

The Beam Line

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Sports Spectacular A Success

A unique experiment in holding a Long Distance Run and a Bicycle Race at the same time was carried out by employees at SLAC on Friday August 31st. A crowd of approximately 150 interested spectators watched the proceedings get underway at Sector 30. Jim Basket from Plant Maintenance operated the HiFi Stud Gun and the shots rang out loud and clear to start the races off.

In the Bicycle Event there were seven entrants. (Unfortunately, one participant, Dave McQuate, collapsed a wheel while making the turn at Sector 30, but he was not injured. Tough luck, Dave -- understand you were really "truckin'" before that happened.) The winner (under 35 category) was David Ugglia from Group G with a time of 21:26 for the 7.6 mile circuit -- Congratulations, Dave. Second under 35 was Bob Woolston (Electronics), 21:40. Martin Berndt (EPD), 1st over 35, 22:56. Don Burwell (Data Analysis), 2nd over 35, 22:20. The two ladies participating did extremely well and their times were only eight seconds apart. Gloria Strelchuk (DA), 23:23 and Gloria Cardenas (Stores), 23:31. Thanks for participating. Hope we can have more ladies enter next year.

The Long Distance Run attracted 19 entrants, and what a fast race this turned out to be! Last year's winning time was beaten by no less than seven runners. Winner (under 35) and new arrival from Purdue University was Dave Catthiell (Theory). This guy really moves. His time for the 3.8 mile course was 21:19. Wow! Second place went to Alex Gallegos (SPEAR) who turned in a spectacular time of 21:24, his best ever at this distance. Alex has worked hard and long preparing for this event and put on a tremendous display to stay with the winner. Ron Hover entered his son Gregg (17) who turned in an excellent 21:30 for unofficial third place. Official third place went to Bill Divita (Stores) whose 22:07



David Ugglia (center) didn't know here that he would come in first!

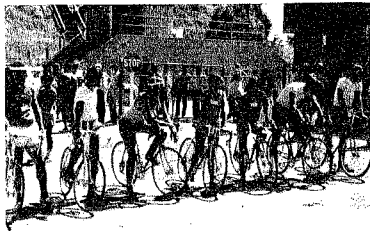


Everybody here is pretty spry-looking (before the race). From left to right, Bob Woolston, Charlie Hoard, Don Burwell, and Gloria Strelchuk.

Photo courtesy of Vern Smith.

was also a personal best. In the "over 35" category, Yours Truly took first place with 23:09. John Alcorn (ME) came in 2nd in that category with 25:05, his best time ever. Charlie Hoard (ME) was first place winner in the "over 49" category with 31:14. Charlie deserves honorable mention for his fine performance.

Starting with the 4th arriver at the finish line, the sequence of runners is as follows:
4th - Ted Syrett (CG), 23:06. Fantastic improvement over last year, Ted.
5th - Ken Moore (PMU), 23:09.



Starting line-up for the Bicycle Race.



Dave Catthiell (center) won the first place trophy and Alex Gallegos (right) took second place.

- 6th - Alan Schmirer (Labor Pool), 23:15. (A 2 1/2 minute improvement over last year.)
- 7th - John Alcorn, 25:05.
- 8th - Mike Cargin (E), 25:06.
- 9th - Gerard Putallaz (HBC), 25:23. Gerard hurried back from Switzerland to catch the race. Excellent time, Gerard, considering you were unable to train.
- 10th - Jeff Newmeyer (Theory), 26:21.
- 11th - Mike Gravina (EB), 27:01.
- 12th - Ezekiel Wilkerson (Labor Pool), 27:05.
- 13th - Cary Kritikas (Stores), 27:12.
- Unofficial 14th - Dave Love, 28:03.
- 15th - Floyd Pourroy (SFSCC), 20:27.
- 16th - Charlie Hoard, 31:14.
- 17th - Carlo Alabiso and Garrett Schierholz (both in Theory Group) tied with 39:08.

Our thanks to all who helped in the events. The timers: Phil Davies, Walt Aikens, Bill Kinker, Ron Hover, and Walter Bruers. The Health Physics Group, Surveillance, Medical Department, and crowd control expert, Jim Basket, were all a help. George Petrie and the Riggers did an excellent job with the refreshment booth, aptly named the "Kool-it Lounge." We hope to hold these races again next year and welcome your suggestions for ways to improve. The Group Jogs will continue to be held, and the next one is at Thanksgiving. If the bicycle riders would like to join us, we would be glad to have them.

Thanks for all the participation, and keep on "truckin'."

Ken Moore
Plant Maintenance

SCIPping Around

The Stanford Center for Information Processing (SCIP) was formed in March, 1973, after an extended study of Stanford's computing resources and the anticipated needs of the university community. SCIP incorporates all major general purpose computing operations at Stanford, both academic and administrative. Its staff of over 250 supports Stanford users on projects ranging from administrative production jobs such as payroll and student records, to real time research projects at the Medical School. Installation of two IBM 370/168 computers at SLAC this fall will bring the total main memory of SCIP systems to over 11 million bytes.

The main user constituencies of the SCIP system are five in number: academic, administrative, library, medical and SLAC. Each of the five areas is managed by a SCIP associate director responsible for the interests of his particular user group. Charles R. Dickens doubles both as SCIP Director and as Associate Director for SLAC Computing. Mel Ray has become Associate Director for Operations.

This emphasis on individualized service to the community is a basic premise of the organization. At the same time, coordinated planning for SCIP as a whole will provide single focus for all development programs.

The two 370/168 computers, mentioned above, are due at SLAC before the end of the year. Peripheral modules for the new system are already being delivered and connected to SLAC's 360/91.

One eventual use of the power of the 168's will be in LASS and SPEAR experiments, which involve the collection of massive amounts of real time data. (Ed. Note: the preceding was taken in large part from the "SCIP Newsletter.")

Physicist in the Field— Mario Rabinowitz

A few hundred years ago scientists were considered to be natural philosophers. Of course then a standard pastoral setting and possibly sheep on a local hillock or two were needed to set the scene, for what philosopher could contemplate the eternal verities without a serene natural setting? Sounds kind of familiar, though, if you substitute a few Hereford cattle for the sheep. In modern scientific idiom the term "physicist" has been substituted for "natural philosopher." The philosophizing has gotten more elaborate and trussed up in the hard knowledge of previous and present discoveries as well as the "hard" machines required to test the theories, but the intent is much the same -- to learn about the universe. Mario Rabinowitz is one such physicist.

Mario believes in miracles, but for him, miracles are not the rare, supernatural events that are almost legendary. Rather they are events one can see every day all around -- life, thought, communication, and nature. One every day miracle for Mario is a flower. He says, "Many people don't realize how important flowers are. Flowers (the angiosperms) changed the face of our planet, not only as objects of beauty, but without them the higher forms of life, including man, would probably not be here. When we find intelligent life elsewhere in the universe, it wouldn't surprise me if we also find flowers there. Yet as recently as one hundred million years ago there were no flowers

on our four billion year old planet; man is an even more recent visitor. It makes one suspect that nature is much more subtle than superficial observation would lead one to conclude.

I tend to agree with those scientists who consider Darwin's theory of evolution to be not only incomplete, but possibly even vacuous. Charles Darwin did have tremendous insight, but random mutations or survival of the fittest are likely to be only a small part of the story. In some ways, Alfred Russel Wallace (independent co-originator with Darwin of the principle of natural selection) had a keener insight into the incompleteness of the theory than Darwin. In raising the question of how man got his brain, he touched upon a point which is not satisfactorily answered even yet. It is far from clear how man, the dolphin, and the whale have come by their highly superior brains. Their mental powers are far in excess of what they need for mere physical survival; however, in the case of man, the assumption that his physical survival is safeguarded by his excess amount of mental equipment may soon be called into question.

Actually when you observe the universe, you see evolution on a universal scale, and often going on quite independently of any natural selection processes. For instance, first generation stars are the brewing pot where the heavy elements are formed. Viewed in a narrow perspective their life cycle of birth, growth, and death in a violent explosion might seem quite meaningless. However, in a broader perspective we realize that the heavy elements made in these stars form the basis of the second generation stars, the planets, and life as we know it. Complex molecules exist in the vast regions of space and can form the building blocks of life. It is not too unreasonable to speculate that there is a built-in pattern or teleology underlying the manifestations of the evolutionary chain.

In order for the sciences to flourish, Mario feels there are three primary factors involved:
-- "A precise language. There could be no accurate continued on back page

Views of a Cherokee at SLAC

"Fish and small game, or birds -- that's mostly what my brothers and friends and I brought in as food to our families. We had just enough to live on, not a surplus; and we always used all parts of the animals or it was wrong to kill in the first place."

Being a Cherokee Indian, Jim Ketcher's early life on the "Cherokee Strip" in Northeast Oklahoma was partly spent helping provide food for his family on land that was once Indian hunting grounds. Recently appointed by R. E. Hollingsworth, General Manager of the AEC, as the Native American Representative to the AEC on the Committee to the General Manager, we thought Jim's brief comments on Indian life in the past and observations as an Indian in the "modern world" would be well worth hearing!

"For us the land was both mother and father, as if our people were related to it in a family. There was no such thing as a wilderness for us, or wild animals, either. The land was part of us, and we were part of it. It was there to provide life for our people and we in return respected the land. We did not think of the animals as wild beasts but rather as creatures provided in abundance to be used as food. So when we did kill an animal we gave thanks for it and used it up completely."

"A Cherokee believes that there is a power, or Great Spirit, which exists above man and that each person has a purpose for living. For us, the purpose was simply to live. We had enough food to eat, and our presence on earth was not related to clocks or time as we know it today. In fact, time in our world was non-existent. It didn't pass by in seconds or minutes but rather flowed in a steady stream. My grandfather once said to me, 'You can try to paddle upstream or you can flow downstream and let the current help you, but you can't get out of the river.'"

"Competition and aggressiveness weren't part of our way of looking at life. Our belief was that all men should be brothers so there shouldn't be any battles among men for position. That would make them enemies. Each man was a dignified being, and so no man would actually consider that he worked 'under' anyone else. That feeling doesn't always fit right in with the existing job market, though."

"In my own tribe and in others I've seen, there's a strong belief that a source of power can be activated through a circle, for instance a circle of people. Some tribes believe that no harm can come to a person who carries a perfectly round and smooth stone. For example, if that person is struck by lightning the bolt will supposedly pass harmlessly right through him and find another round stone in the earth to strike instead of the person himself."

"One of the ceremonies in our tribe was the Stomp Dance held far back in the woods. It was a big celebration with dancing and Indian ball. The costumes were elaborate with tortoise shells tied onto the thighs, and there was a big fire. The elder men sat near it and talked about their youth, how they worked to stay together, and about the Great Spirit. The young girls danced around the fire and the whole ceremony was to show appreciation just for being alive. No problems any of us faced in the outside world could penetrate that unified feeling at the campfire."

"Many times an Indian comes to the city in search of a job, but he may take only one look at all the concrete and glass buildings, noisy streets and thousands of cars, and he cannot understand why he should stay in such a cage."

"I really appreciate working out here towards the hills in the respect that there's a little space here, and growing things, room to breathe for me. I think everybody needs room!"

Physicist in the Field...

continued from front page

exchange or accrual of information if the language of science is hampered by misinterpretation. Mathematics is the primary language of science, but we also need a good secondary language.

"A free and open society. There should be no bottling up of knowledge, which must flow and be accessible to all who desire it. A good example of exclusive knowledge was in the ancient Egyptian society, which was scientifically quite advanced but where only the priesthood had access to this knowledge. They had electricity and they had a calendar with which they could predict such things as when the Nile would overflow. Their knowledge of preservation (but not self-preservation) was hundreds if not thousands of years ahead of their time. However, when the priesthood died out, this knowledge disappeared with them. In an open society that would not happen."

"A religion that is compatible to science. Belief in a single mind behind the myriad manifestations of nature is conducive to searching for the laws which govern the virtual heiter-skelter flux."

Part of the fascination of physics for Mario is that to him it's one of the greatest quests of the human mind. For him, being a physicist requires the same kind of dedication as that of an artist or musician.

In his words, "It contributes to part of our understanding of what this world is all about. We don't know where we came from, why we're here, or where we're going. So it does help to get some clues along the way. I firmly believe there is a mind behind nature. If there were not, I don't think that the laws we discover would work so well and be so universal. One of my favorite quotes is from Albert Einstein: 'The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer stand rapt in awe is as good as dead. That deeply emotional conviction of the presence of a superior reasoning power, which is revealed in the incomprehensible universe, forms my idea of God.'"

In Mario's opinion, "Although some feel that it is a mistake to take the mystery out of nature as physics appears to do, the real danger lies in ignorance. For a person who appreciates the real mystery, uncovering parts of it makes the enigma more profound. Conversely, for those who think the quest is doomed to failure, I would say that even if there may be no ultimate answers, the finding lies in the searching itself."

"Today we live in a state of such rapidly accelerating change that it's easy to mistake the change for the reality. I believe there is a comprehensible substructure which governs the change, and that we must perceive it to avoid being inundated and destroyed by it. Physicists believe in a physical substructure which we call the laws of physics. How singular it would be if only the physical world is governed by laws. The laws of physics are the articles of faith with which physicists operate. These are constantly tested and then modified or abandoned when they are found wanting. Physicists believe in things that even in principle can never be seen. Sometimes they have believed in things long before they could be directly detected. They have done this because these unseen, undetected things fit part of a larger pattern, were consistent with our body of knowledge, helped tie things together, and led to the emergence of a more complete picture. Religions teach that there is beauty, law, and order around us. We scientists in our own realm look for that too. God is like the top of a mountain, and different religions have their particular approaches to the top. Other than a rather general unity of goal, the views are quite diverse. In science attempts are made to unify the picture of nature, because that's the only tangible area where we can try to find the truth."

Mario believes a person's attitude is very important in life. "It's not just what happens that counts, but also how one perceives it. Of course there's an objective reality, but the subjective reality can be equally important. I have my parents to thank for instilling a positive approach to life. I think it helps to be optimistic and look at the brighter side. This perspective has helped me to objectively observe in physics and in life that the right bad thing coupled together with a good thing can often result in an even better thing. In perception, self-communication, and in communication with others there seems to be a limitation similar to the uncertainty principle in quantum physics. There seems to be a limit on the product of clarity and precision so that the more clear something is, the less precise it is, and vice versa."

Mario has worked in a wide variety of fields since getting his doctorate in physics some ten years ago, six and one half years of which have been enjoyably spent here at SLAC. Some twenty published papers and six patents confirm his contributions in superconductivity, cryogenics, surface physics, field



Physicist in the Field - Mario Rabinowitz

emission, electrical discharges, vacuum physics, metal vapor plasma physics, and other fields. He can be described as a "generalist" rather than a "specialist." He recalls a saying that, "A specialist strives to know more and more about less and less till finally he knows everything about nothing. On the other hand, a generalist risks knowing less and less about more and more until he finally knows nothing about everything." I think one has to avoid both extremes -- there's a Golden Mean in there somewhere. Being a generalist helps one to have an open mind, which should not be confused with an empty head."

Certainly his attitude toward all life and his very early interest in the inner workings of nature have led Mario to this spot at SLAC where he's working as a research physicist with his favorite subject, Nature, to investigate a small part of the universe and man's own place in it.

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Job Openings at SLAC

The following job opportunities are currently available at SLAC and have been approved for internal placement. Interested SLAC employees should apply immediately as the lead-time required to advertise in the BEAM LINE does not necessarily coincide with the formal posting periods.

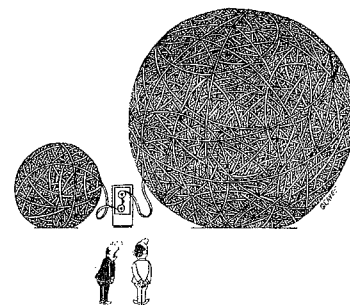
The Klystron Group has a day shift opening for a Mechanical Technician (PS&E I, Mechanical \$630-804) for the handling and maintenance of klystrons and related parts. They are looking for someone with general mechanical ability and two years experience in two or more of the following fields; plumbing, welding, machine shop, or high vacuum systems.

In the Electronics Technician field, SLAC has four current openings -- all at the PS&E II level (\$730 to 932). The Experimental Facilities Group has two openings for shift operation and maintenance of power supplies and associated electronics equipment. They need journeymen technicians with experience in trouble shooting electronic control circuits using schematic diagrams. Of course, they would prefer experience with large, precisely regulated SCR power supplies, but the group is willing to provide training with this equipment. (SCR power supplies have a wide range of industrial applications, for instance in the Bay Area Rapid Transit District (BART).) The Bubble Chamber Operations Group also needs a shift technician for electronics maintenance and fabrication of circuitry. The position offers the opportunity to assume sole shift responsibility for electronics equipment and the opportunity to become familiar with cryogenics, photography, optics and mechanical fields as well. The Accelerator Electronics Group has an owl shift opening for a trouble shooter to maintain all types of gallery electronics equipment. This department will arrange a compatible shift schedule for someone attending school to further his education.

The Plant Maintenance and Utilities Group has an opening for a Radiation Gate Guard (\$618 to 662). Stop by and discuss this opening with one of the Sector 30 guards if you are interested in finding out more about this opening.

Lastly, the Mechanical Fabrication Shops is looking for a Lab Mechanician/Instrument Maker (\$1050 to 1158). This day shift position requires someone with several years of experience as a Tool and Die Maker or Model Maker and familiarity with vacuum techniques. A wide variety of duties is associated with this position, but the most specific requirement is precision assembly of specialized items of hardware and work with engineers on development projects.

Contact the Employee Relations Office (ext. 2355) if you are interested in any of these positions.



"We need more tape units."



"And yet, all this is less complex than the brain of a chicken."