

AT A GLANCE

Activity camps planned. Registration has begun for 1996 Gryphon activity camps. Run by the Department of Athletics, the camps offer children aged five to 14 educational activities, recreational sports and games on campus. There will be six five-day sessions July 1 to Aug. 9 from 9 a.m. to 4:30 p.m. Cost is \$125 per session. For information call Pat Richards at Ext. 2742.

Support the forest. A benefit concert for the Arboretum's Children's Forest, featuring "Today's Family" choir, the Ponsonby Public School Choir and Phoenix Jazz, is slated for April 28 at 7:30 p.m. in War Memorial Hall. A donation of \$2 per person is requested. During the concert, a draw will be held for a hand-crafted quilt. Raffle tickets are \$1 and are available at the Arboretum.

On the run. Campus Police hit the road April 25 in support of the Special Olympics... page 3

On being learner centred. A FACS forum examines the roads and barriers to active learning... page 4

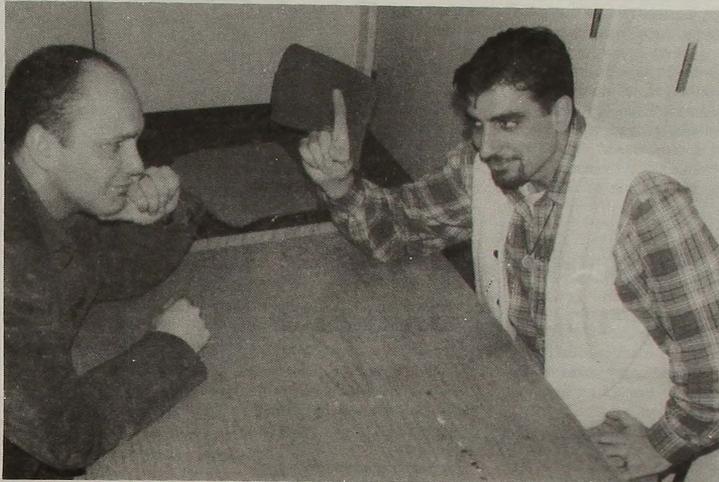
Wake up and smell the coffee. Caffeine limits for athletes are too high, says human biologist... page 5

It's all in the packaging. Food preservation gets a boost from a packaging breakthrough... page 8

Thought for the week

I was thrown out of college for cheating on the metaphysics exam; I looked into the soul of the boy next to me.

Woody Allen



I told you so! A flair for the dramatic comes in handy when you're a member of the award-winning U of G Debating Society. Proving his point with a wag of his finger is champion debater Ron Guirguis, right, as colleague Jim Scala prepares his rebuttal. See story on page 3.

Photo - Kerith Waddington, University Communications

Alumni Senate caucuses formed

U of G alumni will be more involved in the decision-making process at Guelph, thanks to the recent establishment of an alumni caucus.

Made up of the nine alumni currently serving on Senate after appointment by their peers, the caucus has been meeting on a monthly basis since November 1995 to consider and co-ordinate views of its individual alumni constituencies on a variety of campus issues.

Caucus members will bring representative opinions to the Senate committees they serve on as well as the Senate floor itself. In this way, the group plans to bring a powerful alumni perspective to University governance and operations.

It is a job alumni are well-suited for, says alumni senator Robert Murray, a 1949 graduate of OAC who founded the caucus.

"Knowing both the university system and the world existing outside it, alumni have a broad base of experience they can bring to bear when considering issues affecting the functioning of Guelph," says Murray. "This positions them well to bring about positive change."

Alumni have traditionally influenced University decision making by serving on college alumni associations, the U of G Alumni Association (UGAA), advisory committees, councils and boards. Caucus goes beyond these avenues in bringing a broadly based, co-ordinated alumni presence and input to the highest levels of University government, says Murray.

Invaluable knowledge and experience make alumni an important resource for the University community, says caucus chair Mark Stevenson, a 1993 graduate of the College of Social Science. "The formation of an alumni caucus will bring the alumni into closer and more real contact with the University community and administration, a process that can only better help serve the campus

New partnership for U of G, OMAFRA

A memorandum of understanding between U of G and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), which will clear the way for detailed planning to be carried out for an enhanced partnership for most functions in the ministry's education, research and laboratories division, is in its final stages of preparation.

The partnership is expected to build on the current agreement between U of G and OMAFRA and encompass the colleges of agricultural technology at Kemp-

tonville, Alfred and Ridgeway; the Veterinary Clinical Education Program and diploma program at Guelph; OMAFRA's agricultural and food laboratory services and veterinary laboratory services; and the Horticultural Research Institute of Ontario.

President Mordechai Rozanski says the new partnership is an opportunity for Guelph to maintain and even strengthen its pre-eminent position in agriculture and food programs, which would

have been at great risk if the new partnership did not proceed.

Rozanski says this partnership offers access to additional sources of revenue that can be used to mitigate the removal of more than 25 per cent of the provincial government's funding of functions of the educational, research and laboratories division, which include OMAFRA's support of research and education at U of G.

It will also improve the University's delivery system for agricultural technology and enhance Guelph's outreach to — and recognition in — all areas of Ontario.

Prof. Larry Milligan, vice-president (research), Norris Hoag and Jim Pettit of OMAFRA and Jeremy Gawen of the Office of Research are leading and co-ordinating a team of OMAFRA and U of G representatives who are preparing detailed proposals and implementation plans.

Other members of the University serving on related subcommittees with their OMAFRA counterparts are OAC dean Rob McLaughlin, OVC dean Alan Meek, dean of graduate studies Alastair Summerlee, Prof. Dave Hume, Clayton MacKay, Prof. Gord Surgeoner, Prof. Marc Le

Woman assaulted in UC

Guelph police are investigating an assault April 7 in the basement of the University Centre.

An unidentified woman was using a washroom across from Peter Clark Hall at 10:30 p.m. when she heard someone enter. She assumed it was another woman using the facilities, but when she left the stall, a man grabbed her from behind and held a knife to her throat.

Police say the man then turned the woman around and forced her to grab the blade of his knife. When she did, the man pulled the knife, cutting her hand. Startled

by a noise, he pushed the woman back in the stall and fled.

The assailant is described as six feet tall, wearing a three-quarter-length navy blue parka, black ski mask, dirty white running shoes and thin leather gloves. He had brown hair and eyes.

Additional patrols by security staff are now being conducted in the area of the incident, says Nancy Sullivan, vice-president (finance and administration).

Anyone who has information about this incident is asked to contact Guelph Police at 824-1212. □

See LINK on page 3

See ALUMNI on page 3

A new car? Putting the kids through college?
Retiring... comfortably. Whatever your dreams,
we can make your money grow.

CIBC Banking Centre, 23 College Ave. West
Telephone: 824-6520



We see what you see.

LETTERS

Student voices must be integral part of consultative process

The University of Guelph is currently undergoing drastic restructuring in response to a series of funding decreases.

In recent months, we have seen the adoption of a new mission statement for the University and the adoption of learner centredness, research intensiveness, collaboration, internationalism and open learning as strategic directions for this institution.

These strategic directions will guide how we restructure every facet of the University and will affect who will participate in the

decision making around that restructuring.

As the largest stakeholder on campus, students must be an integral part of the consultative process, especially with regard to course reviews and program specializations.

In the Strategic-Planning Commission's report to the president, Recommendation 21 states that "all undergraduate and all graduate courses should be evaluated by students. A common set of questions should be introduced university-wide, to form a part of

each department's questionnaires."

The commission goes on to say that "in a learner-centred university, we must pay close attention to what is and what is not working for all student leaders." This implicit recognition of the importance of student input and student course evaluation must be acted on in each program, department and college and at all administrative levels.

In the Jan. 10 issue of *At Guelph*, Prof. Norman Gibbins stresses the importance of student voices

in a learner-centred university best when he says that learner centredness "is predicated on respect for the student as an academic colleague."

He also explicitly recognizes the vital contribution that students can make in course reviews and evaluations.

The benefits of campus-wide comprehensive course evaluations can't be stressed enough. At the moment, the majority of departments on campus do perform some sort of course evaluation, but there is no consistency in the method or the protocol for these evaluations even within the department, let alone between departments.

There is also a certain amount of mystery involved, whether perceived or real, concerning what is actually done with the evaluations, who sees them, how they are used, whether students need to sign them to lend credibility to their comments, etc. These are issues that need to be addressed.

We believe that having a campus-wide system implemented with clear guidelines and accountability will aid in the evaluation process.

In determining the actual criteria and methods for course evaluations, student input is also important. Students are in the position to judge the effectiveness of a course in a way that is different from that of the professor or the department or program chair.

If we are moving towards the goals of self-reliant learners, asking students to shoulder the responsibility for what they learn, we need to ask them how best this can be achieved. This is particularly relevant where we are delet-

ing courses and specializations from programs.

We understand that the Joint Faculty Policies Committee is reviewing this issue, and we look forward to a positive outcome of that review.

During the course of a student's university career, attitudes change and academic appreciation deepens. Often, the benefit of a course is not realized until later in a program of study, when the tools and concepts learned are actually put to use. It is with this in mind that we propose that exit interviews also be implemented in conjunction with semester course evaluations. This could be achieved through the distribution of surveys with graduation/convocation packages.

At a time when students are being asked to absorb a 19.6-percent increase in tuition, it is vital that U of G demonstrate it is committed to an accountable open process of restructuring and evaluation that includes the active participation of the students at this institution.

Course evaluations, while being recognized as a critique of course content and presentation, also serve as a way to achieve a healthy rejuvenation of teaching and scholarship. We recognize that there are two kinds of reviews — reviews of faculty and reviews of courses; our primary concern is with the latter.

In the spirit of learner centredness, we can all learn from each other and build on our strengths and the strengths of others through an open process of review and evaluation.

Central Student Association
and the Senate Student Caucus

Building design should be geared to people, not superficial economics

"Systems are made for people and not the other way around."
Vclav Havel, president of the Czech Republic, in 1991.

In *At Guelph* March 27, Lloyd Cummins is quoted as saying: "Leaving your work area over the noon hour and on breaks can help or eliminate sick-building syndrome." I know he was only being helpful, but it's an admission of expensive past building failures, which I hope we are now learning from.

For most of human history, we used buildings to protect us from

the elements; now we use the elements to protect us from the buildings.

Although people are the most important resource of any university (or any business for that matter), their efficient functioning in environmentally and socially pleasant conditions is completely ignored — simply so that someone can design and build a superficially economic but basically dysfunctional building. And in my view, any building that doesn't have private individual offices with windows that open plus a central social meeting place is dysfunctional and should never be built.

Unfortunately, some people are prepared to accept the superficial economic arguments in place of rational thought. And it's a growing and depressing trend everywhere, as David Ehrenfeld of Rutgers University describes in his 1993 book *Beginning Again*.

Ehrenfeld's university planned to spend more than \$9 million on its resources building, to turn it into a showpiece, a state-of-the-art facility. At frequent planning sessions, users asked for windows that opened, and this was agreed on. During construction, the foreman said: "No, the windows of tinted glass will not open," and it was too late to change the plans.

Ehrenfeld says that numerous complaints of poor temperature control, lack of air movement, headaches, eye irritation, fatigue, etc., were received. The air intake on the roof was closed; it was too close to the building exhaust anyway. The chief designer appeared and protested angrily: "They open the blinds. This system only

works with the blinds closed." Subordinates nodded in unison to show their outrage at thoughtless people who open blinds when the sun is shining.

How do such monstrosities get built? How can modern state-of-the-art facilities end up less adequate than those designed in the Middle Ages?

It happens because of fragmentation and bureaucratization of responsibility, proliferation of arrogant "experts" and resulting inadequate supervision. It happens because top-down imperial management makes decisions in ignorance, without considering or consulting (or only pretending to consult) the users.

It happens because of foolish infatuation with "state-of-the-art" systems designed with utter disregard for the inhabitants and users. It happens because people accept quantity instead of quality. It happens because people spend money as a substitute for thought. It happens because people are treated as things to be manipulated and not as human beings.

And finally, even just considering the bottom line, it is inefficient and wasteful.

Ernest Rutherford was once asked how Cambridge University produced so many outstanding physicists. He replied that they had no money, so they needed to use their brains. Unfortunately, in Guelph, as elsewhere, the opposite now holds. We have no brains, so we need (to waste) a lot of money.

Prof. Michael Brookfield
Land Resource Science

Will treasure memories

This campus has been rich with experiences for me, and my wonderful farewell party April 10 was yet one more. Retirement feels right, but I will miss the day-to-day interaction with the people here — the essence of this university.

I have memories to treasure, and now I will be seeing the campus from another perspective as I work on completing my BA.

Thank you from the bottom of my heart for the party. And thanks, too, for the contributions people have made in honor of my retirement to the fund-raising program Class Act. To date, do-

nations have reached more than \$700.

And by the way, whoever said I liked Kit-Kats?

Dorothy Collins

At Guelph welcomes letters to the editor from members of the University community. They must include the full name, signature and telephone number of the correspondent. At Guelph reserves the right to reject any letter for publication and to edit letters for content and length.



A watershed event in the life of a computer nerd: Hearing the Call of the Information Highway.

Tucker-Johnson Limited

- Sales, Leasing, Parts & Service
- Free Courtesy Shuttle Service
- Oil and Filter Service Special on VW Products from \$24.95
- Serving the Community Since 1963

Golf CL lease from \$229 (24 months)
Jetta GL lease with A.C and cassette \$299 (24 months)*

Half km west of the Hanlon on Hwy 24
656 Wellington St. W., Guelph

824-9150 • Fax: 824-7746

*OAC plus applicable taxes

AT GUELPH is published by the University of Guelph every Wednesday except during December, July and August, when a reduced schedule applies. *At Guelph* is guided by an editorial policy and an editorial advisory board. The policy is available on request at Ext. 3864.

Views, opinions and advertisements contained herein do not necessarily reflect official University policy. *At Guelph* will not be liable for damages arising out of errors or omissions in advertisements beyond the amount paid for space.

At Guelph welcomes contributions from the University community, including letters to the editor, opinion pieces, publications and news about faculty, staff and student activities. Deadline is Wednesday at noon unless otherwise specified. Articles may be reprinted with permission of the executive editor.

At Guelph top stories can be accessed on World Wide Web <http://www.uoguelph.ca/atguelph>. Offices: University Communications, Level 4, University Centre, University of Guelph, Guelph, Ontario N1G 2W1. Telephone: 519-824-4120, fax: 519-824-7982, e-mail swebster@exec.admin.uoguelph.ca. Office hours: 8:30 a.m. to 4:45 p.m.

UNIVERSITY
of GUELPH

Executive editor: Sandra Webster, Ext. 3864.

Editor: Barbara Chance, Ext. 6580.

Writer: Kerith Waddington, Ext. 2592.

Advertising co-ordinator: Vicki Gojanovich, Ext. 6690.

Production: Linda Graham, Ext. 6581.

Editorial advisory board: Prof. Roselynn Stevenson, Microbiology; Prof. Beverley Hale, Horticultural Science; Jim Rahn, Veterinary Teaching Hospital; acting CPES dean Robert McCrindle; Prof. Donna Woolcott, Family Studies; Prof. Donna Pennee, English; CSS dean David Knight; Lance Morgan, Central Student Association; Karen Iles, Graduate Students' Association; Linda Hoffman, Animal and Poultry Science; Cal Swegles, Human Resources; Sharon Taylor, Library; Benny Quay, Counselling and Student Resource Centre; and Guelph lawyer Robin Lee Norris.

Member of Canadian Public Relations Society, Canadian Council for the Advancement of Education, International Association of Business Communicators and the Council for the Advancement and Support of Education.

Subscriptions: \$44 (includes GST); outside Canada, \$51. ISSN 08364478. © 1996.



They're the tops! FACS recently presented its 1995/96 learning and teaching awards. Winners are, top row from left: Frebis Hoffmeyer, Consumer Studies (community service excellence), Prof. Andor Tari, Family Studies (undergraduate teaching excellence), and Prof. Jean Turner, Family Studies (graduate teaching excellence). Bottom: Consumer studies graduate student Heather Couler (GTA excellence), Greta Hofstra, Consumer Studies (research support excellence), and Prof. Kerry Daly, Family Studies (learner-centred excellence). The 1996 Gerhard Scherf Award for contributions to the college went to student Shawn Penny. Photo - Kerith Waddington, University Communications

Link builds on relationship

Continued from page 1

Maguer, Prof. Danny Butler, Prof. Gary Kachanoski, John Miles, Wayne Marsh, Jeff Schieck and Bruce Anderson.

Prof. Iain Campbell, provost and vice-president (academic); Nancy Sullivan, vice-president (finance and administration); and Vic Reimer, acting assistant vice-president (human resources) are reviewing policy issues.

"The prospect of this enhanced link is exciting and builds on our historic 30-year relationship with OMAFRA and the agri-food community," says Milligan. "There's no doubt in my mind that as we develop this partnership, it will assure Guelph's position as the focal point in Canada for agri-food education and research.

"Combining our current strengths with training and with agricultural technology development and application at the colleges, participating in the regulatory system and participating in provincial reference diagnostic work promote a greater cohesion within Ontario's agri-food indus-

try. It helps bring the results of our research into practice more quickly, opens up opportunities for graduating students and makes the University relevant to the lives of more Ontario citizens. This builds a wider constituency that believes in the need to sustain support for our whole university." Hoag, OMAFRA's assistant deputy minister, says such an enhanced partnership "would allow Ontario to concentrate the use of our resources to provide our food and agriculture industry with a first-rate source of information and technology."

According to OMAFRA, this partnership will allow the ministry to reduce government expenditures by \$20.1 million a year, minimize the impact on clients and staff, help keep existing facilities open and focus on Ontario's leadership in agricultural research and education.

More information will become available as detailed planning progresses. Discussions call for the new partnership to be in effect by April 1, 1997. □

Alumni have important role

Continued from page 1

community as a whole," says Stevenson.

Furthering the efforts of caucus to bring an organized alumni presence to those highest levels is a new provision to reserve a seat for the past president of the UGAA. Senate secretary Brenda Whiteside is pleased with the establishment of both the provision and the caucus.

"Alumni have an important role to play on Senate," says Whiteside, "and the provision as well as the monthly caucus meetings in advance of Senate will encourage them to become yet more active. In addition, Senate just recently passed a resolution that each Senate committee should try to include one alumni member. Such involvement will further the participation of alumni in the governance process." □

Campus constables will carry the torch for Special Olympics

Carrying a torch.

Many of us have done this for someone at one time or another, but probably not literally and probably not for more than 7,000 people at a time. That's where University police officers Robin Begin and Gary Ferris stand out. They'll be carrying a torch April 25 in the 10th annual Ontario Law Enforcement Torch Run for Special Olympics.

Covering a six-kilometre route from campus to downtown, Begin and Ferris will be accompanied that day by several Special Olympians and members of the Guelph Police Department.

The run finishes at City Hall, where a flag will be raised and the torch will be passed on to provincial police.

The run is part of an international series of 75 runs in 17 countries and is geared to raising funds to support community-based sport programming for people

who are developmentally handicapped.

Provincially generating about \$4.5 million to date, the torch run has resulted in a marked increase in the participation of Ontarians at the Special Olympics, says Begin.

It also enhances community-based policing.

"There's a bond between police departments in Guelph that is strengthened by participating together in a really good cause," she says.

"And the increased interaction that occurs between the police and the community as a result of the run makes it more likely we can all work together for the safety of our community."

Coming on the heels of a successful fund-raising "Wing Night" at Gryphs that was hosted by the campus and city police departments and raised \$300 for the Special Olympics, the torch run is



expected to light its own fund-raising fire.

"Participating is a great feeling physically as well as emotionally because you know you have helped smooth the path for someone else to achieve new goals," says Ferris.

Anyone interested in sponsoring the campus constables as a team in the run can call Begin at Ext. 6261. □

Debaters talk their way to success

by Kerith Waddington
University Communications

The only way you'll be out of breath playing this sport is if you can talk a blue streak.

The U of G Debating Society — 38 members strong and growing in prominence on campus and throughout the world — won this year's national debating competition and placed 16th at the World Debating Championships in Cork, Ireland.

As the finest public-speaking team in North America — with the top individual debater on the continent — the society is "striking concern and fear into the minds of logisticians the world over," says club president Ron Guirguis, an eighth-semester economics student.

"Guelph debaters are known to be ruthlessly logical, but they do it with charisma, with panache and often in costume," says Guirguis. "We have the best, most friendly and fun debating society of them all, and I recommend membership to everyone, not only for the social aspect but also for the skill development that can be acquired."

Skills gained during the society's twice-weekly meetings on campus include effective use of rhetorical devices like voice inflection and humor, punctuating a point with fact, thought organization and building self-confidence. Guirguis says a sharp mind is a natural aptitude that in a crunch can be supported by using the time-honored debating tactic: "When in doubt, lie."

A popular competitive sport in many parts of the world, debating is catching on in North America, where there are an estimated 400 school teams.

The Canadian parliamentary style of debating used here entails formal seven-minute-long talks by each of two team members on a sight-unseen topic. Interspersed with these presentations are talks and responses by members of an opposing team of two.

Staged either in front of a large

crowd or a single judge depending on the format, debates and topics can range from the ridiculous to the sublime, says team member Jim Scala, an eighth-semester philosophy student.

"Be Your Own Pope Church," "Hamlet Take Her Now or Lose Her Forever" and "Censorship and Hate Propaganda" are just a few of the subjects the team has discussed at recent public forums, Scala says.

"For me, the key to debating well is to remain 'true' by speaking from the heart without worrying about winning and to use humor effectively," he says. "Considering you've got a captive audience, it's a terrific opportunity for people with an opinion to say all they've ever wanted to about certain subjects and have someone listen."

The society gives back to the University community by hosting public debates on campus almost every other week during the semester to disseminate information to students in an entertaining and informative way.

"Debaters for Hire" is a fund-raising initiative whereby, in return for a donation by college governments or organizations, the society holds a debate on a

relevant topic. Most recently, a debate on "Whether or Not the Charter of Rights Should be Repealed" was presented on behalf of the Politics Club. Last semester, the society debated "Is Communism Dead?" with the president of the Canadian Communist Marxist Leninist Party.

The Debating Society's willingness to serve as a resource for student groups and the administration in offering a forum for university-wide discussion of current campus topics is an exemplary service, says Brian Sullivan, associate vice-president (student affairs).

"The society's efforts have brought considerable renown to U of G," says Sullivan, "and the impact they have made in vaulting to the front ranks of North American and international debating in such a brief tenure has been extraordinary. I've been particularly impressed with the leadership skills that the members of the group have developed, both in recruiting and training novice debaters and in raising the funds and external sponsorships necessary to compete at an elite level." □

Nadalin to join C of C

Gary Nadalin, director of community relations in University Affairs and Development (UA&D), is leaving U of G to become general manager of the Guelph Chamber of Commerce May 6. He will succeed Mike Henry, who is retiring after 21 years.

Nadalin, who joined the University in 1978, is well-known in the downtown community. He is a director on the board of the Chamber of Commerce and the Downtown Board of Management, a member of the Visitor and Convention Services advisory board and a member of the Guelph Civic Centre board, of which he is chair.

Nadalin is also a director of the Big Brothers' Association of Guelph and Wellington County and a member of the Guelph Police Services board and the Rotary Club of Guelph.

UA&D vice-president John Mabley extends best wishes to Nadalin in his new position. Noting that U of G and the Chamber of Commerce are both committed to the economic development of the Guelph community, Mabley says he looks forward "to maintaining a vital relationship with the Chamber of Commerce through Gary, who knows the University so well." □

TEACHING & LEARNING

FACS forum focuses on roads and barriers to active learning

by Ann Middleton

Learner centredness proved a hot enough topic to bring 40 members of the College of Family and Consumer Studies out into the cold in March for a 3½-hour forum.

The student-sponsored event, which attracted undergraduate and graduate students, faculty and staff, was the brainchild of students Janine Coackley and Susan Thorpe, who worked closely with Prof. Ron Stoltz and Les Richards in Teaching Support Services.

"We wanted to initiate dialogue because most people don't know what learner centred means," said Thorpe. "We thought it was important to discuss concerns, barriers and ways and means of achieving active learning."

Forum host Prof. Julia Christensen-Hughes, HAFA, chair of the FACS learning and teaching committee, said: "It's up to all of us as learners to bring this alive. It's not a top-down process."

Christensen-Hughes said universities must respond to changing needs in society. "It's a huge challenge for deans' councils and curricular and department committees," she said.

Four introductory speakers set the stage for discussion — Shawn Penny, president of the FACS undergraduate student association; graduate student Lauralei Harper; Prof. Susan Lollis, Family Studies; and Prof. Ann Armstrong, HAFA.

Implementation questioned

Penny said he doesn't think students oppose the concept of learner centredness. But he questioned whether new and innovative teaching methods, a shift to faculty as learning facilitators, an emphasis on self-reliant learning and skill development, and a strengthening of the research/teaching link can be easily implemented.

To achieve student-centred learning, faculty must work with administration and students to understand and assume their roles as facilitators rather than traditional authoritative figures, said Penny.

"Students must be provided with incentive to accept the new environment, and administration must be willing to restructure the allocation of resources and accept students as sharing the authoritative role both in and out of the classroom."

The question of authority was also raised by Armstrong, who sees the question of student rights as the fundamental issue in learner centredness.

"We faculty don't look at the rights that go along with the students' responsibilities in our course design and evaluation," she said. "We create repressive tolerance by being preoccupied with responsibilities and not rights. If students are given the opportunity to become sentient people —

to manage their own rights and responsibilities — we will see great things. But it will be difficult in the beginning because we've infantilized students and they will fail at first."

Lollis said faculty should involve the student's whole self in the classroom. "We should invite the emotional and experiential self to class and encourage an interaction between the instructor and student that is mutually beneficial."

Non-active learners

Lollis, a specialist in childhood education, said that about 50 per cent of children become non-active learners by age 10. "Do we stop including students in the process of education?" she said. In her own research with schoolchildren, she has found they have a chance to negotiate their positions in their families, an opportunity that does not usually exist in the more rigidly structured classroom.

By allowing university students to negotiate within certain established guidelines on issues like evaluation and content at the beginning of the course, faculty get a more committed class and a more effective evaluation process, she said.

Harper noted that graduate students get little mention in the strategic plan although they are a resource that could be put to better use as learner-centred facilitators. "But as teaching assistants, we receive little or no training in pedagogy, so how can we adopt a learner-centred approach?"

Students weren't the only ones concerned about the size of the job and the lack of tools for implementation.

"We want to make courses more learner centred," said Prof. Bruce Ryan, Family Studies, "but we need clarification in terms of such things as instructional design. Every semester I try to do something different and better... I ask myself what I will do that's different from what I've been doing all along."

Prof. John Pratschke, Consumer Studies, pointed to constraints such as large classes, heavy teaching loads, shrinking library facilities, lack of computer support and diminishing financial resources, which make it difficult for faculty to enrich the learning experience.

"Education is a process, not an outcome like a cookie," he said.

Peter McCaskell of Computing and Communications Services, one of four group facilitators, asked his group what they would do to eliminate barriers to learner centredness if money were not a problem.

Members concluded that even if all classes consisted of 30 students or less, there would not necessarily be an atmosphere of learner centredness.

"There is no single way you could achieve this," Ryan said. The process would involve a cultural change that must include students, faculty and administration, group members agreed.

Students, faculty fear change

It was acknowledged that students and faculty alike fear change. Harper said students she talked to expressed fear of extra work, taking responsibility for their own learning and receiving less value for increased tuition.

"I think intimidation and fear of failure are a big thing in student learning," said graduate student Jeff Misumi. "There is a perception that the professor has all the power. As you get older and really start to challenge things, you know that doesn't matter. When you get to that stage, you start learning."

Misumi said it's only as a graduate stu-



dent that he has taken responsibility for his own learning.

"I'm a product of the university education system. I did what I had to do as an undergrad and came out at the end with a degree, but as a very dissatisfied person. I had to mature before I wanted to learn."

Ryan agreed that it's not easy to convince first- and second-year students to take responsibility for their own learning.

"We take a learner-centred approach at the graduate level and in small senior courses fairly effectively now, but it's not so simple at the earlier levels," he said.

The question of professor as facilitator rather than authority figure caused discussion in one of the groups. Pratschke said faculty should be leaders, not facilitators. "If I become a facilitator, I have abdicated my responsibility."

He stressed that professors are learners, too, a point that was reinforced by several other faculty members.

Administration here to serve

If Guelph is to foster an atmosphere for learning in classrooms, faculty have to stand up to the administration, said Armstrong. "The administration is here to serve students and faculty."

She cited the regulations that require professors to hand in exam results in a short period. This means there's no time to mark exams of an intellectually stimulating nature, she said.

Speaking for her discussion group,

Johanne Doucet, academic assistant to the FACS dean and program counsellor, said: "We must recognize that the administration is here to serve the students and that may mean changes in areas such as exam schedules. We need to respect the individual learner, not to make them fit the mould. We need to challenge the norms as they stand and remove institutional barriers to establish new institutional norms and values."

Doucet's group suggested that mentoring and buddy systems within programs could promote active learning, and that students should be encouraged to be advocates.

In response, FACS dean Michael Nightingale said there is a need to reward risk taking in students, faculty and teaching assistants to allow them to make changes. "It's something we're not good at now," he said.

Nightingale also urged students, faculty and staff to challenge him on administrative barriers to the creation of a more learner-centred environment in the college.

At the end of the evening, Penny commented on the learner-centred environment of the forum. "This event has given me more understanding than anything else I've encountered on the subject," he said.

Student Kian Merrikh said: "We must realize this is just the beginning. There are no overnight answers. To implement a learner-centred approach, we need to capitalize on people on every level of the University." □

What does 'learner centred' mean?

At the FACS forum, it became clear that students and faculty alike find the term "learner centred" confusing and ambiguous.

Prof. John Pratschke: "I'm critical of the ambiguity and vagueness of the term, but we're free to interpret it as we wish. We should interpret the concept as a positive one and set up the University as it was meant to be, a community dedicated to scholarly activities. If we are all learners, we don't have to worry about questions of power. In a true community, resources should be shared equitably."

Sarah Bull, graduate student: "Everyone is throwing around the concept, but it isn't tangible."

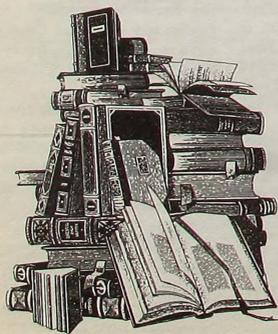
Vanessa Armstrong, member of FACS Student Advisory Council: "I can't see things getting better with learner centredness with such confusion about what it means."

Prof. Bruce Ryan: "There is no unambiguous statement on what the concept means in practice."

Program counsellor Johanne Doucet: "The term is unpronounceable, not visibly tangible and should be redefined."

Graduate student Lauralei Harper asked fellow students what they thought "learner centred" meant. She received the following responses: "lots of extra work," "confusing," "no spoon feeding," "less value for increased tuition," "learning based on student needs," "more responsibility for own learning" and "use of alternative teaching methods."

When Harper asked what they'd like it to mean, students said: "more interaction between students and faculty," "more responsibility for students (but we need guidance)," "a helpful hands-on approach" and "something more clearly defined." □



Effects of caffeine on female athletes studied

by Sophie Wilson
Office of Research

Female Olympic hopefuls using caffeine to improve performance may be getting more of a "jolt" than they realize, says a U of G researcher.

Caffeine — in the form of pep pills from the drugstore or coffee from the pot — improves a high-performance male athlete's endurance dramatically, says Prof. Terry Graham, Human Biology and Nutritional sciences. Now, he and graduate student Cyndy McLean are studying caffeine's effects on women.

"Athletes have been using and abusing caffeine for years," says Graham. "We know what happens when men do this. Now we want to look at women's reactions."

In a previous study, Graham found that men's endurance improves when they ingest as little as 300 milligrams of caffeine, roughly the amount in two large cups of coffee. He believes the effect will be more pronounced in women.

Caffeine is broken down in the liver by the same system that breaks down estrogen. Women in their child-bearing years have more estrogen than men do, so they probably have fewer resources available for breaking down caffeine, says Graham. As a result, caffeine may stay in a woman's body longer and have a more prolonged impact.

Metabolism of caffeine

To see if this is true, he and McLean are giving women a set dose of caffeine, then taking blood samples from them over an eight-hour period. The women are tested at rest and in two exercise situations to see how exercise affects their metabolism of caffeine.

If Graham is right, the study could raise serious doubts about athletes' current allowable levels of caffeine — 12 micrograms of caffeine per litre of blood or the equivalent of drinking about four large cups of coffee.

And plenty of elite athletes do use caffeine to improve their performance. Some sprinters use the drug to improve their reaction time and increase the speed at

which they shoot out of the starting block. Some runners, skiers and cyclists put caffeine in their water bottles to increase their endurance in long-distance races. Cyclists on the U.S. 1984 Olympic team have publicly admitted to using caffeine suppositories. Graham says he even receives calls regularly from amateur athletes asking how and when to take caffeine pills.

"Caffeine is one of very few 'controlled' drugs in sport," he says. "Unlike with steroids, authorities have decided a certain limited amount of caffeine in the blood is acceptable. That acceptable amount is the issue."

Higher levels in blood

If caffeine does take longer to disappear from women's bodies, then women will have higher levels of caffeine in their blood than men do and lower caffeine levels in their urine. Because tests are usually carried out by analysing urine after a race, the current limit may be allowing women to ingest more caffeine than men do and still have the same test result.

Regardless of what the experimental results show, Graham and McLean argue that the limit is too high to begin with. Says Graham: "I firmly believe caffeine shouldn't be used in sport. It has no nutritional value. It does nothing to your body that your body needs."

In fact, too much caffeine produces negative side effects, say the researchers. Hand and eye coordination, for instance, gets worse after drinking coffee. In addition, anyone with ulcers may develop bleeding in the stomach, and some people can develop an irregular heart beat.

As far as Graham is concerned, the improved performance isn't worth it. He's a runner himself, so his research has implications in his own life.

"I run marathons. I'm not going to win, but I can run a marathon in 2:50. If I drank a few mugs of coffee, I could bring my time down to 2:45. So what have I done? I've used a drug to beat myself."

This research is funded by Sport Canada. □

Social science, humanities federations amalgamate

The Social Science Federation of Canada and the Canadian Federation for the Humanities have amalgamated and created the Humanities and Social Sciences Federation of Canada (HSSFC).

In a recent press release, HSSFC says it will continue to represent 54 learned societies, 69 universities and colleges and more than 24,000 scholars and graduate students active in the study of languages, sociology, literatures, religion, geography, psychology, anthropology, history, philosophy, classics, law, economics, education, linguistics, women's issues, industrial relations and international development.

The federation's co-presidents

are John Scott and Gregory Kealey of Memorial University, who will be working with an interim board from across Canada.

One of HSSFC's flagship programs will be the Congress of the Social Sciences and Humanities, formerly the Learned Societies Conference. It will be inaugurated at the University of Ottawa in 1998 to coincide with the university's sesquicentennial anniversary.

HSSFC will continue to administer the aid-to-scholarly-publications program, a Canadian institution that has supported scholarly publishing for more than 50 years. □



Engineering professor Gauri Mittal and graduate student Shirley Ho are part of a team that is refining a unique process that could become an environmentally friendly replacement for pasteurization.

Photo - Margaret Boyd, University Communications

Pasteurization could be replaced

by Margaret Boyd
University Communications

A unique process that uses pulsed electrical fields to preserve liquid food could become an economical and environmentally friendly replacement for pasteurization.

Research at U of G shows that liquid foods such as milk products and juices can be safely treated with high-voltage short-time electric pulses without heating and without loss of natural vitamins and flavors.

Pasteurization, which requires food to be heated to high temperatures (70 C) to kill micro-organisms and inactivate enzymes, has high energy costs and causes food to lose natural vitamins and flavor.

The quest for a non-thermal, energy-efficient and environmentally friendly process is a global concern. Currently, research into the electric pulse processes is also being conducted in Japan, Germany and the United States.

"The big advantage is the energy saving," says engineering professor Gauri Mittal of the process. "One litre of milk requires more than 300,000 joules (or about 71,000 calories), whereas the new process requires only 500 to 1,000 joules."

Mittal is now refining the process with Prof. Mansel Griffiths and industrial technology adviser Bill Keith of the Department of Food Science, James Cross of the University of Waterloo and Guelph graduate students Shirley Ho, Vivia Marquez and Munawar Chaudhry.

Using different electric pulsers, the team has been working on developing methodology and technology and reducing equipment costs. So far, costs have been reduced from about \$100,000 for a suitable commercial pulser to \$20,000 per unit for the complete food-treatment unit.

The process works by applying voltage for one microsecond (one millionth of a second) in a series of electrical pulses to foods between two electrodes. By chance, Mittal and Ho discovered that the negative voltage at the end of each electrical pulse, called a sudden charge reversal, was the most effective pulse for breaking microbial resistance in foods. The amplitude of the reversed charge pulse is not enough to provide cell

membrane breakdown, but it produces high alternating stress on the cell membrane, causing structural fatigue.

Experiments have shown that about 10 pulses of 25 kilovolts per centimetre or higher are sufficient to provide desired microbial decay in various liquids. Vitamins are not affected because of their chemical and protein structures.

The electrical pulse process also extends the shelf life of food products beyond that of pasteurized products. Unlike pasteurization, the process is successful in destroying spores (created when cells undergo harsh conditions).

Experiments have shown that foods such as freshly squeezed orange juice undergo no change in flavor after being treated, although more research is needed to study the effects on color and flavor of foods, says Mittal.

The electrical pulse process can

also control enzymes' activity affecting flavor, taste and protein functionality, but more research is needed to prove its safety and efficacy, he says.

"This provides opportunities for achieving sufficient microbial control and yet minimizing damage to certain enzymes. The process may also have other important applications for the food industry."

Mittal is working with industry to use the process to sterilize and recycle brine used in smokehouses. The brine, which is used as a spray to cool cooked meats, is an environmental problem because of its high levels of sodium chloride. Recycling brine also saves considerable energy.

This research is sponsored by the Ontario Ministry of Agriculture, Food and Rural Affairs and the Natural Sciences and Engineering Research Council. □

Breaking the ties that bind

by Anne Douglas
Office of Research

A housing system has been developed at the Elora Research Station that allows dairy cows to live in individual stalls without being chained.

The system, designed by animal and poultry science PhD student Dave Barney and Prof. Frank Hurnik, is a redesign of existing stall housing. Instead of the cows being tied up to one end of their two-by 1.25-metre stall, all facing in one direction, gates keep them in their stall. This allows them to lie down and stand up more easily and to interact with other cows next to them without the constraints of the chains.

"Often, chain housing systems don't permit comfortable resting," says Hurnik. "We're trying to remove the physical restrictions of the chains to improve the well-being of the animals and increase productivity."

The researchers are now testing the new housing system to see if it actually improves milk production or if the cows show any measurable sign of preference for the gated stall system. They are comparing productivity and signs of comfort in a herd of 64 cows

where half are living in traditional tie-stalls and half are living in gated stalls.

"We've developed a feasible design," says Hurnik, "and now we're asking if it can be done in a real farm situation by observing its impact on the comfort, behavior and productivity of the cows."

By watching the cows for 24 hours at a time with cameras, the researchers have found that pregnant cows often stretch out on their sides in the gated stalls, whereas cows that are tied up can't — and it can be painful for a pregnant cow to lie down on its chest. They've also observed that normal social interaction, such as mutual grooming and licking, is more difficult for tied-up cows.

Barney says that if cows are healthier and more content in gated stalls, it may increase their longevity, which would increase the value of each animal.

"Over 50 per cent of animals finish their dairy careers before the end of their second lactation. If the gated stall system increases health and production — giving the animal one more lactation — the animal is worth much more."

This research is sponsored by the Ontario Ministry of Agriculture, Food and Rural Affairs. □

Community

NOTICES

Celebrate the Earth

A variety of events, tours and exhibits run April 21 from noon to 9 p.m. at the Arboretum to kick off Earth Week, with an Earth Day ceremony scheduled for 1 p.m. *The Fable of Evergreen*, written by retired English professor Homer Hogan, will be performed by Storytellers for the Ecozoic Age at 2 and 4 p.m. Cost is \$2. Also at 2 p.m. is a workshop on "Japanese Ideas on Connection with Nature." Cost is \$4. At 7:30 p.m., naturalist and author Aleta Karstad discusses the work of a field naturalist. Cost is \$3.

AIDS walk

The AIDS Committee of Guelph and Wellington County presents the area's third annual Walk for AIDS May 5 starting at noon at the Riverside Park bandshell. Registration begins at 11 a.m. for the 10- and six-kilometre routes. For information or pledge forms, call the committee office at 763-2255.

Food bank drive on

The Guelph Food Bank's spring drive continues until April 21. Donations of non-perishable food and money are welcome. Make cheques payable to the Guelph Food Bank and send to 100 Crimea St., Guelph NIH 2Y8. For more information about the drive and volunteer opportunities, call 767-1380.

College women to meet

The College Women's Club will hold its annual general meeting May 7 at 8 p.m. at the Arboretum Centre. Guest Cheryl Barta will give a presentation on "Clothes to Travel In," with club members modelling outfits. For more information, call Betty-Anne Stammers at 822-4051 or Elisabeth Duncan at 837-3879.

Chamber choir performs

The Guelph Chamber Music Society wraps up its 16th annual season with the Guelph Chamber Choir performing "Songs of the New World" April 20 at Westminster-St. Paul's Church, 206 Victoria Rd. N. Conducted by Gerald Neufeld, the concert begins at 8 p.m. Tickets are \$15 general, \$12 for students and seniors, and are available at the door and at the UC box office.

Support for parents

A single-parent support network called "Soul Parents" meets every second Tuesday from 6:30 to 8 p.m. at the Guelph YMCA-YWCA of Guelph. There is a minimal fee for child care at 824-5150.

Environmental workshops

"Environmental Risk Assessment: Statistical Tools to Understanding Hazards and Exposure" is the topic of a workshop on campus May 29 to 31. Deadline to register is May 22. "Environmental Chemistry: Understanding the Polluted Environment" runs June 12 to 14. Register by June 5. Cost of each workshop is \$825. To register, call the Office of Open Learning at 767-5000.

Retirement celebration

Bill Reiding, co-ordinator of the Construction Department, will be honored at a retirement reception April 30 from 4 to 6 p.m. at the University Club on Level 5 of the University Centre. Cost is \$8. RSVP to Sandra Hellewell at Ext. 2011.

Raise up your voice

The feminist chorus "Woman to Woman" presents LIBANA in a workshop for women's voices May 3 and 4 and in concert May 5

at 3 p.m. at St. John's-on-the-Hill United Church in Cambridge. LIBANA performances include a capella singing and an array of instruments and dance. For tickets and information, call 836-7578 or 628-0596.

Art exhibition

"Absolut Art," an exhibition of original contemporary paintings, photographs, fashion designs and furniture by international artists and designers from the Absolut Vodka advertising campaigns, runs May 17 to Aug. 18 at the Seagram Museum in Waterloo. The museum is open daily from 10 a.m. to 6 p.m.; general admission is free.

Musical interludes

The Suzuki String School of Guelph and the piano studios of Gail Lange and Florence White will present a chamber music concert April 21 at 2 p.m. at Westminster-St. Paul's Church, 206 Victoria Rd. N. The Suzuki school will hold its annual spring concert May 5 at 2:30 p.m. at Westwood United Church, 577 Willow Rd. The program will feature 150 violinists, violists and cellists performing works by Handel, Vivaldi, Bach and more. Admission to both concerts is free.

Y offers courses

The YMCA-YWCA presents courses on "Discovering Your-

self," "Men Making Changes" and "Creating a Personal Journal," starting April 17, 24 and 25, respectively. Workshops begin at 7 p.m. Cost of each course is \$60. To register, call 824-5150.

Environmental Internet

Learn how to access information about all things environmental at a program offered as part of Earth Week at the U of G Library April 22 to 26 at 2 p.m. Cost is \$2; tickets are available at the Arboretum, the U of G Bookstore and Simply Wonderful. For more details, call the Arboretum at Ext. 2113.

Spring wildflowers

Learn about the identification, life cycles and ecology of spring-flowering woodland plants at one of two workshops being offered by the Arboretum May 7 and 22 from 9 a.m. to noon each day (session A) or 1:15 p.m. to 4:15 p.m. (session B). Cost is \$34.25. Register at Ext. 2113 by April 30.

Going for baroque

The Arkell Schoolhouse Gallery presents a baroque celebration of the music of Bach, Handel and Telemann April 20 at 8 p.m. at 843 Watson Rd. S. in Arkell. Tickets are \$10. Call Geraldine Ysselstein at 763-7528 to reserve tickets.

Focus on processed meat

U of G and Durham College present a course on "Sausage and

Processed Meat" May 15 to 17 on campus. It's geared to medium to small processors wanting to know more about the basic technology and applied aspects of meat technology. Cost is \$800. Register by May 1 with the Office of Open Learning, 519-767-5000.

Community development

The Office of Open Learning presents a workshop on "Community Economic Development in Turbulent Times — Strategic Planning for Maintaining and Expanding the Local Economy" June 5 to 7. Cost is \$595. Register with the office at 767-5000.

Education in the future

"What Works II: Postsecondary Education in the 21st Century" is the topic of a conference June 21 to 23 at the Penn State Scanticon Conference Centre. Discussion will focus on research leading to specific, effective educational practices and policies needed to prepare students for competition in a rapid-paced, technologically sophisticated and increasingly multinational workplace. Cost is \$270 per person, \$255 if two or more from the same institution submit together. Teaching Support Services will co-ordinate registration. Call Helen Martin, Ext. 2973, or send e-mail to hmartin@tss.uoguelph.ca. □

CLASSIFIEDS

WANTED

Someone to translate document from Slovenian to English, Betsy, Ext. 3438 or 763-7430.

Unwanted or dead gas barbecue, free pickup, Paul, Ext. 3924 or 846-0374.

Sixteen-foot canoe, in good repair, reasonable price, Jerry, Ext. 6296 or 824-8182.

Mature student with two well-mannered canine companions requires small main-floor apartment with access to yard for fall semester, non-smoker, non-drinker, Sharon, 905-892-5640 (from Guelph call toll free 766-4777, wait for dial tone, then dial 905-892-5640).

Grad student looking for bright, quiet bachelor or one-bedroom apartment for September, 823-8978.

Responsible couple or visiting professor to rent two-bedroom self-contained house, parking, on bus route, no pets, references required, 766-9955.

FOR SALE

Sorgarden solid-pine dining table with two drop leaves from Ikea, four grey metal and leather chairs with arms, sell together or willing to separate, 824-0792.

FOR SALE

Victorian dining room table with six balloon-back chairs; four-poster bed; chest of drawers; marquetry side table; sofa table; chesterfield and matching tub chairs, good quality; two table lamps; metal filing cabinet; office chair, 763-8534 after 6 p.m.

Refrigerator, white, suitable for bar, apartment or cottage, Jack, 821-6059.

Kitchen ware, lamps, beds, office supplies, furniture, typewriter, television, 837-9615.

York 2001 weight-training machine, Stuart, 821-3073 evenings.

Canadian silver dollars, 1950-1966, 100 available; Royal Canadian Mint sets, 1963-1966, 20 available, Mike, 822-2910.

CCM rower; stepper; Burlington light pine bedroom suite including four-poster bed, nightstand, dressers, excellent condition, Colleen, Ext. 3968.

FOR RENT

Furnished two-bedroom bungalow, finished basement, large fenced yard, close to downtown, available May 1 to Aug. 31, \$500 a month inclusive, Jack, Ext. 3650 or 824-9526.

FOR RENT

Two-bedroom basement apartment near Church of Our Lady, carpeted, separate entrance, non-smokers, \$500 a month inclusive, 824-1278.

Three-bedroom cottage on island in Newboro Lake, near Kingston, boating, swimming, fishing, \$300 a week including canoe, rowboat and transportation to island, 836-0098 or 613-733-6152.

Two-bedroom apartment to sublet, close to campus on Gordon Street, laundry, parking, cats welcome, available May 1, \$495 a month plus hydro, 837-9615.

One-bedroom apartment, close to downtown, on bus route, rent includes utilities and cable, available May 1, Linda, 836-9786 after 5 p.m.

One- and two-bedroom apartments and single rooms for students, summer and fall openings, close to campus, 763-8412.

Basement apartment, parking, yard, laundry, York and Stevenson area, available May 1, \$500 a month inclusive, require first and last month's rent, Ann, 856-9132 or Catherine, 763-8598.

Three rooms in shared house, fully furnished, laundry, TV/VCR, cable, 10-minute bike ride to campus, on bus route, \$300 a month inclusive, 837-8897.

London House
London, England

Convenient spring & summer accommodation in University of Guelph's LONDON HOUSE

- Apartments or Rooms
- Minimum 3 nights
- Weekly and monthly rates
- \$45 per night
- Newly renovated
- Smoke-free environment
- Business/tourist travel

Off Campus Housing
(519) 824-4128, Ext. 3357 or Fax (519) 767-1670
EMAIL: ochp@uoguelph.ca

WANTED!

London family wishes to purchase home in Guelph. Private, no agents. Must be well maintained in quiet area.

1-519-642-3878

FOR SALE

Lovely family home/income property. Two-storey, 4 bedroom, plus 2-bedroom apartment. Low taxes, low maintenance, good location. Central air, gas heat. Many new appliances (negotiable).

Asking \$139,900

824-6712

RUBBER STAMPS!!

Frogs' Whiskers Ink Rubber Stamp company is coming to Guelph. Large selection. Thousands of decorative stamps for sale.

Friday, April 26
3 p.m. to 8 p.m.
Holiday Inn
Board Room

BEAUTY, PRIVACY, CONVENIENCE AND NO NEIGHBOURS

Country property near Maryhill, 10 minutes to K-W, 5 minutes to Guelph, two storey, 4 bedrooms, 4 baths, rec room, double attached garage, pool, extensive landscaping and sundecks, perennial gardens on 2/3 acre, move-in condition. Private sale.

Open House: April 20, 21, 27, 28 from 1 to 4 p.m.

Asking \$254,900

(519) 822-7142

GRAD NEWS

The final examination of **Mary Buck**, an MA candidate in the Department of History, is April 17 at 1 p.m. in Room 904 of the MacKinnon Building. The thesis is "Twelfth-Century Cistercian and Savigniac Foundations in England and the Isle of Man: A Comparative Study." Her adviser is Prof. Elizabeth Ewan.

The final oral examination of PhD candidate **Douglas Powell**, Food Science, is April 23 at 8 a.m. in Room 1708 of OVC. The thesis is "Applying Risk Communication Theory to the Canadian Agri-Food Sector." His adviser is Prof. Mansel Griffiths.

The final examination of **Tracey O'Donnell**, an MA candidate in the Department of History, is April 23 at 1:30 p.m. in Room 904 of the MacKinnon Building. The thesis is "Political Centralization in 13th-Century Scotland and Wales: A Comparative Study." The adviser is Prof. Elizabeth Ewan.

The final examination of **Sylvia Gillis**, an M.Sc. candidate in the Department of Human Biology and Nutritional Sciences, is April 24 at 9 a.m. in Room 336 of the Animal Science and Nutrition

Building. The thesis is "Early Markers of Liver Fibrosis Are Observed During Long-Term Ethanol Feeding in Rats." The adviser is Prof. Laura Nagy.

The final examination of **Anna Panchan**, an M.Sc. candidate in the Department of Consumer Studies, is April 24 at 1:30 p.m. in Room 233 of the FACS Building. The thesis is "What Is Love? A Content Analysis of Dating Relations in the Magazine *Seventeen*, 1945 to 1995." Her adviser is Prof. Dick Vosburgh.

The final examination of M.Sc. candidate **Yuwei Zhao**, Chemistry and Biochemistry, is April 24 at 2:10 p.m. in Room 222 of the MacNaughton Building. The thesis is "The Regulation of Trypanosomal Phospholipase A1-Lysophospholipase 1 by Calcium Ions." The adviser is Prof. Alan Mellors.

The final examination of **Daniel Ryan**, a PhD candidate in the Department of Mathematics and Statistics, is April 25 at 9 a.m. in Room 222 of the MacNaughton Building. The thesis is "Bias of Autoregressive Estimators in the Presence of Model Misspecification." His advisers are Profs.

Brian Allen and Ed Carter.

The final examination of PhD candidate **Lori Jones**, Chemistry and Biochemistry, is April 25 at 2:10 p.m. in Room 222 of the MacNaughton Building. The thesis is "Development of Techniques Used for the Formation and Characterization of Nanostructured Materials." Her adviser is Prof. Daniel Thomas.

The final examination of **Cheryl Lamerson**, a PhD candidate in the Department of Psychology, is April 26 at 1 p.m. in Room 132 of the MacKinnon Building. The thesis is "Peacekeeping Stress: Testing a Model of Organizational and Personal Outcomes." Her adviser is Prof. Kevin Kelloway.

The final oral examination of PhD candidate **Weerapong Koykul**, Biomedical Sciences, is April 29 at 9:30 a.m. in Room 1713 of the OVC Learning Centre. The thesis is "Factors Affecting Germ Cell Survival in Mammals." The advisers are Profs. P.K. Basrur and Allan King.

Interested members of the University community are invited to attend. □

EMERGENCY CLEANING

WATER ♦ SMOKE ♦ FIRE ♦ VANDALISM

- Prompt service will minimize damage
- We work with you and/or your insurance company

All that remains is the memory



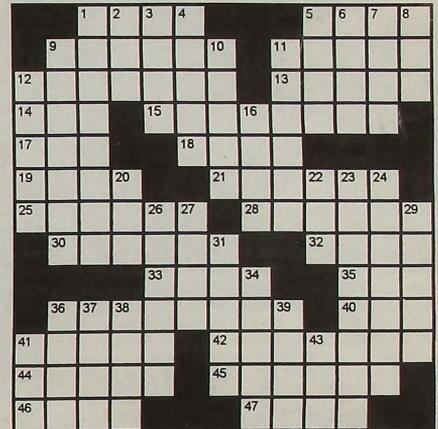
24 HOUR SERVICE

836-7340



Valerie Poulton

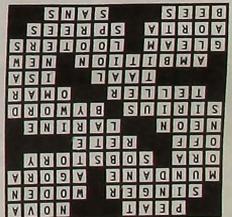
Canadian Criss Cross by Walter D. Feener



ACROSS

DOWN

- Turf
- ___ Scotia
- Glee club member
- Chief Norse god
- Earthly
- Greek market place
- ___ pro nobis
- Tear-jerker
- Light switch position
- Network
- Commercial sign
- Gull-like
- Dog Star
- Proverbial saying
- Bank clerk
- General Bradley
- Philippine volcano
- O.T. bk.
- Appetite for fame
- Just out
- Shine
- Thieves
- Blood vessel
- Drinking spells
- Second letters
- Without
- "HMS ___" (Gilbert and Sullivan operetta)
- Football lineman
- Moslem military officers
- Melchior for one
- Useless
- Scent
- Part of VHF
- Collection of notes
- Overindulge
- Insurgent
- Hydrous
- Lunar bodies
- Wound with a knife
- Nothing
- ___ Jima
- Political contestants
- Pencil rubbers
- Word's last syllable
- Chair
- Attracts
- Train tracks
- Nooses
- Medicinal plant
- Nothing more than
- Flying foxes
- "The Thin Man" wife
- Talk excessively
- Sawbuck



POLICE BEAT

The following Campus Police occurrence statistics for March were provided by Const. Robin Begin, liaison officer with Security Services.

Disturbances and malicious damage: There were 21 occurrences, most of them involving prank fire alarms and damage to windows, doors, vending machines and the sculpture in front of the University Centre. Two students were charged judicially.

Harassment and assaults: Police received reports of an obscene phone call to a male in Mountain Hall, harassing phone calls to a female student and threatening phone calls to the College Royal Office. All incidents are under investigation. A reported physical assault and verbal harassment of a female by another female in a University Centre office is also under investigation. There were two physical altercations reported at the Brass Taps, and one male visitor was charged with assault with a weapon under the Criminal Code.

Liquor-related offences: Police issued 10 charges under the Liquor Licence Act, primarily for students carrying open bottles of alcohol on campus.

Thefts: Some 26 occurrences involving University and private property were reported in March. Property included jackets, wallets, bicycles, cash, flowers, artwork, briefcases, beer and car phones. Three judicial charges were laid.

Trespassing: One charge was

laid under the Trespass to Property Act.

Vehicle offences: A car was vandalized in parking lot P.30.

Other police activities during March included drug investigations, emergency medical escorts, emergency alarm responses and investigation of a fire in the Hutt Building.

With the return of warmer

weather and the growing use of bicycles for transportation, Begin offers a word of caution.

"Remember, if you bring your bike to campus, always lock your bike with a quality lock. An extra safety element for U-locks is to buy a 'plumber's T' and attach it to your U-lock," she says.

For more information on bike safety, call her at Ext. 6261. □

For Complete Grounds Maintenance and Gardening Services Call Steve Gilmour

Hawthorne
Landscape Contractors Ltd.
Phone: (519) 766-9546



Serving Guelph & Area Since 1984

IN REAL ESTATE — EXPERIENCE COUNTS



Bill Green
B.Sc. (Agr), 71 OAC,
Assoc. Broker

LET BILL'S EXPERIENCE WORK FOR YOU!

- Outstanding Customer Service Award, 1993, 1994, 1995
- #1 in sales Guelph & District Real Estate Board, 1992, 1993, 1994, 1995 (Individual unassisted sales)

824-9050

ROYAL CITY REALTY LIMITED

A COMPLETE PORTFOLIO OF FINANCIAL PLANNING

- Retirement Planning 20
- Tax & Investment Planning Douglas St.
- Wealth Creation

OVER A QUARTER CENTURY OF BUILDING FINANCIAL SECURITY FOR CANADIANS

HOURS: Mon.-Fri. 9-5; Evenings & Sat. by appt.

836-3300



Elizabeth McGaw

DAWSON MOTORS

QUICK LUBE & FILTER

\$15.⁹⁵

Most Cars includes up to 5 litres 10W30 Quaker State Oil & Filter

NO MONEY DOWN NO INTEREST NO PAYMENTS *O.A.C.

6 months (valid until April 30, 1996)

FRONT OR REAR BRAKE SPECIAL

\$79.⁹⁵

with coupon

Most Cars

42 ESSEX ST. (Gordon & Waterloo)

822-6290



In a real jam? Food scientists Marvin Tung and Nina Goodrich display some of the new high-performance plastic packaging that is furthering efforts to preserve food and flavor in products such as jam and jellies.

Photo - Martin Schwalbe

Packaging breakthrough a step forward for food preservation

by Kerith Waddington
University Communications

It's an idea with a long shelf life. The application of a new high-performance packaging polymer to food preservation by U of G researchers and the Guelph Food Technology Centre (GFTC) has led to the design of clear plastic containers that will significantly enhance the quality of packaged foods.

Polyethylene naphthalate (PEN) is the name of the new resin, which, when blended with a close relative, polyethylene terephthalate (PET), produces a plastic that is heat- and shatter-resistant, lightweight and provides good barriers against moisture, oxygen and ultraviolet light.

Paired with the use of high-quality products, processes that retard chemical/enzymatic and microbial spoilage and a suitable distribution system, the polymer blend will significantly further food

preservation efforts, says Prof. Marvin Tung, who holds the NSERC/George Weston industrial research chair in food packaging technology.

Research scientists and industry are working hand in hand to produce the polymer, manufacture new plastic and packages, and evaluate their performance in a variety of food-processing applications. The U of G team in the Department of Food Science — consisting of Tung; Nina Goodrich, GFTC's director of operations; and Ian Britt, manager of packaging technology — are in the process of fine-tuning its design applications to food preservation.

The polymer is pushing back the frontier of food preservation methodologies, says Tung.

"Food preservation is a multifaceted challenge of which packaging is just one component, but the development of the polymer and its use in PET blends is an

exciting step forward in this endeavour. PEN has many attractive qualities from a food-packaging point of view, which further refinement will maximize, ultimately to the benefit of the consumer."

Currently being used in a test capacity in Japan, South America and Europe for soda beverages and bottled water, the blend has received positive response from consumers about its flavor-preserving qualities, says Tung. He expects the plastic to become a familiar sight in Canada over the next two to five years, primarily for such things as condiment squeeze bottles, pop containers and containers for a variety of oils, jams and jellies.

Although the PEN/PET blend is more costly to produce than the PET homopolymer commonly used in pop bottles and peanut butter containers, the price is expected to go down as consumer demand rises. Tung expects that the "piggybacking" of the plastic onto the large and successful PET recycling program will also help keep costs down.

PEN is made from a precursor material manufactured by the AMOCO Chemical Company and converted into homopolymers by companies such as Eastman Chemicals. Goodrich says the blend, which received approval from the U.S. Food and Drug Administration April 4, represents the ultimate in packaging potential.

"PEN provides the opportunity to design a package with just the right amount of barrier and heat resistance required for the product," she says, "and plastic offers a new degree of design freedom over glass and metal to customize a shape for customer and product needs. This project is a great example of the benefits coming from the strong partnership between the University of Guelph and the Guelph Food Technology Centre." □

Food scientists aim for low-saturate margarine for the health conscious

by Wade Hesson
Office of Research

Heart-conscious consumers are trimming their diets of saturated fats, trans-fatty acids and cholesterol... and a U of G researcher is responding.

With the help of industry and government, Prof. Yukio Kakuda, Food Science, and master's student Firouz Jahani-Aval are making margarine that is 10 per cent lower in saturated fat and contains no trans-fatty acids.

Saturated fat and trans-fatty acids are two major contributors to cardiovascular disease, and if they're in your margarine, then they're part of your meals by way of toast, sandwiches, cooking and baking.

Kakuda is working on a margarine that will consist of 90-per cent liquid canola oil, a highly unsaturated fat. Most margarines only contain about 80 per cent unsaturated fat, so by increasing the percentage of unsaturated fat, he's proportionately decreasing the level of saturated fat in the margarine.

Soft tub margarine

Combined with the canola oil is the "hard fraction" composed of palm or cottonseed oil, which has been modified so it's in a solid form at room temperature. The hard fraction helps transform the canola oil into a soft tub margarine.

The challenge is to make this mixture into a state that's solid. With so little hard fraction added to it, that much liquid oil tends to produce a texture akin to the runny consistency of mayonnaise, not margarine.

"It's a challenge to create a margarine with so high a liquid level," says Kakuda. "So much sloppy oil is difficult to emulsify into a stable margarine with a palatable texture."

To give the margarine a more solid form, the emulsion is placed in a "votator" — a machine that cools the emulsion until it has crystallized. Kakuda must experiment by changing the speed, temperature and amount of time the emulsion is in the votator until a sufficiently solid margarine can be produced.

The votator Kakuda is using is on loan to the Guelph Food Technology Centre (GFTC) from Cherry-Burrell, a manufacturer of food-processing technology in Louisville, Ky. It arrived three months ago through negotiations among the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), Caravelle Foods in Toronto, the Department of Food Science, GFTC and Cherry-Burrell, and will be at GFTC for at least another six months.

Size of business desk

The machine is about the size of a business desk, and because it can work on small batches, it is better suited for the research Kakuda is doing than are the room-sized voltators used by companies such as Caravelle.

Kakuda says he's making progress. "We're already producing a stable liquid emulsion," he says, "and we'll soon have a prototype in solid form."

Looking to the future, Kakuda plans to produce a low-saturated-fat margarine with even fewer calories. Like the margarine he's developing now, a low-calorie margarine would meet the growing demands of heart-conscious consumers for tasty, healthy food.

For heart-conscious butter lovers concerned about their cholesterol intake, Kakuda, along with Prof. Jim Squires, Animal and Poultry Science, is making cholesterol-free butter. And french fry lovers aren't left out either — Kakuda is also developing cholesterol-free tallow and lard, which are normally used for restaurant deep-frying and baking.

Separates by molecules

To do this, the researchers are using an "affinity column," a tube filled with glass beads. When butter, lard or tallow pass through the tube, the cholesterol molecules in the fat stick to molecules on the glass beads, so the fat that comes out of the affinity column is 90-per cent cholesterol-free.

"It's like a filter, only instead of separating by size, the affinity column separates by molecules," says Kakuda.

The cholesterol research is sponsored by OMAFRA and Caravelle Foods. □

Food technology centre to hold annual meeting

The Guelph Food Technology Centre (GFTC) will hold its first annual meeting of GFTC members April 17 from 3 to 5 p.m. in Room 1707B&C of OVC's Lifetime Learning Centre.

GFTC president Don Murray will present a report on the "GFTC Concept and Where It Is Today." Nina Goodrich, director of the centre, will present various market and technology opportunities that members can take advantage of through the centre.

Kathryn Cooper, director of training and development for the

centre, will explain how the GFTC is promoting a training culture in the food industry. Over the past year, the centre has trained more than 1,000 people in 50 programs in such areas as quality, plant operations, tax credits and thermal processing.

The meeting will conclude with a tour of the pilot plant and a review of the completed Phase 1 and the in-progress Phase 2.

For more information, call Cliona Reeves at 767-5024, fax to 836-1281 or send e-mail to cmreeves@uoguelph.ca. □

BLUE CHIP ADVICE

PROFESSIONAL ADVICE

◆ RRSPs & RRIFs ◆ Mutual Funds

◆ Govt. & Corp. Bonds ◆ Labour Sponsored

Funds ◆ Portfolio Reviews

◆ Retirement Blueprints



Clara M. Maret, B.A., M.A.
Vice President,
Financial Advisor



Jay Maret, B.A.
Financial Advisor



MIDLAND
WALWYN
BLUE CHIP THINKING™



TM Blue Chip Thinking is a trademark of Midland Walwyn Capital Inc.