

etCetera

November 23, 1981

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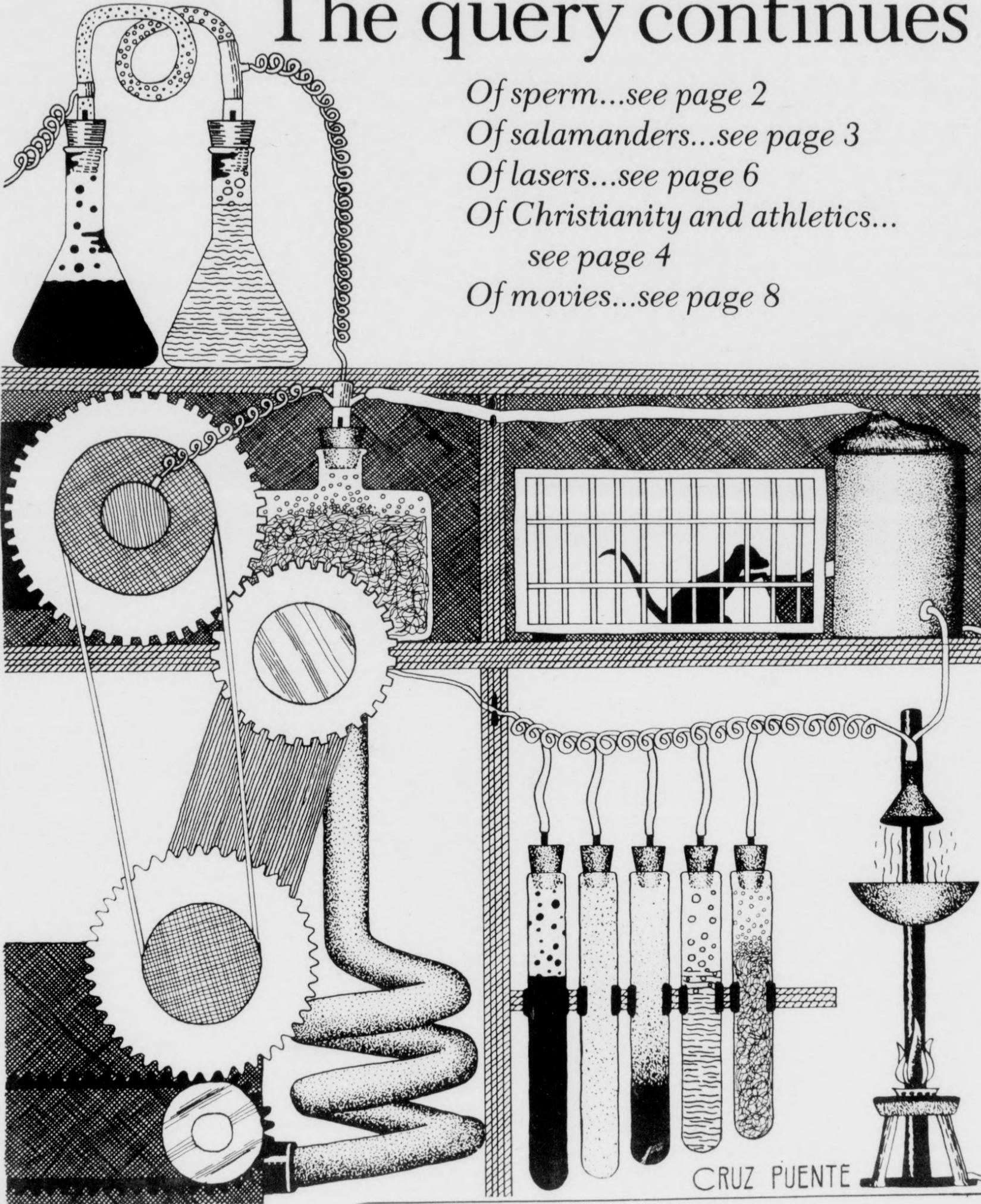
Of sperm...see page 2

Of salamanders...see page 3

Of lasers...see page 6

*Of Christianity and athletics...
see page 4*

Of movies...see page 8



Sperm may not always be such a nuisance

By Anne Stabile

Sperm are very helpful critters. If they didn't exist, no one else would, either. But they can also be a nuisance, which is why Wayne Barcellona is interested in them.

Barcellona, chairman of the biology department at TCU, is a cell biologist. He isolates pre-sperm cells and studies the processes which go on within them.

Barcellona is trying to find a site of action for a male contraceptive. He stresses that he's not looking for a chemical contraceptive like the birth control pill, but is studying the process of sperm development to see if he can stop it at some stage.

One way to study the process of sperm production in the testes, Barcellona said, is to study the different stages the cells go through. Study of the distribution, movement and interaction of the chemicals in the pre-sperm cells can identify each stage of sperm development, Barcellona said.

Human males aren't his guinea pigs.

He collects sperm cells by removing the testes of a Chinese hamster and removing the little tubes where the sperm are produced. He said he uses this animal because its cells are easier to separate into fractions, and because there are more of them.

He places the little tubes in an enzyme solution.

"The enzymatic treatment loosens up the cells and breaks down the tube walls, and the cells eventually come out as single cells. They're not held together in a tissue configuration," Barcellona said.

After he frees all the cells, Barcellona then separates them into groups called populations.

He said he wants to carry the separation a step further by separating the cells into populations of the same or similar stages. By doing so, he might be able to distinguish which populations carry out which biochemical processes.

There are many ways to separate the cells. Barcellona and collaborator

Marvin L. Meistrich, researcher at the University of Texas Health Science Center in Houston at the M.D. Anderson Hospital and Tumor Institute, have used only two: the Staput Technique and the Elutriation Technique.

The Staput Technique was developed by R.G. Miller and R.A. Phillips, two Canadian biologists working with blood cells. It uses the force of gravity to separate cells.

Elutriation separates the cells mechanically by using a centrifuge, a machine that uses centrifugal force to separate particles of varying density. This method is almost twice as fast, but has drawbacks, Barcellona said, adding that he found some unexplainable spaces in the cells and other unknowns in the cell nuclei, he said.

The populations Barcellona studies represent two different stages in sperm development.

"I'm interested in the biochemical processes which occur over those two generations," he said.

Barcellona looks at chemicals which may be present in one stage and not in the other. He also looks for the ways in which the chemical products of one stage may affect other stages, he said.

Barcellona said he is interested in isolating and studying pieces of messenger RNA (ribonucleic acid) in the first population. This molecule carries a genetic message from the cell nucleus to another part of the cell. It is used in the formation of a protein molecule, Barcellona explained.

"Proteins are really the workhorse of the cell because they're the building blocks of enzymes. Enzymes are very important to the normal functioning of any cell and they're very specific in what they do, usually," Barcellona said.

He said if you can specifically eliminate the production of one protein, you can possibly affect the production of sperm.

It's already known from other research that RNA is used in the other stage of

(See Sperm, page 7)



SEPARATION - Wayne Barcellona, biology department chairman, is researching the process of sperm production in Chinese hamsters. He is not

trying to develop a male contraceptive, but is searching for a stage in which to stop development.

Photo by Ben Noey

Aid for humans seen through salamander eyes

By Anne Stabile

A salamander is a slimy, wriggly amphibian with legs and a tail. It is also a mythical animal said to live in fire.

As either, salamanders aren't very endearing to most people, with one exception—Rudolf Brun.

Brun, associate professor of biology at TCU, is an embryologist. He studies the development of organisms.

He's also interested in how genes, which transmit hereditary characteristics, control development.

He's primarily interested in animals with backbones and is studying salamanders as a sample.

Brun is interested in a gene that represses eye formation, a gene referred to as "e." Salamanders with gene e don't form eyes in their beginning or embryonic stage, Brun said.

He is trying to find what part of the embryo is affected by the presence of an eyeless gene.

Brun said he studies salamanders for several reasons. He can work with them all year round, so he's not dependent on any kind of season to collect the material he studies. And he can manipulate the salamander embryos easily by microsurgery.

Brun grafts tissue involved in organ formation from one section of the embryo to other parts of it, or exchanges it between two embryos.

"You could even exchange heads if you wanted to do so," he said. "This is not because I have particular skills in microsurgery, it is rather that the embryos have a tremendous healing capacity. They heal within minutes," he said.

Brun said if one wants to investigate genetic control, he must have mutants—genetically abnormal forms. They express alternate forms of particular aspects of development, he said.

Eye formation doesn't just involve genes. Brun said both the brain and the embryo's skin are involved in eye formation.

The brain determines the beginning of eye formation when an eye cavity appears at the appropriate area, he said. In eyeless embryos, the cavity doesn't form.

He said he doesn't know why.

"All I can say is that in eyeless embryos the brain does not produce an eye vesicle."

He said, however, that there are embryos that have the e gene which try to produce a vesicle.

The reason why a vesicle forms in some part of the brain and not in other parts is unknown, Brun said.

Though scientists know a lot about genes, they don't know how genes control embryonic development. There is a gap between the study of heredity and the structural changes of development, he said, adding that all he can do is investigate the development of eyeless embryos.

Brun starts collecting information

by asking what the target tissue of gene e is—the brain itself or the skin.

Brun said he has evidence that the gene affects the brain indirectly, probably through the skin.

He removed the area of the brain that would normally produce the eye cavities from the embryo with gene e, and grafted it into a normal embryo without the e gene. In normal embryos, the mutant's brain was able to form a complete eye, Brun said.

"This then means that basically the brain of the eyeless mutant knows how to produce an eye vesicle."

The next step was to find out why the mutant's brain is suppressed in the mutant embryo, Brun said.

Brun took both the optic area and the skin and grafted them into another salamander embryo. No eyes formed, he said.

It appeared that the outer layer of brain cells either suppresses the brain in the eyeless embryo or just doesn't provide the stimulus to form an eye, Brun said.

"This set of experiments points to the epidermis (skin) as being the target of gene e," he said.

But Brun said before he got too far into researching the tissue itself, he wanted to be sure he was on the right track.

He developed a series of experiments to see whether the outer cell layer is always the target of the e gene.

He switched his first experiment around. Instead of taking the part of the brain which will later produce the eye from an eyeless embryo and grafting it into a normal embryo, he took a normal embryo's skin and grafted it into the skin of an eyeless.

In some cases, grafting skin from normals brought about eye formation. "This might indicate that the epidermis from eyeless embryos has a suppressive effect on eye formation," Brun said.

The grafting operations can be performed only at certain stages of embryonic development. Perhaps, he said, if the operation were done at earlier embryonic stages the effect of skin cell composition on eye development would be complete.

Here Brun ran into technical problems.

He had to map the area, which would later be involved in eye or organ formation, in the embryo's very early stages.

"Very probably those cells are already committed to doing this sort of thing," Brun said. "And so you need to know where the eye area is located early in the embryo."

Brun said he rediscovered that the structure indicating where eye formation begins changes location in the embryo during development.

"The old embryologists knew that very well," he said, "but we lost that knowledge."

Brun compared the loss of information to a game of "gossip" in



SALAMANDER EYES—biology associate professor Rudolf Brun is studying the formation of salamander eyes, working toward the eventual application of such research in human medicine.

Photo by Ben Noey

which a sentence is whispered to someone, who whispers it to someone else, who tells someone else, and by the time the sentence gets to the last person it's completely different.

Losing information in this way, Brun said, has caused scientists to lose "considerable resolution."

Brun's last publication discussed that problem, he said, simply because he found out that the part of the embryo which will later develop into the eye wasn't where it was supposed to be.

A few weeks ago Brun was faced with a new twist in his research. When he removed the eye region from an eyeless embryo and put it back into the same embryo in a new location, the eyes formed.

"So you see the kind of fight one has," he said, then laughed. "Just when you have figured out the answers they have changed the questions. That's precisely the situation I'm in."

Brun said the experiment seems to show that the embryo's skin isn't made up of only one kind of cells, that the skin is different in different parts of the embryo, he said.

Brun compared the situation to a forest containing many different plants growing in especially suitable spots. Oaks, for example, grow in one spot and sycamores grow in another. Certain factors, such as the right constitution of the soil, favor the oak in one place and the sycamore in another, he said.

"The epidermis has a pattern which allows certain organs to form in one area but does not allow the same organs to form in another," he said.

What Brun said he's going to do next is turn the whole epidermis around so that the bottom will be at the top and vice versa. This idea came from Associate Professor of Biochemistry Joseph Babitch, who is also a good friend of Brun's.

Brun said his research may one day be applied to medicine, but that it is necessary to first understand the basic mechanisms leading to the formation of an embryo.

Similar mechanisms are also involved in regeneration of lost parts, he said.

"We have some insight into the changes in cell structures and their function—at least into what factors are involved," Brun said, adding that this opens the door to a new kind of human medicine in which new tissues will be stimulated to grow to replace lost parts, rather than replacing parts with artificial ones.

It's possible because the basic mechanisms at work in salamander cells are the same as those of human cells, Brun said.

"You can't distinguish the behavior of human cells in culture and those of salamander cells. Basically what you have is the same thing," he said. "So what I'm saying is those mechanisms that work in a salamander probably also are at work in human development. I have no doubts about that."

"I can really see the time when we will know how to stimulate the iris in human eyes to produce a new lens," he said.

Until then, though, Brun will continue to work with salamanders.

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Christian athletes carry t

By T.J. Diamond

Today, fundamental Christians are striving to influence national politics, converted rock stars are singing about Jesus, and areas of life rarely touched by religion are feeling the impact of the message of Christ.

In a similar way, many athletes are also leaving behind the traditional "Sunday Christian" image and are taking their faith onto the field.

Athletes face the same pressures and troubles that everyone else faces. Success and failure, the push to improve, and living and working within intimate bounds of one another are all day-to-day struggles, magnified in the locker room and on the court.

To the athlete who puts a priority on his or her faith, sports are often seen from unique perspectives.

Some Christian athletes may look upon God as the source of their abilities, some may see themselves as having the responsibility of setting a good example, while others may view their situation as an opportunity for sharing their faith.

"Christianity gives me hope and keeps me going," said Zane Drake, fullback on the TCU varsity football team. "A lot of people have a dying attitude, and they quit what they're doing. Christianity helps me in that perspective, because I think 'Jesus didn't quit, so why should I?'"

A junior from Springdale, Ark., Drake was a junior varsity walk-on his first year at TCU. In his sophomore season, he earned a starting role on the varsity as a safety, and this past year he started several games for the Horned Frogs as fullback.

Drake is also president of TCU's chapter of the Fellowship of Christian Athletes.

FCA, as billed in a promotional brochure, is an interdenominational "fellowship through which ordinary people help each other become better individuals and better examples of what the Lord can do with a yielded life."

FCA's stated purpose is to "present to athletes, coaches and all whom they influence with the challenge and adventure of receiving Jesus Christ as Savior and Lord, serving Him in their relationships and in the fellowship of the Church."

"Since I'm in football, I want to bring football players to FCA," Drake said. "If anything can make our team closer, it's God. I live with, work with, and play with these guys all the time, yet I see their growth as stagnant, and it's my goal to see these guys develop a better relationship with Christ."

FCA meets weekly, he said, "to get together and talk things over. We'll look in the Bible and find things that apply to our lives and let it help us," he said.

"It's neat to see that 'hey, other people are feeling the same way, too,'" he said.

Susan Mileur, captain of the women's basketball team and female coordinator of FCA, agreed.

"Athletes have a common bond in the first place, and when Christian athletes get together, they have a double bond," she said. "And what are more intimate to us than athletics and Christianity?"

"When you're an athlete, you struggle every day with physical endurance, and you get right down to the meat and bones of what you're made of, and that's also what Christ is interested in."

Just as all members of FCA need not be athletes, all Christian athletes at TCU are not necessarily involved with FCA.

"As Christians, God doesn't place us on the field just to play football, but he has a reason for us being there, to have an influence on the lives of the guys on the team," said Greg Lillestrand, a defensive back for the Horned Frogs.

"People sometimes have an impression that if you're a Christian on the team you'll be holding big revivals with the players," he said. "But a lot of times, the team is under a lot of stress and there are problems and hassles."

He said being around when someone needs to talk and sharing Christ's care is why Christian athletes are there.

In some situations, however, teammates look at the life of a Christian player to see how he or she may react to a difficult situation. Although they may not think of themselves as on trial, some Christians said that their lifestyles should be examples of what they stand for.

Making a crucial mistake in the last minute that loses the game for the rest of the team may force some Christians to deal with their own anger. They may face question such as, "Where is your God now?"

Locker room frustrations can cause an athlete to do or say something he'll regret. Coping with such situations and attitudes shows - and builds - maturity in the athlete.

"Before games, I pray that God will help me out," said Jeff Baker, varsity basketball team member. "If I had a good game,

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PARA

carry their faith to the field

I thank the Lord for it. If I had a bad game, He may have just not wanted it.

"He maybe wants to see what my reaction will be . . . whether I'll be down on myself and just totally go haywire, or am I going to keep my chin up and work harder for next week's game."

Christians — like all people — struggle with peer pressure. In an athlete's realm, this may mean not going along with his teammates when asked to do something that goes against his personal convictions.

Such decisions may be the toughest and most important a Christian athlete faces.

"I think a lot of people have the misconception that Christianity is for weak people," Drake said, "but it takes a strong person to follow God's will and not his own. Anybody can do what the other guy does.

"I think winners are set apart because they are leaders. They don't follow the trend, they set it. And in Christianity, the trend is God's will," he said. "Sure, there are a lot of temptations, but that's where a strong Christian will stand up for what he believes. I think that's where a good leadership role begins."

Drake and a few fellow team members initiated Bible studies this fall for the team immediately before the games. He said that these short prayer meetings were for "guys to start realizing that 'hey, this ability I have isn't mine. I didn't put it there,' and they'd start seeing that God did."

Several players attended the first meeting, held before the Arkansas game.

Even as TCU was losing to the Razorbacks, a few players kept encouraging each other to pray, Drake said.

And as the game began to turn to TCU's advantage, prayers increased.

The next week, 25 players came to the pre-game prayer meeting.

Prayer may not necessarily win the game, but some of the athletes said that it puts them in a positive frame of mind.

"I've heard it said that the way you think about things is the way you act, so I'll just think about Jesus constantly," said Rae Rothfelder, who was named the nation's top freshman golfer last year.

"I'm talking to God on the golf course the whole time that I'm

playing. When I'm getting upset I'll say 'calm me down, Lord, because I'm playing for you,'" she said.

"I often ask myself what it means to say I'm 'playing for God.' I guess I'm just trying to think of him as being my audience," she said. "It doesn't matter what all the other people are going to think of me. Just as long as God sees me and the attitude that I go about playing. I'm not playing to have people praise me, but to glorify Him."

Another struggle for some athletes is pride. Sports can be an ego-booster, and talented players are often glorified.

But many Christian athletes believe God is the source of their abilities and strengths.

"In my life, Christianity or God used to be something they kept in the church," Lillestrand said. "When I was on the football field, in order to be good, I had to rely totally on my own strength, power, and the abilities I had.

"But in the last few years, I've realized that God could have a part in football. So many guys have the attitude that to be a Christian and really follow God, you can't be playing a rough sport where there's a lot of emotion and a lot of hitting," he said. "But I know that God gave me abilities, and I'm cheating myself and the Maker that made me if I don't use them to the best that I can."

John Regan, all-Southwest Conference soccer player for TCU, said the "hardest thing as a Christian to deal with is competition."

"I have a real competitive nature, plus our society is really win-oriented. It's hard to balance the win-at-all-costs attitude with 'how can I play as a Christian,'" he said. "Can I play as a Christian and can I give cheap fouls? You have to struggle with retaliation and enforcement, too.

"But I don't think God is concerned with winning and losing in sports. He's not looking for winners and losers in life either. He's looking for faithful people."

Nearly all aspects of life come into play within the realm of sports. Struggles and successes, temptations and failures, are all compounded in the life of an athlete.

"There are going to be so many struggles in your life that really show through in competition," Mileur said. "And so when my goals are in line with Christ's goals, I have a much better time."

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THE LIVING BIBLE

PARAPHRASED

Lysiak's lasers make 'time go backward'

By Anne Stabile

The door said *Danger! Pulsed Ruby Laser! Do Not Enter When Red Light is On.*

The red light was off.

It was a long, dark room lit only by a tiny 60-watt bulb and the red glow of the laser.

He was leaning back in his chair, close to the door, explaining complicated mathematics to a woman in an Indian sari named Mrs. Roy.

The room would be perfect for an electric train setup. Long tables stretched from one side of the room to the other. But instead of electric trains there were optical benches used for mounting lenses.

On either end of the table were the gas lasers.

He talked for some time until finally, the graduate student understood the meaning of the numbers.

"We're watching time go backwards," said Richard J. Lysiak, associate professor of physics.

He raised his eyebrows over the rim of his black glasses and showed an even row of teeth from his pentagonal face.

He explained at length his study of optics—the study of light and vision.

A native of Chicago, Lysiak came to Fort Worth in 1954, fresh out of the Navy, to work for General Dynamics.

Because he was eligible for the GI Bill, Lysiak said, he decided to go back to school. He already had an engineering degree from the University of Chicago, and hoped to continue in the field.

But TCU didn't have an engineering degree plan, so he studied the next best thing—mathematics and physics.

Lysiak said that long conversations with University of Dallas President Don Cowan convinced him to seek a Ph.D. in physics. He received the degree from TCU in 1964, and was asked to take a one-year teaching position.

The one-year position has lasted nearly two decades.

"I had no intention to go into teaching," he said. "I was working at GD and making lots of money."

But that wasn't important to him, his wife Fae said. "Money's never been a motivation for him."

"I guess the thing which attracted me to TCU was that I was able to do what I please," Lysiak said. "I always

enjoyed teaching. I work longer hours, but it's a matter of doing what I want to do."

Which brings us back to his research: watching time go backwards.

Soviets actually began the experiment at the Lebedev Institute in 1972, he said.

A beam of light was sent into a cell filled with carbon disulfide, a thick, flammable liquid. Before the light reached the container, it hit a bottle (a distortion plate). When the light hit the bottle, it separated into waves.

The Soviets discovered that when the light reached a sufficient intensity, the waves went backwards. More importantly, he said, when the waves returned the light was reconstructed into the beam again.

Amnon Yarev at the California Institute of Technology became interested at looking at the experiment mathematically. He discovered that when a wave went backward, it went backward in time according to a mathematical equation he developed.

Lysiak said time doesn't really go backward, "but it's like taking a movie projector, stopping it and

making it go backward. It's one of those tricky things about time.

Lysiak said the experiment looked at the interaction of light and matter. In 1979 he began to study how good the reconstruction of the backward light was.

He put information on the beam, which shows up as a circle, then split the beam and tacked on a glitch—a "hair" of light—on one side.

If, Lysiak said, when he shot the light and took a picture (with high speed infra-red film) he could see two spots show up, the reconstruction would be pretty good. But, if the photo showed the two spots and the glitch, reconstruction would be excellent, he said.

After overexposing the photo 100 times, Lysiak found that under certain conditions he could get 99 percent of the light to reconstruct into the beam.

He also found that the greater the intensity of the light the better the reconstruction was, he said.

One of Lysiak's graduate students, Robert Mays, did a lot of the work, he said.

"In all the experiments the student (See *Lasers*, page 7)



THE LASER BEAM—Richard Lysiak, associate professor of physics, is researching the interaction of light and matter. Reconstruction of separated light waves, he said, appears to be time going backward. "Appears," however, is the key word. Lysiak and his student assistants are also studying the

acoustics in auditoriums in Dallas and Fort Worth. Lysiak gives much credit to his student assistants for sharing the workload, saying professors usually get the credit for research, when students usually perform much of the labor.

Photo by Ben Noey

Lasers

(Continued from page 6)

does 80 to 90 percent of the work and the professor gets all the credit," Lysiak said with a grin and another raising and lowering of his brows.

He said he and Mays tried different diameters in the cells to find what controls reconstruction. He looked at all the different waves going backwards.

Lysiak said his recent experiments seem to indicate that without the distortion plate, reconstruction isn't as good as it is with the plate.

Good reconstruction is "hit and miss" right now, he said, adding that he's trying to determine how effective the plate is.

Lysiak and one of his graduate students, Russ Campbell, are also researching acoustics—the science of sound.

In the laboratory across the hall from the laser lab, there are complicated pieces of machinery which measure sound and the time duration of a sound wave. There are reel-to-reel tape decks to record sounds in different auditoriums or concert halls.

Lysiak and Campbell are studying sound waves, what the waves bounce off in an auditorium, and how that determines what listeners in different places in the auditorium will hear.

Their research is directed at auditoriums and concert halls in the Dallas and Fort Worth area, Campbell said.

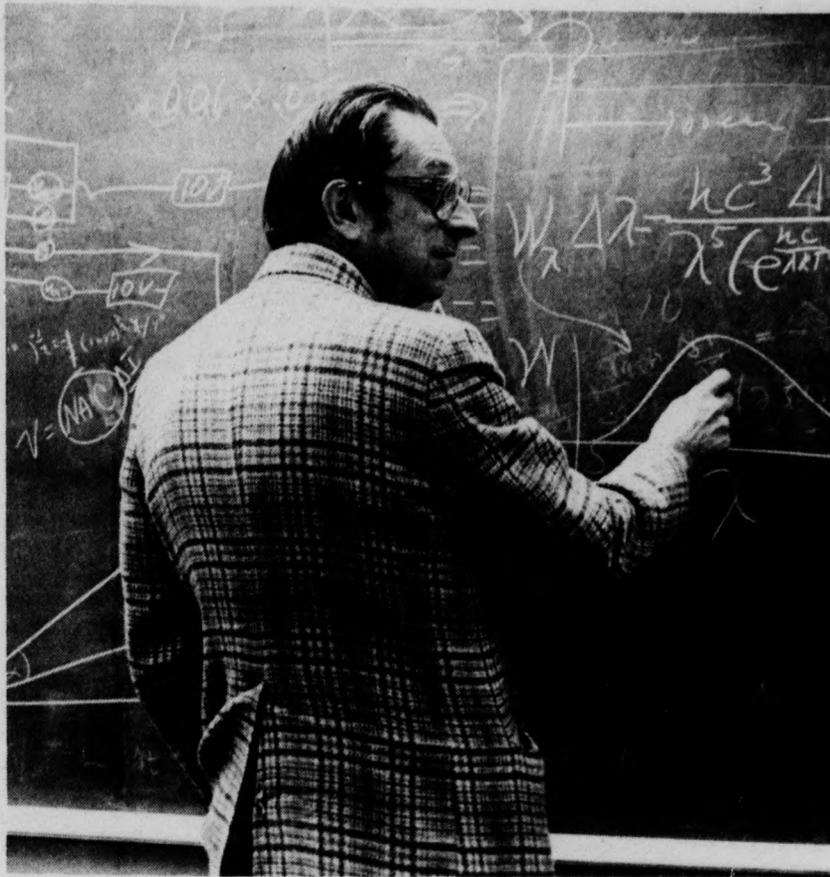
Life does not exist for Lysiak only in the lab.

When the lab gets to be too much for him, he often retreats to his 168-acre ranch in Hamilton County.

"He'd never even seen a cow till after we got married," Fae said with a laugh. She said she's a country girl, raised in Tennessee.

Lysiak said he bought the ranch 10 years ago primarily as an investment.

He was looking to see where he could put his money to get some



CALCULATIONS NEVER END—Richard Lysiak, researching laser beams, works out a scientific equation in his office.

Photo by Ben Noey

enjoyment out of it, he said, and mentioned that his son, Richard, 27, and daughter, Angela, 20 were "lucky enough" to have a horse when they were little.

The farmhouse was pretty old when they bought it, Lysiak said, giving him a chance to indulge in his hobby of furniture building.

About half the furniture in his home on Elms Road is "homemade," and he made all the furniture in his home in Fort Worth.

At his home, Lysiak has a small and very clean workshop. He uses power tools, such as saws and a drill press.

He also uses planes to smooth the tops of tables or chests of drawers.

Lysiak said some of his tools were his grandfather's. He also built furniture.

Before Lysiak could build furniture for the farm, he first had to rebuild floors, doors and ceilings, and had to modernize the house with such luxuries as electricity.

He still has no phone.

The ranch is self-sufficient, Lysiak said, except for the electricity. His windmill pumps water into a storage tank, which he keeps filled.

Lysiak said he looked at solar

panels for heating water, but that they were too expensive and he would have had to be at the ranch more often.

In keeping with the cowboy tradition, Lysiak wears cowboy boots.

He didn't buy a pair until he bought his ranch, he said, but he found out he needed them to tramp through the pastures, feed his 21 head of cattle, mend fences and work in his garden.

The garden, he said, isn't cost effective, but "there's a big difference cutting green beans out of the garden and cooking them the same day—it's just much better."

The cattle aren't very cost effective, either, he said. Last year it cost him more in feed than he sold in cattle. Lysiak, unlike some ranchers, doesn't grow his own hay.

Last year, he said, he spent \$1,500 on feed alone.

"Ranching isn't profitable. You make maybe 2 to 3 percent on your investment and you can make 18 percent on a Money Market CD," he said. "For most of these people it's a way of life. Most barely make it from year to year," Lysiak said.

But, he added, "there's a certain natural attraction to the land."

Lysiak said he likes to spend time at a little cafe near the ranch. "It's like a step back into time," he said about the place and its clientele, who talk about the price of cattle and the need for rain.

"This is what's important when you stop and think about it," Lysiak said. "This is important for survival. Those people are literally down to earth. People in the city 'ose touch with this."

Lysiak said he wants to be a man who doesn't lose touch with anything. *etC.*

Sperm

(Continued from page 2)

sperm production that he is studying, because it shows up in the next population, he said.

"We're trying to sort out where messenger RNA is produced and how it's used later on in the process," said Barcellona. "You can give a drug or find something to stop its production and you'll affect the eventual differentiation (specialization of cells) later on," he said.

Barcellona is now working on viability of the cells in culture after they're separated into populations. He's studying their RNA and protein-making capacities.

In the future he hopes to define what kinds of proteins are produced in both populations, he said.

Barcellona has used agents, called inhibitors, which prevent certain chemical changes from occurring in the cell.

"The inhibitors we're using won't be used as potential male contraceptives," Barcellona said. "We're using these as molecular probes to tell us what the normal operating circumstances are to help determine normal functions," he said.

Scientists began studying the male reproductive system more than 15 years later than they began studying the female system because the female system is easier to study, Barcellona said.

"The female really provides an advantage because things are so cyclical and only one egg is produced each month," he said. "In the male you've got millions of sperm constantly being produced."

Another factor that facilitates the study of the female system is the important part that hormones play, Barcellona said.

"Hormones affect the process in the male definitely but not to the same extent," he said.

The male system is more complex with respect to controlling final output, Barcellona said. The female has a target. It's known when the egg will appear within a few days. That kind of prediction can't be made with the male system, he said.

Barcellona also discussed other research on male contraception.

One group in West Germany studied the use of a drug that interferes with the action of the most important male hormone, testosterone.

However, the drug also decreases the sex drive, Barcellona said, which "is an undesirable side effect of any birth control mechanism."

The Chinese have discovered gossypol, a chemical naturally produced in cotton plants. It apparently affects the production of sperm, but its side effects include interference with other bodily processes, Barcellona said.

"There's no really effective chemical means of male contraception at the current time," he said, which is why he's looking at ways to affect the process of sperm production.

The work is inevitable, he said.

"The work has to be done on the male eventually. We've got to do this kind of work to establish what normally goes on in the male. Once you know what is normal, you've got a stepping stone from which you can say, 'Well, this point here is quite vulnerable; let's see if we can develop a drug which will work at this site,'" he said.

Male contraception would lessen the burden of birth control on the female, Barcellona said, although a male contraceptive won't be perfected before the end of the decade. *etC.*

events etC.

Monday 23

Kappa Alpha Psi Food Drive.
Interfraternity Council, noon, Student Center Room 211.
Panhellenic, 3 p.m., Student Center Room 218.
Interfraternity Council, 3:30 p.m., Student Center Room 222.
Concert Connections, 4 p.m., Student Center Room 202.
"A Sense of Spirit," Exhibition of Houston Artist's work expressing spiritual ideas and values, Gallery 4:30.

Tuesday 24

Kappa Alpha Psi Food Drive.
Interracial Encounter Group, 4 p.m., Student Center Room 218.
Student Government, 5 p.m., Student Center Room 222.
Student Affairs, 5:30 p.m., Student Center Room 209.
BSU, 6 p.m., Student Center Room 218.
Academic Affairs, 6 p.m., Student Center Room 204.

Wednesday 25

Kappa Alpha Psi Food Drive.
Thanksgiving Recess Begins after 10 p.m.
Forums, 4 p.m., Student Center Room 214.
Interdorm Council, 4 p.m., Student Center Room 222.
Student Foundation, 5:30 p.m., Student Center Room 222.
Wednesday Night Bible Study, 8 p.m., Student Center Room 222.

Friday 27

Film: "It Happened One Night," 5, 8, 10 p.m., Student Center Ballroom.

Saturday 28

Basketball, University of Texas at Arlington, there.

Sunday 29

ICTHUS, 8 p.m., Student Center Room 202.
Theatre Rehearsal, 6 p.m., Student Center Ballroom.

Monday 30

Panhellenic, 3 p.m., Student Center Ballroom 218.

Interfraternity Council, 3:30 p.m., Student Center Room 211.
Lady Frogs Basketball: TCU vs. UTA, 5:15 p.m., Daniel Meyer Coliseum.
Films Committee, 6 p.m., Student Center Ballroom 202.
Campus Crusade, 9 p.m., Student Center Ballroom 203.
Brown Bag Series, "Day for Dancing," TCU Chapel Choir and Division of Ballet, 7:30 p.m., University Christian Church.
Basketball: TCU vs Northwest Missouri State, 7:30 p.m., Daniel Meyer Coliseum.

Tuesday 1

Brown Bag Series, "Day For Dancing," 7:30 p.m., University Christian Church.
Interracial Encounter Group, 4 p.m., Student Center Room 218.
Student Government, 5 p.m., Student Center Room 222.
Student Affairs, 5:30 p.m., Student Center Room 203.
Academic Affairs, 6 p.m., Student Center Room 204.
BSU, 6 p.m., Student Center Room 218.

Wednesday 2

University Chapel, noon, Robert Carr Chapel.
LOTAS, "Stress and Time Management," with guest lecturer Linda Hughes Allen, adult services coordinator, continuing education, noon, Student Center Room 202.
Forums, 4 p.m., Student Center Room 214.
Interdorm Council, 4 p.m., Student Center Room 222.
Student Foundation, 5:30 p.m., Student Center Room 222.
Unity Chapel, 7 p.m., Robert Carr Chapel.
Wednesday Night Bible Study, 8 p.m., Student Center Room 207.

Thursday 3

Lady Frogs Basketball: TCU Invitational, 10:30 a.m., Free with ID, Daniel Meyer Coliseum.
Arnold Air Society, 4:30 p.m., Student Center Room 205.
Campus Chest, 6 p.m., Student Center Room 204.
Forums, Michael Manley, Former Prime Minister of Jamaica, 8 p.m., Student Center Ballroom.
Campus Crusade, 8:30 p.m., Student Center Room 204.

Friday 4

Lady Frogs Basketball: TCU Invitational, 10:30 p.m., Free with ID., Daniel Meyer Coliseum.

KD Emerald Ball.

Friday On Campus.

Wednesday Night Bible Study, Caroling and Christmas Party, meet in front of Frog Fountain, 5:30 p.m., Party later.
Film: "Thunderball," 5, 8, and 12 p.m., Student Center Ballroom.
Jazz Concert, 8 p.m., Ed Landreth Auditorium.
Freshman Night Before Christmas Pajama Party, 9 p.m.-1 p.m., University Christian Church Fellowship Hall, tickets available in the Student Center Lobby from 11 a.m. to 1 p.m., until December 4, \$2 before, \$3 at the door.

Saturday 5

Lady Frogs Basketball, TCU Invitational, Championship Match, 7:30 p.m., Free with ID, Daniel Meyer Coliseum.
Film: "My Fair Lady," 5, 7:30, 10 p.m., Student Center Ballroom.
Hideaway, Special end of the year show, 8 p.m.
Delta Gamma, Black and White Formal, Unity Christmas Ball.
BSU Formal Banquet.
TCU Celebrity Frog Bowl.

Sunday 6

Puppet Show, "The Littlest Angel," dinner at 6 p.m., Student Center Room 207-209, Show, 8 p.m., Student Center Ballroom, tickets, \$5.50, \$3.50 for children.
Choral Union Concert, Singing Bach's "Magnificat," and Verdi's "Te Deum," 7:30 p.m., University Christian Church.

Monday 7

Student Center Christmas Fair, Arts and Crafts exhibit, 10 a.m. to 7 p.m., Student Center Lounge.
Brown Bag Series, "Dance happenin'," TCU advanced modern dance laboratory, Student Center Ballroom.

Tuesday 8

Student Center Christmas Fair, Arts and Crafts exhibit, 10 a.m. to 7 p.m., Student Center Lounge.

Wednesday 9

Last day of classes.
University Chapel, noon, Robert Carr Chapel.
Musica Nova, 8 p.m., Ed Landreth Auditorium.

Thursday 10

Study day.
Film: "Godzilla vs. The Bionic Monster," 5, 8, 12 p.m., Student Center Ballroom.
Van Cliburn Celebrity Series, Flutist James Galway, 8 p.m., Ed Landreth Auditorium, admission charged.

Friday 11

Study day.
Army ROTC Christmas Party.
Film: "Private Benjamin," 5, 8, 12, p.m., Student Center Ballroom.

Saturday 12

Faculty Christmas Party.
Air Force ROTC Christmas Party.

Sunday 13

Student Center Open until midnight, extra rooms available.

Monday 14

Final Exams.
Pick up financial aid applications for 1982-83.
Carols by Candlelight, 10:30 p.m., Robert Carr Chapel.

Tuesday 15

Final Exams.
Pick up financial aid applications for 1982-83.
Late night study breakfast, Student Center Cafeteria.

Wednesday 16

Final Exams.
Pick up financial aid applications for 1982-83.
Unity Chapel, 7 p.m., Robert Carr Chapel.
Service Recognition Award Ceremony.

Thursday 17

Final Exams.
Pick up financial aid applications for 1982-83.

Friday 18

Semester ends.

'Private Lessons' should be private

By Rosalyn Royal

In "Private Lessons," they do, uh, things best done in private.

And what makes it especially offensive is that these, uh, "things" are done with a 15-year-old boy whose voice hasn't even changed yet!

Sylvia Kristel is the quasi-housekeeper whose sole purpose in life is to seduce her rich employer's son. Then she and her butler boyfriend can pretend she dies of ecstasy in the 15-year-old's arms (I'm serious) and the father will pay hush money.

This she accomplishes by first asking the boy if he wants to watch her undress—totally—and then, asking him if he wants to bubble up in the bath with her.

And, this is still with the very-much-boyish, very-much-not-yet-a-man 15-year-old.

Well, she, nevertheless, makes a "man" out of him, and even decides she "loves" him enough to bow out of the blackmail and "get out of his life."

Seriously.

I guess if you're 15 and just ache to get in on those "private lessons," well, then so be it.

Otherwise, it's a definite no-no, silly movie.

Matter of fact, 15-year-olds can't even get in to this this R-rater without a parent!

Forget it.

Another slightly silly, slightly fascinating movie is "The French Lieutenant's Woman."

The best thing about it is that it's showing at the very comfortable and plush Opera House Theater.

What makes it fascinating is the presence of Meryl Streep as the "French lieutenant's whore" and Jeremy Irons as the man she finally loves and beds.

This part takes place in the early 1800s, complete with its Victorian morality. We're never quite sure if Streep only imagines her French Lieutenant—since she is still a virgin when she succumbs to Irons in one of filmdom's most sensuous scenes—or if he really does exist.

Hence, the "whore" label with

which the town brands her.

The silly thing and the thing that breaks the spell of the movie is its continual flipping-over to today, and today's off-screen tryst of Streep and Irons *making* of the "French Lieutenant" film.

Two movies in one, and that's the way it should have been. Just as we're getting into the 19th century mores, we're brought back to 20th century reality.

Along the way, we're also not quite sure why 19th century Streep disappears for three years—but we *know* why the 20th century romance is finis. The film ends naturally.

I don't believe it's Oscar time again for Streep. Not for this one.

etC.