the love of God. May our ill members feel the restoring hand of our Lord and Savior.

ITEST
221 North Grand Blvd.
St. Louis, Mo. 63103

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