

Unlocking mysteries of a basic puzzle

Three University of Guelph physicists are making use of some of the best nuclear research facilities in the world in an attempt to gain a greater understanding of how and why atoms combine to form condensed matter like liquids and dense gases.

Professor Peter Egelstaff, Department of Physics, has been heading up a Guelph research team making use of atomic particles called neutrons to find out what happens at the atomic level inside condensed matter. Now assisted by Professors R. McPherson, W.G. Graham and post doctoral fellows D. Litchinsky and A. Tectsmas, Prof. Egelstaff has been working on the project since 1970 under the sponsorship of the National Research Council. They are working with a technique called "neutron scattering" which involves sending a beam of neutrons through a sample of condensed matter and then measuring the degree to which the beam has been changed, or scattered.



Assembling equipment after arriving in Grenoble are Professor Peter Egelstaff, left, John Copley of the host laboratory, and student Bob Hawkins.

In their search for good sources of neutrons, the physicists have been given access to neutron-beam research facilities in Canada, the United States, and France. Most of their work is being done in Canada; some at the electron accelerator at the University of Toronto and the nuclear reactor at McMaster University, but mostly at the Chalk River nuclear reactor operated by Atomic Energy of Canada Ltd. This year they paid their first visit to the high flux research reactor at Oak Ridge, Tennessee with the support of the National Science Foundation.

However, the facility the team looks forward to using the most is the research reactor in

Grenoble, France, jointly built and operated by France, Germany, and Britain. "It's the best one of its kind in the world," says Prof. Egelstaff. Thanks to a Canada-France scientific exchange program, the team has been able to make annual visits to the facility since 1974.

This summer they were granted almost a month at the Grenoble establishment, "an exceptional amount of time," comments Prof. Egelstaff. The demand for use of the facility from researchers around the world is so great that the establishment is highly selective in its choice of research projects granted time, he explains. But in order to get all the experiments done in the time allotted, there's little time for sightseeing. "We have to operate around the clock for the whole time we're there," he says.

The co-operation from all the research facilities used has been "excellent," says Prof. Egelstaff. Atomic Energy of Canada Ltd. has been especially helpful at its Chalk River reactor, allowing the team space to set up their equipment on a more or less permanent basis, and helping them design and build the special apparatus for their work, he adds.

At the heart of their research is a piece of equipment called a "neutron spectrometer." The spectrometer is used to sort out the neutrons leaving the reactors, channelling the ones travelling at the right speed and in the right direction into a beam. The beam is then sent through a sample of matter, such as liquid rubidium (a metal), and the changes in the speed and direction of neutrons are measured. By measuring this scattering of the neutrons, the physicists are able to obtain information on what is happening inside the matter at the atomic level. "The neutron is our probe at the atomic level" explains Prof. Egelstaff.

The Guelph team had to design and build its own neutron spectrometer for its work in Canada. In this they had the help of the expert technicians of the physics department, especially Lutz Halm and Gord Willis. "It's the only one of its kind in the country," says the physicist. Most other neutron spectrometers in Canada are used for studies involving crystalline structures, rather than liquids or dense gases which require a different design, he explains.

The Guelph physicists are trying to interpret the data from their neutron scattering

experiments in terms of groupings of three atoms. Atoms are not hard bodies, and when two atoms are close together the arrival of a third one distorts their shape. This distortion is called the "three-body effect," explains the physicist.

Most of the work by liquid state physicists in the past has concerned the relationship between only two atoms. Studying the three-body effect is "a frontier area" in physics, says Prof. Egelstaff. When enough is known about the grouping of atoms in threes, condensed matter physicists will start looking at larger groupings until they find a pattern, a kind of common link, which will enable them to understand how and why we have matter in the way that we do, he explains.

The work is highly theoretical, but the techniques being used have practical applications. Robert Hawkins, a Ph.D. student in hydrology at Guelph has been assisting the team and using their techniques for his research into the water absorption characteristics of clay. The neutron spectrometer allows him to find out what is actually going on at the molecular level inside clay when water is added. It seems to work better than the more commonly used X-ray techniques because, unlike neutrons, X-rays are literally unable to "see" water, explains the physicist.

Although the practical applications are important, the real aim of the research is to help unlock a basic puzzle which has engaged condensed matter physicists for decades: "How is our kind of matter possible?" When that puzzle is finally solved, through the contributions of many research teams, then man will be able to see the world around him in a new light. Li

Sigma Xi lecture

Professor Egelstaff will give the Sigma Xi lecture, *Nuclear Reactors in My Back Yard*, Wednesday, November 24, 4 p.m., Room 113, Physical Science.

HIGHLIGHTS

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Alyea, E.C., G. Ferguson, R.J. Restivo and P.H. Merrell, 1975. *Structural Investigation of a Nickel (III) Complex Containing a New Type of Tridentate Ligand with a Planar NNN Donor Set and Both Uni- and Bidentate Nitrate- Groups*. X-Ray Analysis of

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Martin, L.J. and K. D. Meilke, 1976. *Commodity Modeling for Policy Analysis in a Canadian Context, Agricultural and Food Price and Income Policy: Alternative Directions for the U.S. and Implications for Research*, ed. R.G.F. Spitze, Special Pub. 43, University of Illinois, August, pp. 107-117, (School of Agricultural Economics and Extension Education).

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OFF-CAMPUS OFFICES

Professor W.T. Ewen, who recently retired from the Department of Land Resource Science, has been made an honorary member of the Conservation Council of Ontario. He has been a member of the Grand River Conservation Authority for many years, representing that body on the Conservation Council.

Professor E.C. Gray, Agricultural Economics and Extension Education, has been elected vice-chairman of Niska Wildlife Foundation.

Dick Jol, lab technician in the Department of Clinical Studies, has been named president of the Central Ontario Regional Chapter of the Canadian Association for Laboratory Animal Science.

Mr. Jol worked at farming in Nova Scotia before coming to the University of Guelph where he received a degree in animal husbandry in 1959. In 1961 he started in clinical research at the University, working with S.P.F. animals. Mr. Jol is now working with gnotobiotic pigs and mice.

Professor Jack R. MacDonald, Physics, was elected chairman of the Association of Ontario Physics Departments at a meeting held recently at Queen's University.

Professor R.S. Rodd, Agricultural Economics and Extension Education, has been elected to serve as an individual member of the Conservation Council of Ontario. The council is composed of representatives of 32 provincial organizations plus a number of individuals from special disciplines related to the conservation of natural resources.

SEMINARS AND PAPERS

Members of the Chemistry department participated in the Canadian Federation of Biological Societies held in Halifax. A presentation by P. Ahmad and Professor A. Mellors was entitled *Parachor in Steroid Structure-activity Correlations* and one by P.N. Hambrey and Prof. Mellors was entitled *Lysosomal Enzymes and the Catabolism of Cardiolipin*.

Margaret Beckman, chief librarian, was guest speaker at the Rotary Club of Kitchener where she spoke on *Scientific Information Networks in Canada*. Mrs. Beckman was also one of the theme speakers at the recent Ontario Library Association Conference in

Waterston, Elizabeth, 1976. *The Gap in Henry Adams' Education*, Canadian Review of American Studies, VII, No. 2 Fall, pp. 132-138, (English).

Wilkie, B.N., 1976. *The Effect of Route of Immunization on the Lapine Immune Response to Killed Pasteurella haemolytica and the Influence of Aerosol Challenge with the Live Organism*. Can. J. Comp. Med. 40: 346-349, (Veterinary Microbiology and Immunology).

Zwart, A.C. and K.D. Meilke, 1976. *Economic Implications of International Wheat Reserves*, Canadian Journal of Agricultural Economics, Proceedings Issue, pp. 62-77, (School of Agricultural Economics and Extension Education).

Vanderkamp, J., 1976. *The Role of Population Size in Migration Studies*, Canadian Journal of Economics, August, (Economics).

Waterston, Elizabeth, 1976. *The Missing Face: Five Short Stories by Duncan Campbell Scott*. Studies in Canadian Literature, 1, 2, 223-233, (English).

Toronto. At that time her topic was *Toward the Year 2001, A Technological View*.

Professor J.D. Brooke, chairman, Human Kinetics, was a guest speaker at the Rotary Club of Guelph. His presentation was entitled *Youth Tomorrow—England and Guelph*.

Professor Lloyd V. Busch, Environmental Biology, and Jean D. Brisson, Botany and Genetics, attended the second International *Verticillium* Symposium at the University of California in Berkeley. Prof. Busch acted as the chairman of the session Pathogen-Disease-Physiology and presented a paper co-authored by Dr. Jane Robb and Mr. Brisson entitled *Plugging, Toxic Effects and Symptom Development Caused by Verticillium dahliae*. In addition, Mr. Brisson presented two additional papers: *Verticillium-infected Petioles of Chrysanthemum and Sunflower: a SEM Study*; co-authored by Dr. J. Robb and Prof. Busch, and *Mycological and Histopathological Study of the Stem Dieback in Lowbush Blueberry (Vaccinium angustifolium Ait. Sensu lato)*, co-authored by Professors J.F. Pauze and V. Lavoie, Laval University, Quebec.

Professor J.M. deMan, chairman of the Department of Food Science took part in the annual meeting of the International Dairy Federation held in Quebec City. He also served as vice-chairman of Committee E. Analytical Standards and Laboratory Techniques.

Professor G. Leibbrandt, Mathematics and Statistics, gave a seminar at Carleton University on *Solitons in Higher Dimensions*, a subject dealing with some rather unusual solutions to nonlinear partial differential equations.

During his recent sabbatical leave as a Nuffield Scholar at the Animal Physiology Research Institute, Cambridge, England, Professor A. Mellors, Chemistry, gave several invited seminars. These talks were presented at Organon Research Laboratories, Glasgow; Strangeways Research Laboratory, Cambridge, and University of Reykjavik, Iceland.

Professor J.C.M. Shute, Extension Education, addressed the annual branch meeting of CANSAVE (Canadian Save the Children) in Ottawa.



Gordon Surgeoner has been appointed assistant professor in the Department of Environmental Biology.

Prof. Surgeoner graduated from the University of Guelph in the class of OAC, 1971, and obtained

his Ph.D. this year from Michigan State University.

Prof. Surgeoner's research responsibilities will include medical and veterinary entomology and he will be teaching medical entomology and insects in relation to wildlife.



Joel R. Coats, from the Department of Entomology, University of Illinois, Urbana, is now a visiting professor with the Department of Environmental Biology.

His research interests are in the area of pesticide toxicology,

with special reference to selectivity, metabolism and environmental fate of pesticides.

While at the University Dr. Coats will participate in teaching courses related to pesticides in the environment and the biological activity of pesticides.

Guidelines for future usage Computing committee formed

A Long Range Planning Committee for computing, formed to recommend policies and procedures to be used as guidelines for implementation of computing resources for the next five years, has been announced by President D.F. Forster.

"This is a very complete survey of future computer usage which will make recommendations about Guelph's future with regard to both hardware and organization," says chairman of the Committee, Vice-President, Academic, Professor H.C. Clark.

Members of the Committee are Professor H.C. Clark, Vice-President, Academic, chairman; C.C. Ferguson, director of Administrative Services; Professor K. Ronald, Dean, College of Biological Science; Professor R. George, acting chairman, Department of Computing & Information Science; D.M. Jamieson, research advisor to Vice-President, Administration; Professor K.H. MacKay, associate director, Academic Computer Services, Institute of Computer Science.

Prof. George and Mr. Jamieson are also members of the PACC (President's Advisory Committee on Computers).

The Committee comes into being after a series of preliminary planning steps started as early as 1975 by the Institute of Computer Science and PACC. Given a number of changing conditions, including the technical innovations in the computing field and the funding constraints affecting the universities, the Institute decided to involve the members of the University community in the planning exercise.

The exercise represented a departure from the traditional method of planning conducted by the Institute, according to Institute director Professor K. Okashimo. To facilitate the planning process, two documents, "Environment 81" and "University Computing Objectives," were developed to serve as catalysts in involving the University community.

Early this year these documents were distributed to all academic and administrative departments of the university. The members of the Institute conducted an in depth interview to receive feedback information related to the documents and to discuss computing concerns and requirements for the future. Questionnaires were used to assist in this process.

During the summer, the responses were summarized by Institute of Computer Science staff and reviewed at dean and directorate levels to ensure proper interpretation. An overall summary of University computing needs has been completed recently and presented to senior management. The summary of findings reflect the future needs in teaching, research, and administrative areas of the University. Changes in direction for time sharing, on-line systems and mini-computers are clearly indicated and there is increasing interest in the use of computers in teaching.

The newly-formed Committee will review the stated needs for computing, will recommend alternatives to meet those needs, and will recommend the policies and procedures to be used as guidelines. □

New OVC field station

The new University of Guelph veterinary field station in Eramosa Township should be fully occupied by the end of the month. The original construction deadline was August 1, but it was pushed back three months because spring rains delayed excavation.

Facilities include three buildings to house research and teaching animals. It was built at an estimated cost of \$1,100,000. The main building will house various agricultural procedures. The second building is designed for mink. It holds a small breeding colony as well as animals involved in research and facilities for holding wildlife. In the third building, dogs are kept for conditioning while their health status is checked prior to experimental or teaching use.

The new Eramosa station replaces animal holding facilities at the old Edinburgh Road site, which were crowded out by urban development in the Stone Road/Edinburgh area. Professor Don Ingram, Associate Dean of the Ontario Veterinary College, says there is room for expansion at the new site. Most of the 200 acres will be used as pasture for

the time being, although in future it will be developed to incorporate facilities now located at the Puslinch field station.

The biggest advantage to the Eramosa site is location. Situated near the village of Speedside, it is 16 miles from the main campus. It was necessary to locate that far away, says Prof. Ingram, to find a large tract of land that is not destined for future urban development.

The field station will employ about 11 full time workers as animal attendants and supervisory personnel. Most veterinary students will never see it, says Prof. Ingram. Graduate students and faculty researchers will be its primary users.

The OVC has a large research program in animal health and participates in the research contract between the University and the Ontario Ministry of Agriculture and Food. Faculty members are also involved in research projects to upgrade their knowledge in specialized areas and to maintain their competence in their teaching discipline. This is where Prof. Ingram feels the Eramosa Field Station will play its greatest role. □



Professor Jacques de Bruyne, from the Universities of Ghent and Antwerp (Belgium), visited the Guelph campus recently and gave a lecture in Spanish to students and faculty members of the Department of Languages. His subject was "The isimo suffix in Spanish superlatives." Here, Prof. de Bruyne meets Professor James McKeegney, left, University of Waterloo, and Professor Luis Lozano, coordinator-Spanish Studies, Department of Languages, University of Guelph.

For Sale

1973 Astre hatchback, 823-2788; pocket novels, 822-8342 after 5 p.m.; Vegamatic, juice-a-matic, bun warmer, radio, hair dryer, scissors jack, tires and rims, C78-13, 822-1746; 1971 Philco Ford color television, 822-2942 after 6 p.m.; Westinghouse canister vacuum cleaner, 3330, 823-1863; Upright piano, kitchen table, 2438, 821-1614; Kenmore automatic clothes washer, 821-7826; 1971 Mazda 1200, 824-0592; 1970 Toyota Corolla 1200, 836-0065; Ladies' ski boots, size 5, skis, bindings, 824-8868 after 5 p.m.; 1970 Maverick, 3718; Coppertone table and two chairs, 3314; Dinette table and four chairs, left, front fender for Vega or Astre, 824-6509; Antique iron bed, 3044, 824-5385 after 5 p.m.; Black and white portable television, 3827, 836-6266; 1967 Mercedes Benz, 824-8356 after 6 p.m.; Long dresses, size 9, 12, wedding gown, size 9, 824-2229; Downhill skis, bindings, buckle boots, size 9, 2702, 824-7304 after 5 p.m.; Two snow tires, H78-15, 2401; 30" gas stove, 824-0391; Spanish chesterfield, 8715; 19" black and white television set, 836-3033; Stove, refrigerator, washing machine, 3325, 824-7187 after 5 p.m.; Red raspberry canes, 1972 Fiat station wagon, 8157; Baby's stroll-o-chair, car seat, car bed, youth table, stroller, 821-3557; Box spring and mattress, iron bedstead, chest of drawers with mirror, 3257, 821-0007 after 6 p.m.; Stereo, double bed, 2525; Chrome kitchen table, 8715; Refrigerator, 824-9457; 1974 Buick, double stainless steel sink, faucet, 821-1812 after 5 p.m.; Child's wooden table and chair set, folding highchair, rocking chair, tricycle, 822-9711 after 5 p.m.; Two tricycles, automatic washer, swing set, tape recorder and tapes, iron bed frame and foam mattress, portable typewriter, toys, humidifier, 3520, 824-2047.

Goods and Services

To give away - Registered golden retriever, 3370. Disc Jockey - 822-1354; 824-8356 after 6 p.m. Lost - Violin in case, James and Mary Street area, 824-0527. Will Babysit - 822-2766. Wanted - Home for cat, 3803, 821-5502 after 5 p.m. Typing - 822-0289. Wanted - Seamstress, 821-2044 after 5 p.m. Snow-plowing - 836-6266. Wanted - Piano teacher, 3976, 836-8917. Lessons - Cello, 821-1633. Wanted to buy - Portable electric typewriter, 821-9495; four dining room chairs, mahogany, 822-4508; girl's figure skates, size 12 and 13, 822-2911.

Accommodation Available

For Rent - Two bedroom townhouse, available Dec. 1, 3866, 821-2156; Four bedroom house, fully furnished, near Exhibition Park, January through April, 1977, 824-3771, 8 to 10 p.m.; Three bedroom furnished house, University Village, available for 12 months from May 1, 821-3586; Bachelor apartment for one or two female students, close to downtown, available December 22, 836-3804; Four bedroom house, 823-1239, evenings, 824-2431, Ext. 28, days; Two bedroom apartment, near university, 821-6653.

Room and Board - For person who is willing to babysit two school age children, 821-6305 after 4 p.m.

Accommodation Wanted

To Rent - Two bedroom apartment for January 1 for two female staff members, 2686, 836-7116 after 5 p.m.; accommodation wanted near university by graduate student couple, 824-9845; Family wanted to accept a young Mexican for six months, 821-8949.

The Hogans announce a second album

Department of English professor Homer Hogan and wife, Dorothy, have produced an album featuring Canadian "old tyme" fiddling.

Mrs. Hogan, a folk musician and educator, says "old tyme" fiddling is actually the living traditional folk music of Canada. "The more we appreciate this, the stronger will be our sense of community and love for our land."

Travelling to fiddle contests, barn dances, jamborees, and country house parties from the Maritimes to British Columbia, the Hogans claim to have recorded a range of "distinctively Canadian" fiddle styles, dances, and square dance calls growing from the music of our founding peoples- especially the Scots, Irish, French, Indian, English, and Ukrainians. Examples of their findings are included in *The Great Canadian Fiddle*, a stereo LP album featuring champion Canadian fiddlers Graham and Eleanor Townsend, "King of the Banjo" Maurice Bolyer, and Don Messer's official square dance caller Fred Townsend.

In *The Great Canadian Fiddle*, the Hogans try to show in extensive album notes how the Canadian experience resulted in distinctive regional fiddle styles in places like Cape Breton, Acadia, Quebec, the Ottawa Valley, Northern Ontario, and the Western plains. Their favourite cut is an example of Metis fiddling from Alberta, a blend of Indian tom-tom rhythms and French-Canadian melody.



The cover picture on the album, "The Great Canadian Fiddle," catches 76 year-old Fred Townsend calling "Up in a bunch!" - what the Hogans call the "battle cry of country dancers everywhere."

The Great Canadian Fiddle is the natural follow-up to the Hogan's first album, *Maple Sugar- Songs of Early Canada*, which is now widely known.

People interested in the Canadian fiddle are invited to write to Prof. Hogan. *The Great Canadian Fiddle* is available locally from the Co-Op and Rutledge's. []

University exhibits at the Royal

Genetics research has played a major role in improving Canadian agriculture. The University of Guelph exhibit at the Royal Agricultural Winter Fair highlights some of the important genetic advances which have improved beef cattle, dairy production, poultry, eggs, vegetables, and fruit and field crops.

University scientists are actively pursuing genetic research in many fields. Some of their discoveries could have an impact on world agriculture tomorrow, while other studies are uncovering the basic principles of genetic knowledge - the basis for life itself.

The exhibit ties together genetic research throughout the University. Fair visitors will see two examples of the "species cross" - an offspring of two distinct species with genetic characteristics of each parent. On display is a live cattalo (beefalo) - a species cross of a Hereford cow and a bison bull. Also on display is a sample of triticale - a species cross of wheat and rye - which could play a significant role in improving the quality of grain production around the world.

Through living examples, diagrams, charts, maps and simplified text, visitors to the University booth will learn about the role genetics has played in improving production efficiency of broiler chickens, eggs, milk, corn, beef cattle, tomatoes and Ontario wines.

While the cattalo may not become a major meat animal in the near future, the back-

ground knowledge obtained from genetic research on it may be very useful and lead to further applications. Research has identified the cattalo's desirable characteristics. They include the potential of being able to withstand harsh weather, thrive on roughage instead of grain, and be more disease resistant.

University faculty members and students staffing the exhibit will help you find answers to questions about the University and its degree programs. The exhibit itself and pamphlets being offered contain a wealth of information to interested visitors.

The exhibit is located in the east annex of the Coliseum at Exhibition Park in Toronto. The Fair closes on Saturday night. !!

Next Week At Guelph
Continued from page 8.

Pub - ALLSTAR DISCO BAND, 8 p.m., Peter Clark Hall.

Worship - CATHOLIC MASS, 12 noon, Chapel, level 5, UC; ANGLICAN UNITED DISCUSSION GROUP, 1 p.m., Chapel, UC.

TV - SPOTLIGHT ON UNIVERSITY OF GUELPH, 2 and 7 p.m., Cable 8.

Bridge - DUPLICATE BRIDGE 7:30 p.m., 9th floor lounge, Arts. Learn, 6:30 p.m.

Fellowship - INTER-VARSITY CHRISTIAN FELLOWSHIP, 9th floor lounge, Arts.

Film/Discussion - MERCURY POISONING UPDATE, 7:30 p.m., Rm. 105, PS. Sponsored by GO-PIRG.

Clinic - CROSS COUNTRY SKI CLINIC, 8 p.m., Rm. 207, Human Kinetics.

CIVIC ORCHESTRA

The University of Guelph Civic Orchestra will present its second concert of the 1976-77 season Thursday, November 18 at War Memorial Hall, at 8 p.m.

The Civic Orchestra, now in its third year of public performance under the direction of Professor Stanley Saunders, is composed of 50 instrumentalists, comprising the musical talents of University students, faculty, staff, citizens of Guelph and surrounding community, and several guest members from professional orchestras.

Three major works will be performed; *Romanze in G, Opus 26* by Svendsen, *Mozart's Piano Concerto No. 20 in D minor K.466* and *Symphony No. 2 in B flat Major D. 125* by Schubert. Montreal pianist, Ireneus Zuk, will be the featured guest soloist in *Mozart's Piano Concerto in O minor*. Mr. Zuk is a graduate of the Conservatoire de Musique de Quebec, McGill University and the Royal College of Music in London, England. He received a Masters degree from the Juilliard School of Music in New York and has studied with concert pianist Leon Fleisher at the Peabody Conservatory in Baltimore.

In Svendsen's *Romanze in G Opus 26* for violin solo and orchestra, concertmaster Daphne Hughes will be the featured soloist. Daphne Hughes is the artistic director of the Suzuki String School of Guelph.

Tickets for the concert are available at the central box office, University Centre, Ext. 3940 or from orchestra members.

The audience is invited to meet the artists at a reception immediately following the concert at War Memorial Hall, lower lounge.

QUICKSILVER AND SLOW DEATH

That's the dramatic title of a tabloid-shaped report on mercury poisoning just published by the Ontario Public Interest Research Group (OPIRG).

A film and discussion, *Mercury Poisoning Update*, (report by the OPIRG Mercury Team), will be presented by the Guelph chapter Thursday, November 25, 7:30 p.m., Room 105, Physical Sciences.

Copies of the report are available from OPIRG, University of Waterloo, for 50 cents each.

TRAFFIC CONTROL

The metered area adjacent to Trent Lane and parking area P.52 will be eliminated as of Monday, November 22.

It is hoped that the change will reduce hazardous traffic conditions and allow for the future realignment of Trent Lane.

MUSIC RECITAL

Voice students of Fred Stoltzfus and piano students of Ruth Heidmann-Stoltzfus will be performing at a student recital sponsored by the Faculty of Music on Sunday, November 21,

4 p.m. in Music Room 107, Arts building.

This is a free concert and everyone is invited to attend.

THURSDAY NOON HOUR CONCERT

Cultural Affairs presents the Trio Chitarristico Italiano, the only classical guitar trio in the world, at the Thursday Noon Concert November 25. Its founders, all Florentine by birth, completed their musical studies at the Conservatorio Luigi Cherubini in their native town and took a master class under the direction of Alvaro Company at Villa Schifanoia American University (Rosary College, River Forest, Illinois).

Members of the guitar trio are Alfonso Borghese, Roberto Frosali and Vincenzo Saldarelli. They have chosen to perform works by Leonhard de Call, Filippo Gragnani, Carlo Prosperi, Paul Hindemith, Reginald Smith Brindle, Isaac Albeniz and Manuel de Falla.

The concert begins at 12:10 p.m. and 1:10 p.m., Music Room 107, Arts building.

OPERATION OF EXHAUST FANS

As part of the University's energy conservation program, the exhaust fans in many chemical laboratory fume hoods are automatically timed to start in the mornings and shut off in the evenings. Specific information about the hours of operation is posted on the face of the controlled units.

Laboratory supervisors are requested to draw this information to the attention of technicians, demonstrators and students working in their labs.

If it is anticipated that fume hood experiments will continue beyond the hours of automatic operation of the exhaust fans, supervisors are asked to contact the Maintenance Department and make arrangements to ensure that the hoods are operating when required.

SMOKE DETECTORS FOR THE HOME

As a result of numerous inquiries from employees regarding the availability and quality of smoke detectors, the Safety Security Department has arranged for a supplier to make available a specific smoke detector at a discount price for employees of the University.

The detector is a Guardian Model FB-1 (battery powered), priced at \$36.91, including tax. A recent edition of Consumer Reports rated the Guardian unit number one out of nine ionized detectors tested.

It must be understood that the business end of this arrangement is strictly between the employee and the supplier. However, persons wishing to place an order may do so by calling the Safety Security Office.

CHRISTMAS CARDS IN SUPPORT OF KORTRIGHT

The NISKA Wildlife Foundation, which operates Kortright Waterfowl Park, is selling Christmas cards, hasty notes, and prints suitable for framing, in support of the Park.

Each item is a reproduction of a sketch of a Canada goose, donated by Robert Bateman an internationally-known artist and naturalist.

Items may be purchased in the University Centre courtyard November 22 and 23, 11:30 to 5:30 p.m. or by contacting Gary Davidson, Ext. 8715.

AUCC PRESIDENT

H.E. Duckworth, president of The University of Winnipeg was elected president of the board of directors of the Association of Universities and Colleges of Canada during the Association's annual meeting held in Regina, Saskatchewan November 3. Dr. Duckworth succeeds Michael K. Oliver, president of Carleton University. Dr. Oliver continues to serve on the Board of Directors as past-president.

The newly-elected vice-president is M.O. Morgan, President of Memorial University of Newfoundland.

CAMPUS CHILD CARE CO-OPERATIVE

The Campus Child Care Co-operative has openings for children six months to five years of age in either full day or half day programs.

For more information, call Charleen Powell, 836-4981, evenings.

UNITED WAY

As of November 12 contributions to the United Way campaign on the campus totalled \$29,938.64. The objective for the University campaign is \$34,244.

The canvassing in departments has virtually been completed. Those who have not yet donated but wish to do so, may still contribute through their department canvasser or through the co-chairman of their college or administrative unit. Pledge forms for cash or payroll deduction donations may be obtained by phoning Ext. 3811. To accommodate late donors, the closing date for the campus campaign has been extended to Friday, November 26.

ENGINEERING INSTITUTE

The Waterloo-Wellington Chapter of the Engineering Institute and the Engineering Student Society will sponsor a technical meeting at which Professor Neal Stoskopf, Crop Science, will make a presentation entitled *Feeding the World — A Challenge for Engineering*. After the presentation, the meeting will be opened for questions and discussion.

The meeting will take place on November 24 in Room 442 of the University Centre beginning at 8 p.m. The presentation is open to the public.

CROSS COUNTRY SKI CLINIC

The University of Guelph Nordic ski team and Tim Heiberg, C.S.A. instructor, Halton Hills Ski School, will present two films, a discussion of equipment, and a waxing demonstration Wednesday, November 25, 8 p.m., Room 207, Human Kinetics. Admission is \$1.



VISIT CANCELLED

The visit to the University of Guelph campus and a public lecture by Professor Keith Buchanan November 18 and November 19 has been cancelled until further notice.

TEACHING SKILLS WORKSHOP

The Senate Committee on Teaching and Learning sponsored a workshop on teaching skills and strategies November 6 with Dr. Michael Orme from OISE as leader of the session. Dr. Orme used the statement 'teaching is an art' and added that that may be true for some instructors — sometimes. However, teaching is also something that can be learned, and so for those days that you aren't inspired by the muse, you may learn a number of retrievable skills which will enhance the students' learning.

One area on which he focused was attention and motivation skills. The other focus of the discussion was on probing. When the instructor uses this skill effectively, it increases the students' critical awareness as they are asked to analyse statements, become aware of the assumptions underlying comments and to evaluate ideas, he explained.

A BILINGUAL NEWS BULLETIN?

It is always good to receive comments from *News Bulletin* readers. Michael Baker-Pearce, chief technician, Pathology, after reading the article last week on *Bilingualism — Preparing for the Year 2000*, (page 5), telephoned to suggest that the *News Bulletin* introduce articles written in the French language. Michael has taken several French-language courses and recently had one of his poems, written in French, read on C.JBC. Michael has offered to send his poem to the *News Bulletin*.

CENTURY ONE CORRECTION

Century One; A History of the Ontario Veterinary Association 1874-1974 by A. Margaret Evans and C.A.V. Barker may be purchased from CAPRI Books, Box 931, Guelph.

MANPOWER REPORT

A second report on *Getting and Holding Manpower in Northwestern Ontario* is now available, the Ontario Manpower Co-ordinating Committee announced recently. The report discusses issues and makes specific recommendations about the quality of communities and of management in the region, training, native participating in employment, and immigration. A copy is with the *News Bulletin* editor, Department of Information, Ext. 3864. Additional copies may be obtained by writing Quetico Centre, Box 1000, Atikokan, Ontario.

PEDESTRIAN SAFETY

Several reminders for pedestrian safety are in order now that the evening darkness comes earlier and the snow is falling. Slips and falls

caused nearly 40 per cent of all disabling injuries on campus during 1975. To avoid contributing to these statistics this year employees are reminded to:

- . Cross the roadways in the marked crosswalks or at intersections
- . Always stand on the curb while waiting
- . Cross only with the signal light after checking that the way is clear
- . Be alert for inattentive drivers
- . Be careful of your footing if the pavement is slippery or uneven
- . Where there are no sidewalks, walk on the left facing the oncoming traffic
- . Proceed slowly and cautiously on wet or icy pathways
- . Use the handrail when climbing or descending stairs.

TEACHING AWARDS

The Ontario Confederation of University Faculty Associations is to continue the awards program — as recommended by the Teaching Awards Review Committee. The review committee — whose members were Mary Balanchuk (Education, Queen's); Tim Moore (Psychology, Glendon); Harry Murray (Psychology, Western) and Jim Stevens (Physics, Guelph) — further recommended that the awards be presented in conjunction with the fall council. Hitherto, they have been announced and presented at spring council. The next round of awards will therefore be made a year hence. Member associations are urged to forward nominations for the Committee on Teaching Awards to the Provincial Office immediately.

BIG BAND SOUND

- . *Tuxedo Junction*
 - . *Moonlight Serenade*
 - . *Little Brown Jug*
 - . *String of Pearls*
- Pennsylvania 6-5006*

Dance to the immortal sounds of the Glenn Miller Orchestra Saturday, November 20, in Peter Clark Hall of the University Centre. The sound of this band is perhaps the most distinctive musical trade-mark ever created in the history of modern music, blending reeds with a clarinet lead, growling trombones, and wailing trumpets.

Not only are recordings of the original band still among the best-selling discs, but the present Glenn Miller Orchestra, led by Jimmy Henderson, is one of the most sought-after musical organization for concerts, college dances, military installations, and private functions.

Tickets are available at the central box office University Centre. Reservations may be made by calling Ext. 3940. After obtaining your tickets, tables may be arranged by calling Carol Krusky at Ext. 3902. Tickets are \$20 a couple, and include a late evening buffet.

1977 PARKING PERMITS

Full time regular staff and faculty members presently on payroll deductions for parking fees can expect 1977 permits about December 13, according to Parking Administration. The parking fee for the calendar year is \$42 payable on the second pay of each month in the amount of \$3.50. If you do not wish to re-register for a permit, please advise the Parking Administration office, level 3, University Centre, in writing, before November 19. Persons not eligible for payroll deduction, or who wish to pay cash, may apply for a parking permit (same price) in person anytime after December 15. If you leave the University anytime during the year, return your permit to Parking Administration for possible rebate. Further details may be obtained by calling Ext. 2118.

Clubs begin another season



The University Women's Club and the College Women's Club began another season recently and welcomed new members. Above are some of the members of the executive of the University Women's Club. Left to right are Janet McLean, vice-president and Cathy Burns, president. Marilyn Whiteley is the publicity chairman. Members of this year's executive of the College Women's Club gather for a photograph at the membership tea held at the Arboretum recently. Left to right are Mrs. J.J. Madden, president; Mrs. H.D. Branion, honorary president; newcomer, Mrs. H.C. Clark; Mrs. B.J. McSherry, vice-president and Mrs. N.R. Richards, recording secretary. Serving tea is Mrs. T.J. Heeg.



Two years planning for choir tour

Forty eight members of the University of Guelph Choir will leave for Frankfurt next August on what, for them, will be the first leg of a 21-day tour of southern Germany and Austria. For Professor Murdo MacKinnon it will mark the end of nearly two years of preparation which began shortly after they returned from their successful trip through the cathedrals of Britain in 1975.

Such tours require a great deal of planning — to the extent that few universities in Canada will make the attempt, and then only at long intervals.

Prof. MacKinnon, who acts as tour manager, reports that the first step is to secure high-level backing. This includes the approval of the President, the director of Music and the choir director. Next, a request must be made to the Alma Mater Fund for financial support after which the choir itself plans a fund raising campaign.

The University Choir is built around a semi-permanent nucleus of graduates, faculty members, and staff, augmented by a constantly changing corps of undergraduates. Their reaction to a proposed tour through countries famous for music, history and architecture was immediate and enthusiastic.

The next move was to select a target area which would have to be limited in order to avoid excessive travelling during the three weeks allotted to the trip. The selection of the Cologne, Heidelberg, Munich, and Vienna area was more or less arbitrary and contingent upon the reaction of choir directors in Germany and Austria. The encouraging responses indicated that a choir from Canada would indeed be welcome.

Letters in German were then sent to universities and churches in the selected area to ask if they would like the choir to come and to find out what kind of program would be acceptable.

The letters also included the credentials of the conductor, the accompanist and the choir. Few of the recipients would know much about Guelph or whether its choir was likely to measure up to their exacting standards. There are, however, indicators which are recognizable to members of the international musical fraternity. The director, Fred Stoltzfus and his wife, Ruth Heidmann-Stoltzfus, who is also the choir's accompanist, both studied for five years under well-known professors of music at Detmold in Germany. The fact that the choir had performed with distinction in such cathedrals and Canterbury and Salisbury is also significant. The nature of the proposed program, too, would denote a choir of no mean ability.

The replies were nearly all favorable and, bit by bit, the tour started to take shape. An experienced travel consultant sketched in the details and an estimate of the costs began to emerge. Compared with the 1975 trip to England, distances are greater and costs higher — maybe by as much as 50 per cent

— but decisions must be made, dates confirmed, buses and hotels contracted for long in advance. Beginning with a concert in the oldest Gothic church in Germany, the Elisabethkirche in Marburg, the choir will experience all manner of different conditions ranging from formal, well-advertised concerts to a 20-minute recital sung a capella in Cologne Cathedral during the daytime.

The 48-member choir is selected by audition. Any member of the University community may apply and each is required to pay a deposit on acceptance. Rehearsals are in progress in preparation for the upcoming Christmas concert which will include parts of next summer's program. Funding will be sought from corporations, foundations and student government but the largest share will be paid by the members themselves. When actual costs are added to loss of summer income, each member will be making a personal investment of over \$1,000.

"Why do we do it?" asks Prof. MacKinnon, and offers his own answer. "It is an immense experience on every level, musical, educational and personal. We shall stand where Mozart and Bach have stood and sing for people whose musical heritage is profound — a demanding exercise and one calling for the very best in all of us."

Fred and Ruth Stoltzfus spent their three weeks holiday in Germany this year, going from city to city and church to church arranging for firm invitations and discussing the details with choir-masters, ministers and priests. Li



The Department of Pathology is the recipient of a Martin Glen Loates print "Red Fox," presented to wildlife pathology in memory of Robert O. Ramsden, graduate student and research associate in wildlife diseases. The plaque reads "In memory of Robert O. Ramsden, D. V.M., M.Sc., for his active contribution to the oral rabies vaccine project, Ontario Ministry of Natural Resources, 1976." Dave Johnson, director of the Rabies Research Project, Ontario Ministry of Natural Resources, presents the picture to Professor Joan Budd, wildlife pathology. Attending the presentation are Mary Jane Ramsden, Professor R.G. Thomson, chairman, Department of Pathology, and Professor C.A. V. Barker, Department of Clinical Studies, chairman of the Cultural Affairs Committee, O VC.



Dr. Wendy Keitner, program director, right, and Lori Eddie, house assistant, with winning arctic scene painted by Malcolm Tobias and Normund Sultmanis.

Door - painting winners

Arts House, one of the Living-Learning Centres on campus, recently held its second annual door-painting competition. Using water-based tempera paint, the 64 students in the House, located on the third floor of Lennox-Addington Residence, produced door designs ranging from a delicately-hued depiction of an arctic dog train to a king-size Snoopy in primaries.

The competition was organized by Dr. Wendy Keitner, Department of English, who acts as program director, and her assistant, Lori Eddie, a third semester student in the School of Landscape Architecture.

Winners as selected by Professors Elton Yerex, Fine Art, Bob Scarfo, Landscape Architecture, and Leslie Willis, English, were Malcolm Tobias and Normund Sultmanis, first semester science students who painted the roost artistic door; Cathy Lackey, most bizarre door; Jeff Pacey and Matthew Budden, best fantasy door; Jo-Anne Armstrong and Anna Walsh, best comic door; Kim Barrett, Val Bowen, and Sandra Ritchie, best poster door; and Allan Levine, Fred Simpson, and Doug Lowry, whose philosophic beer mug was judged the entry which best represented the academic orientation of the designers.

Secretary (Part time), Graduate Student's Association. Salary \$150.00 every two weeks.

Laboratory Attendant (Part time), Clinical Studies. Salary \$4.00 per hour.

Technician, Botany and Genetics. Salary grade 6, salary range \$168-\$222.

Buyer, Purchasing Department. Salary grade 8, salary range \$200-\$265.

Stenographer, Horticultural Science. Salary grade 3, salary range \$126-\$168.

Stenographer, Environmental Biology. Salary grade 3, salary range \$126-\$168.

For further information please see bulletin boards or call Ext. 3058 or 3059.

Next Week at Guelph

THURSDAY, NOVEMBER 18

Biology Hour - UNWANTED PREGNANCIES, WHAT'S HAPPENING ON UNIVERSITY CAMPUSES, Dr. I.C. Pelletier, Medical Services, University of Guelph, Rm. 200, B/G/Z building.
Orchestra - UNIVERSITY OF GUELPH CIVIC ORCHESTRA, 8 p.m., War Mem.
Concert - Thursday Noon Hour Concert, LUBA AND IRENEUS ZUK, duet piano, 12:10 and 1:10 p.m., Rm. 107, Arts.
Meetings - Executive meeting of the FACULTY ASSOCIATION, noon, board room, Faculty Club, level 5, UC; SOCIAL SCIENCE COLLEGE GOV'T, 5 p.m., Rm. 433, UC; ORIENTEERING CLUB, 7:30 p.m., Rm. 333, UC; GUELPH GO CLUB, 7:30 p.m., Rm. 126, UC; FIRESIDE - BAHAI' CAMPUS CLUB 7:30 p.m., Rm. 308, Arts; INTER-VARSITY CHRISTIAN FELLOWSHIP, Derek Wood, 7:30 p.m., THE TYRANNY OF URGENCY, 9th floor lounge, Arts; FAMILY STUDIES CLUB MORROCO NIGHT, 7:30 p.m., Rm. 442, UC; WINTER CARNIVAL ORGANIZATIONAL MEETING, 5:30 p.m., Rm. 334, UC.
Employment Search Program - THE JOB INTERVIEW, Dept. Career Planning & Placement, 1 p.m., Rm. 301, UC.
Pub - MEADOWS, 8 p.m., Peter Clark Hall, UC.
TV - SPOTLIGHT ON UNIVERSITY OF GUELPH, 2 and 7 p.m., Cable 8. Guest is Prof. W. Chesworth, Land Resource Science.
Worship - CATHOLIC MASS, 12 noon, Chapel, level 5, UC; ANGLICAN UNITED DISCUSSION GROUP, 1 p.m., Chapel, UC.
Tele-Talk - Ontario's Minister of Health, HON. FRANKS. MILLER, 12:15 p.m., Rm. 103, UC.
Folksinger - BATSHEVA PAUL, 4:30 p.m., Rm. 103, UC. Sponsored by the Shalom Jewish Student Organization.
*Note - Professor Keith Buchanan's visit and lecture has been cancelled until further notice.

FRIDAY, NOVEMBER 19

Seminar - CONSUMERS AND FARMERS: IS THERE COMMON GROUND? Dr. R.M.A. Loyns, 10 a.m., Peter Clark Hall, UC.
Free Film - KIND HEARTS AND CORONETS, 7 and 9 p.m., Rm. 105, PS.
Sports - FOOTBALL - College Bowl Game.
TV - SPOTLIGHT ON UNIVERSITY OF GUELPH, cable 8, 5 p.m. Guest is Prof. W. Chesworth, Land Resource Science.
Worship - MUSLIM JUMA PRAYERS, 12:30 p.m., Rm. 533, Chapel, UC.
Orchestra - GLEN MILLER ORCHESTRA, 8 p.m., Peter Clark Hall, UC.
Faculty Club - WEST INDIAN NIGHT, 4:30 p.m., Faculty Club.

SUNDAY, NOVEMBER 21

Worship - CATHOLIC MASS, 11 a.m., War Mem; CHRISTIAN WORSHIP, 11 a.m., Chapel, UC; CHRISTIAN DISCUSSION-FELLOWSHIP, 7:30 p.m., 8th floor, Arts; MUSLIM ZOHAR PRAYERS, 1 p.m., 9th floor, Arts.
Recital - STUDENT RECITAL, University of Guelph faculty of music, Rm. 107, Arts.
Meeting - SIMS Club, TM AND EXECUTIVE HEALTH, Dr. Harold Bloomfield, 8 p.m., Rm. 103, UC.
Cine Series - THE FOUR MUSKETEERS, 7 and 9 p.m., Rm. 105, PS.

MONDAY, NOVEMBER 22

Video Tape - ABBIE HOFFMAN IN HIDING, 11 to 3 p.m., Rm. 103, UC.
Continues Nov. 24 and 26.

On Campus Recruiting - XEROX OF CANADA LIMITED, permanent employment interviews.

Seminar - THE ARCTIC-ALPINE CUSHION PLANT - A MASTERPIECE OF ADOPTION, Dr. Gerard M. Courtin, Dept. Biology, Laurentian University, 2:10 p.m., Rm. 260, Chemistry.

Political Night - ALL CANDIDATES NIGHT 7:45 p.m., University Village public school.

TUESDAY, NOVEMBER 23

Seminar - SERVICE MAGNETISM IN FERROMAGNETIC METALS, Dr. Allan Griffin, University of Toronto, 4:10 p.m., Rm. 113, PS.
Meeting - CANADIAN LAND RECLAMATION ASSOCIATION, Arboretum. Continues to November 25.
Employment Search Program - INTRODUCTION AND THE SELF-ASSESSMENT, Dept. Career Planning & Placement, 1 p.m., Rm. 301, UC.
On Campus Recruiting - MAPLE LEAF MILLS, permanent employment interviews.
Square Dance - SQUARE DANCE CLUB, 8 p.m., Judging Pavilion.
Worship - ANGLICAN EUCHARIST, 12 noon, Chapel, UC; CATHOLIC MASS, 5 p.m., Chapel, UC.
Fellowship - CHRISTIAN DISCUSSION FELLOWSHIP, 8 p.m., 9th floor lounge, Arts building.

WEDNESDAY, NOVEMBER 24

Meetings - ANIMAL SCIENCE CLUB, 7:30 p.m., An.Sci./Nu. 171; CHRISTIAN AGRICULTURE CLUB, 8 p.m., Rm. 332, UC.
Lecture - NUCLEAR REACTORS IN MY BACKYARD, Prof. P. Egelstaff, Physics, 4 p.m., Rm. 113, PS; INTRODUCTION TO TRANSCENDENTAL MEDITATION, U. of G. SIMS Club, 7:30 p.m., Rm. 121, Arts.
Speaker - Paul Dick, M.P., YOUTH IN POLITICS, Rm. 103, UC. Sponsored by the University of Guelph Progressive Conservative Club.
Employment Search Program - THE RESUME, JOB LOCATIONS/STRATEGIES; THE LETTER OF APPLICATION, Dept. Career Planning & Placement, 1 p.m., Rm. 301, UC.
On Campus Recruiting - GARDNER MCDONALD, and MAPLE LEAF MILLS, permanent employment interviews.
Print Sale - DEPARTMENT OF FINE ART PRINT SALE, students, courtyard, UC. Continues to Saturday.
Career Seminar - RICHARDSON SECURITIES, 4 p.m., Rm. 103, UC.
Easy Wednesday - JEFF MORRISON, noon, courtyard, UC.
Worship - CATHOLIC MASS, 5 p.m., Chapel, UC.
Fellowship - CAMPUS CHRISTIAN FELLOWSHIP, 7:30 p.m., level 5, UC.
Technical Meeting - FEEDING THE WORLD - A CHALLENGE FOR ENGINEERING, Prof. N. Stoskopf, Crop Science, 8 p.m., Rm. 442, UC. Waterloo-Wellington Chapter of the Engineering Institute and the Engineering Student Society.

THURSDAY, NOVEMBER 25

Biology Hour - THE DOMESTIC CHICKEN - PARASITES AS INDICATORS OF ITS ORIGIN, Dr. M.A. Fernando, Pathology, noon, Rm. 200, B/G/Z.
Meetings - GUELPH GO CLUB, 7:30 p.m., Rm. 126, UC; SOCIAL SCIENCE COLLEGE GOVERNMENT, 5 p.m., Rm. 433, UC.
Talk - EILEEN O'CASEY, 8 p.m., Place, TBA.
Meeting - Council meeting, FACULTY ASSOCIATION, 7 p.m., Faculty Club, level 5, UC.
Concert - Thursday Noon Hour concerts, TRIO CHITARISTICO ITALIANO, classical guitar trio, 12:10 and 1:10 p.m., Music Rm. 107, Arts.
Employment Search Program - THE JOB INTERVIEW, Dept. Career Planning & Placement, 1 p.m., Rm. 301, UC.

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