

# NEWS BULLETIN



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GUELPH, Ontario.

## UNIVERSITY OF GUELPH

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### Apples all year round

## Controlled Atmosphere Aids Food Storage

Hot weather invariably brings on a rash of stories about cold storage; since the university has an entire building devoted to such pursuits, what better time to explore this chilly endeavor?

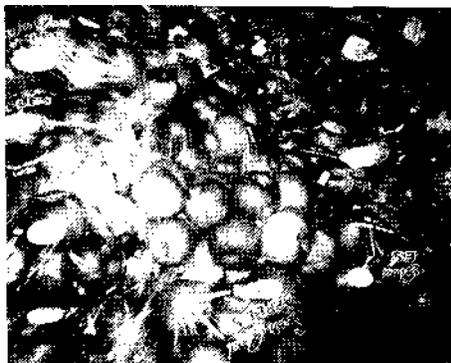
Post harvest physiology (i.e. storage) has become a crucial aspect of horticultural research, for the quality of fruits and vegetables, nursery stocks and flowers depends not only on how they're grown and harvested, but on what happens to them between harvest and use. Such research proceeds in the cold storage facility located at the south end of the greenhouse range and in small cold storage chambers tucked in the basement of the Horticultural Science building.

This research has, in the past 35 years, yielded methods of preserving fresh apples from one harvest season to the next. The first research in Canada to deal with controlled atmosphere storage of apples was performed at Guelph between 1936 and 1939. Since the method was first used commercially in Ontario in 1955, techniques have been vastly improved; last season 1,250,000 bushels of Ontario McIntosh apples were kept in controlled atmosphere storage.

Controlled atmosphere storage differs from refrigeration in that the storage chamber is sealed; the carbon dioxide content is maintained at a high level (up to five per cent) and the oxygen content held at about three per cent. This seems to control the ripening of the fruit.

Why is controlled atmosphere storage successful? Scientists aren't really sure. Research at Guelph has examined the emission of ethylene by ripening fruit. Controlling the levels of oxygen and carbon dioxide modifies the effect of this ethylene, which seems to be a crucial factor in the ripening of all fruits. Controlled atmosphere techniques have been tried with apples, asparagus, potatoes, pears, rhubarb, cucumbers, strawberries, tomatoes and cut flowers. So far, apples and pears have shown the best results.

Efficient research with controlled atmosphere requires highly automated detection and monitoring equipment to maintain the atmospheres. With the equipment in the cold storage building, fifty different controlled atmosphere



*Apples all year round.*

storage chambers can be individually studied. Each chamber (a steel drum) is connected by seemingly miles of plastic tubing to a central instrument room where electronic equipment monitors the carbon dioxide, oxygen and ethylene levels in each drum.

Much basic research lies behind development of storage techniques. Studies now in progress analyze the respiration rates of, and volatile products given off by, ripening fruits and stored vegetables. This project, which also relies on the electronic monitoring and

recording equipment, will help elucidate the basic mechanisms of ripening and ageing.

Closely related to development of storage techniques is the problem of when to harvest products for storage. Consequently, research at Guelph is exploring indices of maturity which will provide a precise measure of when to begin picking fruit for storage. In most cases, fruit for storage is harvested before it fully ripens, and is subsequently allowed to ripen at controlled rates.

Fruits and vegetables aren't the only products involved in storage research. Guelph scientists are also investigating the storage of cut flowers and ornamental nursery stocks. This indicates the changing emphasis in horticultural and agricultural research from interests in food and fibre to broader problems dealing with man and his environment. A current project at Guelph involves cold storage of cut flowers in the bud stage, then forcing the buds to open at the desired time by using an "opening solution." These opening solutions may be specific for each type of flower and could easily be used by florists to produce saleable blooms when

*Continued on page 4*



*Professor G.F. Townsend, Professor P.W. Burke and Professor R.W. Shuel are shown with five members of a Japanese Trade Delegation who visited the Department of Environmental Biology to study methods of packing honey and to arrange for purchases of honey in Canada. Also shown are representatives from the Canada Department of Agriculture and the Canadian Horticultural Council, who were travelling with the delegation.*

## International Research Project Involves Local Ayrshire Cattle

Two University of Guelph scientists in the Department of Animal and Poultry Science have been involved this summer in a project to make a significant impact on the future of the Ayrshire dairy breed in Canada. Semen from five of Finland's best Ayrshire bulls was imported during the summer and offered to the owners of about 70 Canadian Ayrshire herds.

Dr. E.B. Burnside, leader of the project for Ontario, and Dr. M.G. Freeman played a significant role in the plan which will evaluate the relative merits of Finnish and Canadian Ayrshire bulls.

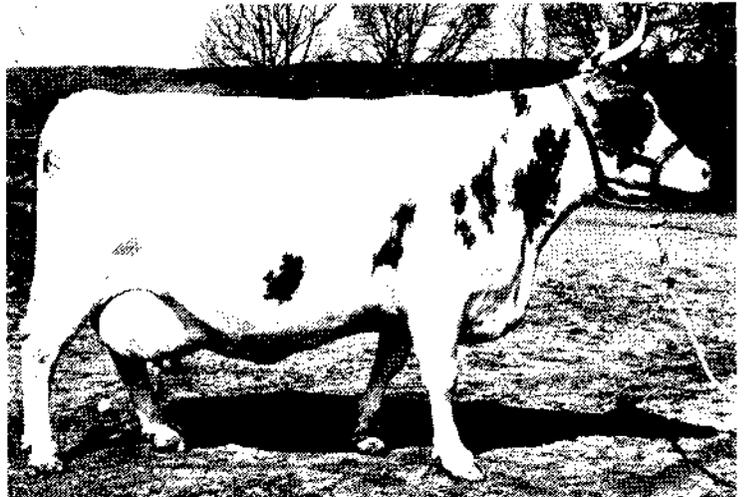
The project is a joint one involving Macdonald College in Quebec, the University of Guelph in Ontario, artificial insemination units in both provinces and the Animal Research Institute of the Canada Department of Agriculture at Ottawa.

The Ayrshire Breeders Association of Canada, representing all purebred Ayrshire breeders in Canada, is also lending its support to the project.

The project, which will take up to five years to complete, is designed to compare the genetic contribution of the best Finnish Ayrshire bulls with the best Canadian Ayrshire bulls.

This will be done by mating cows in each of 70 co-operating Canadian herds with four or five bulls from both countries, then comparing the milk production records of the offspring.

There is some evidence that the Finnish Ayrshires, which are being subjected to a rigorous selection program aimed at improving pro-



*Finnish Ayrshire Elite cow ANNE 141234 AAA. Best annual yield: 24, 436 lb. of milk with 4.9% or 1197 lb. of milk fat. Corresponding 305-day lactation: 22,888 -4.8 - 1,100. Average yield in the first five complete recording years: 19,321 lb. of milk - 4.9% - 939 lb. of milkfat. Live weight c.1320 lb. Owner: Teijo estate, Pernio, Southwestern Finland.*

duction, may be of value to Canadian breeders in terms of milk production and butterfat and protein content.

If this is so, then Canadian Ayrshire breeders will be able to make significant advances by mating their cows to Finnish bulls through artificial insemination.

The degree of improvement that can be expected is impossible to estimate, however, until a test such as the one now being launched has been completed.

Five Finnish bulls have been selected and they are the best proven bulls in Finland. The Finnish bulls have good production proofs with a high butterfat test. Their dams are high producers with lifetime yields from 144720 lbs.

milk, 4.5% fat to 216, 230 lbs. milk with 4.4% fat.

Direct comparisons are not entirely accurate since Finnish records are based on a recording year rather than a lactation. Feeding and care are not the same in the two countries.

Each Canadian breeder who participates in the project will be asked to devote a number of cows to the test. Half will be bred to Canadian bulls and the other half to the Finnish bulls.

In addition, the Canada Department of Agriculture will use herds it owns at the Animal Research Institute at Ottawa, and the Research Stations at Charlottetown P.E.I., and Normandin, Que.

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## Animal-Poultry Science Papers Presented at Meetings

Papers by several members of the faculty of the Department of Animal and Poultry Science were presented recently at two meetings. The following seven papers were presented at the meeting of the Canadian Society of Animal Science held at Lethbridge, Alberta.

J.W. Wilton, Influences within and across station comparisons of beef bulls on expected genetic progress.

J.W. Wilton and T.R. Batra, On the means and variances for average daily gain of station tested beef bulls.

L.G. Young, B.A. Sharp and A.A. Van Dreumal, Influence of source of high level of selenium on absorption and retention by pigs.

A.D. Leigh and J.W. Wilton, A genetic-economic model for beef cattle.

J.C. Flinn, G.C. Ashton and L.G. Young, Influence of the relative prices of feedstuffs on diets of market swine.

G.J. King, Effect of egg yolk on fertility of stored boar semen.

R.R. Hacker, M.P. Stefanovic and R.P. Forshaw, Influence of cold stress on body composition of young male pigs.

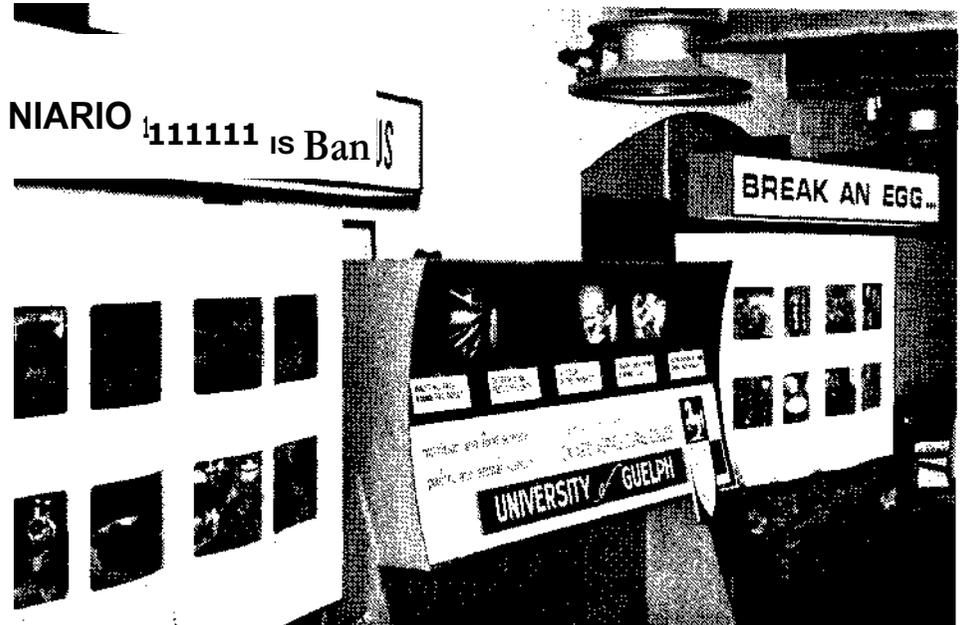
The following two papers were presented at the meeting of the American Dairy Science Association held at Michigan State University.

D.G. Grieve, W.G. Merrill, and C.E. Coppock, Effect of sulfur supplementation on ration

digestibility, nitrogen and sulfur balance of cows fed urea-containing silages and concentrates.

C.E. Coppock, D.G. Grieve and W.G. Merrill,

Effect of sulfur supplementation on performance of cows fed urea-containing silages and concentrates.



Visitors to the Royal City Exhibition saw this University of Guelph exhibit, illustrating the role of OAC in poultry, nutrition and food products research. The exhibit will appear at the Central Ontario Exhibition in Kitchener from August 31 to September 6.

## Agricultural Engineers Meet

More than 300 delegates from Northeastern United States and Eastern Canada attended the annual meeting of the American Society of Agricultural Engineers, North Atlantic Region, held last week at the University.

At the meeting, which was hosted by the University's School of Engineering and lasted from August 15 to August 18, 25 papers on agricultural subjects were presented. They dealt with such topics as the disposal of farm wastes, safety on the farm, the utilization of power, and management of the environment. One major address was given by Albert A. Thornbrough, president of Massey-Ferguson Ltd. (and former vice-chairman of the University's Board of Governors), on the role of the multi-national corporation in today's world. Keynote speeches were presented by R.S. Gowe, director of the Canada Department of Agriculture's Animal Research Institute, on opportunities for agricultural engineers in the animal environmental field; by L.H. Skromme, a vice-president of the New Holland Machine Co., on opportunities in other countries; and by C.G.E. Downing, director of agricultural engineering research for the Canada Department of Agriculture, on openings in the general research field.

W.E. Coates, formerly with the University's

School of Landscape Architecture also presented a paper outlining ways of operating gravel pits and quarries, and at the same time preserving their natural setting.

The society, which also held its 1958 convention at Guelph, will meet next year in Washington, D.C.



C.G.E. Downing, director of agricultural engineering research for the Canada Department of Agriculture and former director of the university's School of Engineering, speaks before the annual meeting of the American Society of Agricultural Engineers, North Atlantic Region. The meeting, which brought together some 300 engineers, was held at the University from August 15 to 19.

## U of G at CNE

CNE-goers may see some familiar campus scenes in the Department of University Affairs display in the Government of Ontario building. The display features a 3-minute show from each of the provincial universities. University of Guelph is depicted in a narrated slide presentation, with a music accompaniment.

# NEXT WEEK AT GUELPH

## THURSDAY, AUGUST 26

T.V. SPOTLIGHT ON UNIVERSITY OF GUELPH. Cable 8 at 5:30 p.m.

## FRIDAY, AUGUST 27

T.V. SPOTLIGHT ON UNIVERSITY OF GUELPH. Cable 8 at 7 p.m.

## MONDAY, AUGUST 30

**Students** LAST DAY FOR SUBMISSION OF STUDENT PETITIONS

## TUESDAY, AUGUST 31

**Seminar** ANIMAL SCIENCE RESEARCH IN NORWAY, by Dr. Knut Brierem, Institute of Animal Nutrition, Agricultural College of Norway, Vollebakk, Norway. 10 a.m. Room 141, Animal Science Nutrition.

## WEDNESDAY, SEPTEMBER 1

**Students** LAST DAY FOR ACCEPTANCE OF APPLICATIONS FOR ADMISSION

## APPOINTMENT

Dr. Thomas F. Funk



Dr. Thomas F. Funk joined the faculty of the School of Agricultural Economics and Extension Education earlier this month.

Born in Indiana, Dr. Funk earned a bachelor and master of science in agriculture from Purdue University followed by his Doctor of Philosophy at the same institution.

Dr. Funk, whose interest areas are agribusiness and general agricultural economics, will teach and complete research in Agribusiness Studies.

## Food Storage *Continued from page 1*

needed. Research at Guelph has dealt only with carnations, but will branch out to deal with other commercially important cut flower crops.

Guelph's cold storage building hosts a variety of storage research projects and in addition provides service storage for apples, potatoes, onions and other crops which undergo exhaustive analyses of quality throughout the storage season.

Although the building sounds like the ideal retreat on sweltering day, it is more suited to apples, potatoes and flowers than to overheated people. Thanks to this facility and the research associated with it, Ontarians can bite into a juicy, crisp, nearly harvest fresh McIntosh apple anytime during the year.

The News Bulletin is published by the Department of Information and edited by Mrs. Betty Keeling. Copy for the next edition must reach the editor, Room 361, McLaughlin Library, not later than noon Friday, August 27, 1971. Any material from this bulletin may be freely quoted.

## Party to honor Mr. Elgar

Mr. C. B. Elgar, supervisor of the house-keeping section of the auxiliary operations department, is retiring September 1 after 25 years of service to the University. A luncheon is being held on Friday August 27 at noon in the Royal Hotel in honor of Mr. Elgar. Anyone wishing to attend the luncheon please contact Ext. 3133 or 3130.

## NORWEGIAN SCIENTIST TO VISIT GUELPH

Dr. Knut Brierem of the Institute of Animal Nutrition at the Agricultural College of Norway at Vollebakk, Norway, will be visiting the University of Guelph from August 30 to September 1.

Professor Brierem will present a seminar in Room 141, Animal Science Nutrition building on August 31 at 10 a.m.

A recognized authority in the field of energy metabolism, Professor Brierem will discuss animal science research in Norway. One of the topics to be discussed is formic acid preservation of forages.

All interested faculty and post graduate students are invited to attend the seminar.

## Prof. Townsend Visits Russia

Professor G.F. Townsend, Environmental Biology, left earlier this week to attend the 23rd International Apicultural Congress in Moscow followed by a tour of Southern Siberia.

Accompanied by Mrs. Townsend, he will be joined by 55 other delegates from Canada and the United States to fly from Toronto International Airport via Russian Aeroflot.

Professor Townsend was in Russia last year assisting in the organization of the Congress as a member of the executive committee. The attendance at the meeting is expected to reach 3,500.

## PERSONALS

- Wanted — Doberman. Call C. Piotrowski, Ext. 2745
- For Rent — one bedroom apartment in downtown area. 823-2124.
- For Sale — Grundig tape recorder, Richo singlex camera. Ext. 3295 or 821-3583 after 5:30 p.m.
- Wanted — two tricycles, desk, arm chair, single bed, ironing board, table, five basket chairs. 821-4167 after 6 p.m.
- Available — babysitting in my own home. 822-5575
- For Sale — queen size bed. 822-5226.
- For Sale — 6 ft. walnut stereo cabinet, speakers, AM-FM stereo receiver, transcription turn table, desk with two matching bookcases. 824-1255 after 5:30 p.m.
- Wanted — stove and refrigerator. 821-3083.
- For Sale — sofa and chair; double bed with mattress, Ext. 3436 or 822-2584 between 6 and 8.
- For Sale or Rent — spacious 8 room home. St. Georges Park. 821-0962.
- Wanted — to babysit young children in our own home. Ext. 3436 or 822-2584 between 6 and 8.
- Wanted — good home for 5 month Labrador Retriever, also small Labrador female, 18 months old. Good watch dog. 822-3979.
- For Sublet — in east end Kitchener for six months. 2 bedroom, well furnished. Adults only. 745-5294.
- For Sale — set of 36" bunk beds with slat springs and mattresses. Best offer. Pat at Ext. 2672 or Acton 853-1593 after 7.
- Ride wanted for winter months only, from Acton to University. Arriving at 8:30 and leaving anytime after 4 p.m. Or one way only at night. Will pay. Pat at Ext. 2672 or Acton 853-1593 after 7.
- For Rent — 4 bedroom house, 2 baths. 821-2346.
- For Sale — Westinghouse washer & dryer; 2 large healthy plants. 821-2346.
- For Sale — '68 M.G.B. White with black interior. Bob at 648-2817.
- Wanted — Ride from Hespeler to University daily. Arrive at 8:30 a.m. and return at 5. Ext. 2114 or 658-4007.
- Wanted — ride from Elmira to University daily. Commencing Sept. 1. Elmira 669-3953.
- For Sublet — 2 bedroom apt. Available Oct. 1. Ext. 3700.
- For Sale — 3 bedroom house off Hwy. 6, south of University. 822-3496.
- For Sale — Purebred Siamese Seal-point kitten, 6 weeks old. 821-1316 after 5:30.
- For Sale — '65 Volkswagon. Radio, gas heater, 73,000 miles. 824-0129.
- For Sale — 21" portable Phillips B. & W. television. 824-0129.