

June 2003

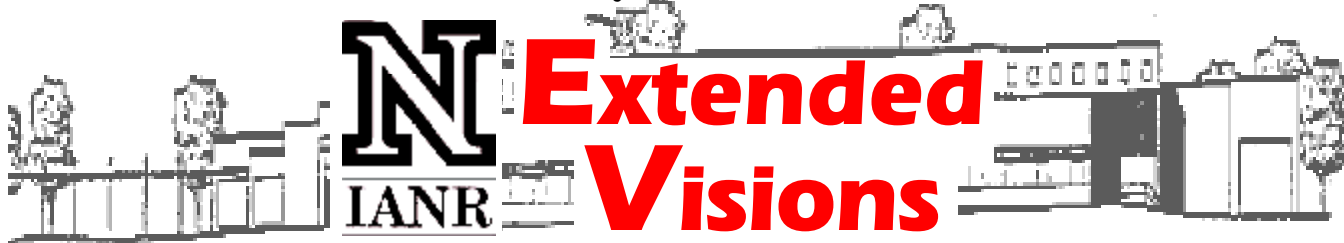
Extended Visions May-June 2003

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ARDC Director's Comments

Moving Forward in Challenging Times

by Daniel J. Duncan, ARDC Director

Two months have passed since my last column and the budget picture is still really fuzzy. Some of the potential cuts have been announced with more to come as the legislative process continues to unfold. While nothing is certain, we do know that a proposal has been made to eliminate the Nebraska Forest Service. This reduction would affect four employees at the Fire Equipment Safety Shop. This shop obtains Federal Excess Property vehicles, reconditions them, retrofits them with fire fighting equipment and makes them available to rural fire districts around the State. The shop also provides mechanic services for all the units operating at the ARDC.

Budget cuts in other areas are also impacting workloads at the ARDC, mostly in the administrative support and business management area. Processes are being eliminated at a centralized level and the responsibility for the processes moved to departments. With this increased workload, we are reviewing our business functions and will make changes to cope with the increased workload. What this means, especially

in the long-term, is that some services will be eliminated and some will be performed only on a fee basis. These changes will affect services to ARDC entities and the general public.

While this all sounds like doom and gloom, it is not. We will survive and continue to move forward. In the midst of all of this we have funding to replace a building at the Dairy Unit and one used by the Facilities and Farm Operations. We are moving forward with mandated upgrades of our municipal water system, planning for an expansion of the Beef Feedlot and many other smaller scale projects designed to improve and increase our research capabilities.

Some may question moving forward with these projects while we are in a budget reduction cycle. However, these projects are critical to support the priorities of IANR. The Units involved in funding these projects have planned and made sacrifices in other areas to ensure we move forward. This type of funding is usually "saved" over a period of years. If we were to use these funds to address the budget reductions, we would only be stalling the inevitable. Using non-reoccurring monies to fund yearly needs is somewhat akin to eating your seed corn...it may seem like a good idea at the time, but it doesn't make for a very promising future. □

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WE WILL BRING YOU QUALITY PROGRAM INFORMATION!

We'll e-mail you updates on: Workshops that offer CCA Credits, Crop Management Diagnostic Clinics, Integrated Crop Management Winter Programs, No-Till Conference, Crop Production Field Day, and many others!!!!

Do you want to know when Cooperative Extension ag-related workshops and conferences are held at sites across Nebraska?

In this time of reduced budgets and rising costs, we are looking for the most cost-efficient and timely way of reaching our clientele. We would like to e-mail you information on upcoming programs. Sign up at <http://ardc.unl.edu/training.htm> or e-mail us at cdunbar2@unl.edu.

You will not only receive monthly program updates, but you will also receive a coupon for \$10 off your choice of programs listed on our website. □

Go to

<http://ardc.unl.edu/training.htm> to register and learn more!

Don't miss out on details on upcoming summer programs...

GET ON THE E-MAIL LIST TODAY!!

Coming up...May 12 Field Scout Training

The website:

<http://ardc.unl.edu/training.htm>

also contains details about other upcoming programs and training opportunities, as well as online registration.

You'll want to bookmark the site and check back regularly! □



FEATURING.... Behlen Observatory



and the Department of Physics & Astronomy

In each issue of *Extended Visions*, we feature a specific department's research and projects at the ARDC. In this edition, we feature the Department of Physics and Astronomy. Read more inside!

Training for Beginning Scouts - May 12

A field scout training course will provide scouts the opportunity to enhance skills needed on the job.

This training is designed for entry level scouts who will be working for crop consultants, industry agronomists and farm service centers across Nebraska and neighboring states.

The one-day training session will be held at the NU ARDC on Monday, May 12 from 8:30 am - 5 pm.

The introductory course will help build confidence, enhance scouting techniques and provide continuing education credits.

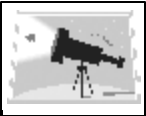
Topics include: corn and soybean growth and development - how to stage the growth of corn and soybeans and the importance it has on the management of pest control; corn and soybean insect pests - identification, damage, and life cycles; natural enemies - predators, parasites and pathogens; weed identification; crop diseases; nutrient deficiencies; and sampling methods - scouting do's and don'ts.

Past participants have given the training high marks. In fact, 100% of last year's participants rated the program as above average or one of the best programs of its type available. A few of the benefits registrants stated the training provided included improved confidence in scouting and working with growers and acquisition of better identification skills. Other participants appreciated the hands-on, practical format. Early registration is \$65 until May 5. After that,

100% of last year's participants rated this training as **ABOVE AVERAGE** or as **ONE OF THE BEST** programs available!

FIELD SCOUT TRAINING - Continued on P. 2

**ARDC
FEATURE**



BEHLEN OBSERVATORY

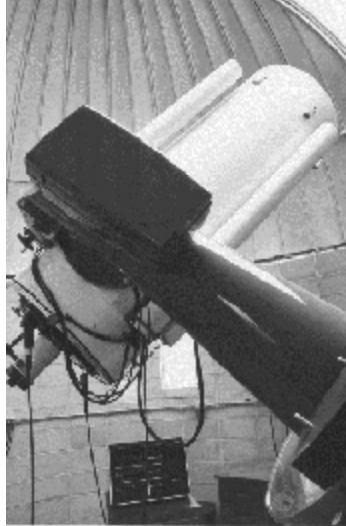
Seeing Stars...and More!

Articles by Dr. Edward Schmidt and Dr. Martin Gaskell,
Department of Physics and Astronomy

Behlen Observatory was established at the ARDC in 1972 to provide an up-to-date research facility for astronomers at the University of Nebraska. Walter Behlen, president of Behlen Manufacturing Co. of Columbus, NE donated \$200,000 to purchase the 30-inch telescope and construct a dome to house it. Mr. Behlen had a long standing interest in astronomy and the telescope which he used at his home in Columbus, NE is now on display at the observatory. The observatory has been used by faculty and students to gather data that has contributed to nearly 45 refereed articles in professional journals and four PhD dissertations. Much of the research and most of the improvements to the instrumentation have been supported by the National Science Foundation.

The Behlen Observatory 30-inch telescope is able to gather more than 5,000 times as much light as the human eye. Its sensitivity is further increased by the use of a cutting-edge electronic camera, known as a charge coupled device or CCD, at its focus. The result is a system which can accurately measure the brightnesses and colors of stars more than 10,000 times too faint to be seen by the unaided eye.

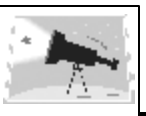
The 30-inch telescope was built before the automation of scientific instruments was common and was designed to be operated manually. In the early 1980's the observatory staff began computerizing the telescope and its scientific instruments. Consequently ours was one of the first research observatories in the United States to achieve computer control to the point where the observations proceeded most of the night without operator intervention. The control system has recently been updated by the replacement of the aging microVAX computer with a PC and the development of mouse driven control software. Nearly 100 star fields can be observed in a single night giving Nebraska astronomers the ability to gather large amounts of data and pursue unique areas of research. □



The Behlen Observatory 30-inch telescope (above) and Behlen Observatory at the ARDC (below).



**ARDC
FEATURE**



BEHLEN OBSERVATORY

About the Research

Studying stars which change

While most stars shine steadily, like the Sun, perhaps one in a hundred oscillates in brightness in intervals as short as minutes or as long as years. Among these variable stars we find a great diversity of types. They range from the coolest of stars to the hottest, from the biggest to the smallest and from the brightest to the faintest. All they really have in common is an inner instability which causes them to vibrate. Since its founding a major research emphasis at Behlen Observatory has been the study of variable stars.

With support from the National Science Foundation, a new cutting-edge electronic camera was purchased in 2001 for variable star studies. Using this equipment Professors Edward Schmidt and Kevin Lee and students Dale Johnston, Shawn Langan and Joseph Henry have been observing a particular type of variable star called Population II Cepheids. While some variable stars repeat their variations in a very regular fashion, others seem to change randomly. The Population II Cepheids fall in between. They exhibit small changes from one cycle to another. When a sufficiently large database has been assembled, it will be possible to study the cause of the small irregularities and use them to determine the properties and the origin of these stars. The Population II Cepheids are also interesting because they appear to range widely in age. In fact, some are among the oldest stars in our galaxy, the Milky Way, while others appear to be associated with the youngest population of stars. When the properties of these stars are better established from the present observations, studies will be undertaken to use them to learn more about the history of the Milky Way galaxy.

Larger than the sun

Although the RR Lyrae stars are considerably larger than the sun, they change very rapidly. Some regularly double in brightness in the course of an hour. Most of these stars repeat their light curves with remarkable regularity. However, some show a much longer secondary periodicity with gives rise to a variation which changes from cycle to cycle. This behavior is known as the Blazhko Effect and produces considerable scatter in their light curves. In his Ph. D. dissertation research and since, Dr. Kevin Lee has studied this phenomenon. The case of the Blazhko Effect is still unknown. Observations from Behlen Observatory are being used to develop a database of the characteristics of Blazhko Effect stars and regular monoperiodic RR Lyrae stars. Observations have recently been expanded to include



ABOUT THE RESEARCH - Continued on P. 3

FIELD SCOUT TRAINING - Continued from P. 1

registration is \$75.

A total of 5.5 CCA credits is anticipated: (Integrated Pest Management 4.0, Crop Production, 1.0; and Soil Fertility .5).

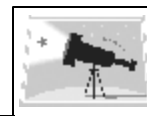
This training is part of the NU Cooperative Extension Crop Management Diagnostic Clinics. Three other clinics are planned, a mid-summer diagnostic clinic on July 10, late season clinic on August 20 and a precision farming management and technologies clinic will be held on September 3.

Trainers are from the NU faculty and the agricultural industry. The clinics provide an unbiased approach by highly skilled trainers.

NU Cooperative Extension, a division of the Institute of Agriculture and Natural Resources, sponsor the training. To register, call (402)624-8030, via fax at (402)624-8010, via e-mail at cdunbar2@unl.edu, or write to NU ARDC, CMDC Programs, 1071 County Road G, Ithaca, Neb. 68033.

Detailed information and registration is on the internet at <http://ardc.unl.edu/training.htm>. Sign up for the e-mail list and save \$10. □

**ARDC
FEATURE**



BEHLEN OBSERVATORY

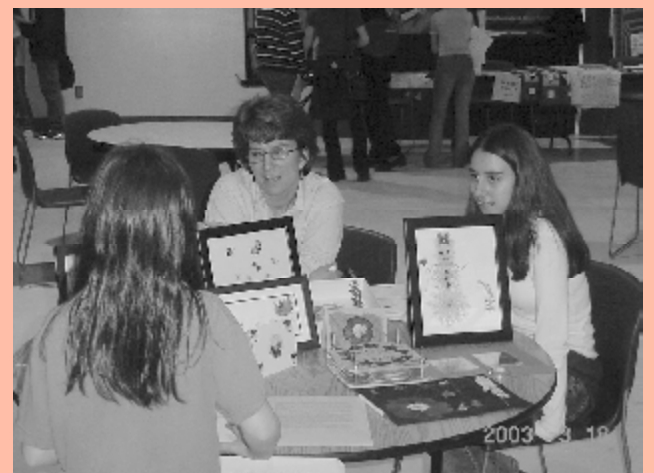
**Behlen
Public
Outreach**

Although Behlen Observatory is primarily a research facility, it is open to the public on a regular basis. During the 2002-2003 academic year, there were seven public nights which attracted nearly 400 visitors from Lincoln, Omaha and the surrounding area. Additionally, two school groups brought about 70 students on specially arranged nights. Over the course of the year, visitors were able to view various objects through the 30 inch telescope including the moon, the planets Venus, Saturn and Jupiter, the Orion Nebula, the Ring Nebula and a Globular Cluster. The public night schedule has not been set for next year but will be on the observatory web site when it is available (<http://physics.unl.edu/directory/lee/bo/bohp.html>). School groups and others wanting to set up a special night should contact the observatory director at eschmidt1@unl.edu.

The High School Astronomy Camp

For the past two years, a summer astronomy camp has been held on the UNL campus in Lincoln. Each of the approximately 20 high school students attending the camp have had the opportunity to visit Behlen Observatory at least one evening to use the telescope. They have taken this opportunity to obtain photos of various celestial objects including globular clusters, the Ring Nebula, the moon and the planet Mars. The camp will be held again during the week of July 13 to 19, 2003. Information can be found at <http://physics.unl.edu/directory/lee/astroed/astcamp/camp.html>. □

Clover College Learn Fair



The Clover College Learn Fair provided an opportunity for 4-Hers, leaders and parents to learn about projects in a hands-on setting. 155 kids, parents, leaders attended this year's fair. □

Simply OUTSTANDING!

Four Employees Receive IANR Award

We've always known that we have some very outstanding employees working at the ARDC, but now we are making it official! In recent months, four employees that work at the ARDC have received the NU Institute of Agriculture and Natural Resource's Outstanding Employee Award (OEA).

This is a very high honor as recipients are selected from the statewide pool of University employees. Letters of nomination were submitted in support of the candidates' qualifications by staff and faculty that work closely with the employees.

Jeff Bergman, ag research technician, at the ARDC Cow/Calf Unit, was selected to receive the OEA for office/service staff for December 2002. Ruby Urban, administrative and computer operations manager at the ARDC, was selected to receive the award for managerial/professional staff for January/February 2003. Erin Marotz, ARDC dairy unit manager, was recipient of the March/April 2003 OEA for managerial/professional staff. Dan Cheleen, ARDC Swine Unit ag research technician, was recipient of the April 2003 award for office/service staff.

We congratulate Jeff, Ruby, Erin and Dan on this honor! □

(Left to right): Darrell Nelson, Dean and Director of the NU Agricultural Research Division. Erin Marotz, Dan Cheleen, and Don Beermann, Animal Science Department Head.



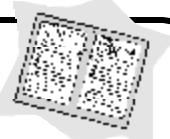
Jeff Bergman receiving his award from Don Beermann, Animal Science Department Head.



IANR Assistant Vice Chancellor, Alan Moeller presented Ruby Urban with her award.



Calendar of Events



MAY

2	Market Journal	12:00-1:00
4	Marietta Livestock 4-H Meeting	6:00-9:00p
8	Great Plains R C & D	9:30-12:00
8	4-H Livestock Advisory	9:00-2:00
9	Market Journal	12:00-1:00
12	Field Scout Training	8:30 - 5:00
13	Vice Chancellor's Dept. Chairs Workshop	7:30-2:00
16	Market Journal	12:00-1:00
23	Market Journal	12:00-1:00
30	Market Journal	12:00-1:00

JUNE

6	Market Journal	12:00-1:00
11	Quality Assurance Training	7:00-10:00p
13	Market Journal	12:00-1:00
17	Saunders County Extension Board	7:00-10:00p
20	Market Journal	12:00-1:00
26	Master Bee Keepers Conference	8:00-5:00
27	Master Bee Keepers Conference	8:00-5:00
27	Market Journal	12:00-1:00
28	Master Bee Keepers Conference	8:00-5:00

JULY

2	4-H Council Meeting	6:30-10:00p
10	Mid-Season Crop Management Diagnostic Clinic	8:00-5:00
11	Market Journal	12:00-1:00
18	Market Journal	12:00-1:00
18	Crop Production Field Day	
18	4-H Crop Tour and Burger Bash	7:00-11:00p
25	Market Journal	12:00-1:00

ABOUT THE RESEARCH - Continued from P. 2

intermediate band photometry which allows one to determine the chemical composition of these stars. It is hoped that a correlation between the presence of the Blazhko Effect and another parameter can be found that might shed light on its cause.

Quasars

Quasars are the main focus of extragalactic research at UNL. Quasars are mysterious outpourings of energy from the centers of galaxies. They are believed to be powered by matter falling towards supermassive black holes in the centers or "nuclei" of these galaxies. Dr. Martin Gaskell, with past and present UNL graduate and undergraduate students, has been studying the mechanisms by which quasars emit their energy. Their research has focused on the nature of the gas close to the black hole, the nature of the X-ray, ultraviolet, and optical radiation emitted from near the black hole, and the structure of quasars. In their studies they are using data from the Hubble Space Telescope, X-ray satellites, and ground-based telescopes around the world, and also theoretical calculations performed on UNL's supercomputer. Behlen Observatory is being used to

monitor brightness changes in nearby quasars.

The Exotic Lives of Close Binary Stars

About half the stars we see in the sky are really double or multiple stars orbiting around each other. Some of these stars are so close that their lives are strongly affected by their mutual interactions. In the most extreme cases the stars are in contact. In other cases material from one star forms a disk around the other star. Dr. Kam-Ching Leung and collaborators are studying some of these exotic close binary systems. Behlen Observatory has been used to measure the light variations of these systems as the stars orbit each other. □

Speak & Split 4-H Speech Contest



Forty-six 4-Hers participated in this year's speech contest and then enjoyed tasty banana splits after the event. While the trophy or a purple ribbon is the coveted prize by many, learning speaking and presentation skills is the prize all participants attain. Shown above are the top contenders in the Senior Division. Left to right: Elizabeth Norris, Hailey Friedman, Katherine Norris, Bailey Maresh, John Potter, and Kristine Kubik. □

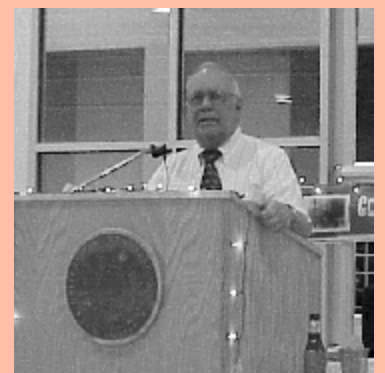
Doug Gustafson Celebrates Retirement

Doug Gustafson, ARDC Farm Operations, retired in March 2003 after nearly 39 years with the University of Nebraska. Co-workers, friends, family and neighbors helped Doug celebrate his retirement at a reception and at a dinner attended by over 100 people.

Doug started his University career on April 20, 1964 as Beef Feedlot Manager at the ARDC. In September 1982, he became the Farm Manager of ARDC Farm Operations. Later his position, evolved into the Farm Operations Supervisor.

Congratulations and best wishes, Doug! □

After an evening of tributes from co-workers, family and friends, Doug Gustafson was given his turn at the podium. Below Doug is shown with his family at the reception held honoring his retirement.





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for updated information &
a brand new look at the
Saunders County Cooperative
Extension Web Site!

Take a look at the new web site for Cooperative Extension in Saunders County. The site has a new look and lots of helpful information. Visit us at:
www.saunders.unl.edu

Cooperative Extension Programs Show "Value"



97% of the participants at the No-Till Conference rated the program as one of the best or above average compared to other educational opportunities available.

Crop producers learned the ins and outs of no-till farming at the No-Till Conference at the ARDC this spring. The free event was sponsored by Cooperative Extension in NU's Institute of Agriculture and Natural Resources, Nebraska Soybean Board, Lower Platte North Natural Resources District, USDA Natural Resources Conservation Service and USDA Farm Services Agency. 210 people attended the conference with 88% indicating farming as their main occupation. Conservatively the conference impacted management of 227,259 acres of cropland. When asked to place a dollar value on what participants learned, they indicated a \$9.41 per acre average value for estimated knowledge gained...bringing the value of this program to \$2,138,507!

The Integrated Crop Management Winter Programs provided intensive training opportunities for 111 participants from 40 Nebraska counties. The workshops influenced at least 1,915,019 acres of cropland or 12% of Nebraska's corn, soybean, and hay acres. The average estimated value of knowledge gained and/or anticipated practice changes on a per acre basis by participants totaled \$3.38 per acre. Total dollar impact on 1,915,019 acres was \$6,478,236.

When you look at the value participants place on programs, you can see that the participants believe there is a real profit in attending programs offered by NU Cooperative Extension - in knowledge gained and in increased profits. □

Students Learn About Agriculture

The Ag Awareness Coalition provides a fall ag awareness festival at the ARDC and also provides a spring festival in Lincoln for Lancaster County youth. Nearly 500 students attended this year's spring festival. University of Nebraska, commodity groups, businesses, and producers led the sessions. NU Extension Educators, Lance Brown and Bob Meduna are shown on the right presenting at the festival. Bob presented information on grain production, while Lance taught the students about dairy calves. Local producer, Bruce Woita also presented at the festival and taught the youth about swine production and byproducts.



A recent visit to the ARDC provided a similar educational experience for 36 third-graders from Milliken Park School of Fremont. □



M.E.A.D.
Making Education in Agriculture Different

Magnet School UPDATES....

Mead FFA Successful at State

by Jenny Kocian, Mead Public School

Members of the Mead FFA Chapter ventured to the 75th State FFA Convention held in Lincoln on April 3rd and 4th. While at convention, students participated in agriculture contests, leadership workshops, and attended awards and presentation sessions.

Students from Mead FFA Chapter represented the school in several contest areas. The following is a list of career development contest participants and results: Agriscience-Tim Armbrust (White), Krystal Ewan (Red), Justin Johnson (Blue), and Trisha Larson. The team received an overall red. Food Science-Sara Ballard (White), Shelby Morris, Chrissy Push, and Lisa Rasmussen (White). Floriculture-Breanne Biehl, Betsy Kruse (White), Ashley Miller (Red), and Erin Thilliander (White). Livestock Management-Kelley Murray-Poultry (Blue), Dustin Barris-Dairy, Brendan Murray-Horse (Red), Eric Deerson-Beef (Blue), and Lindsey Hanson-Swine. Nursery and Landscape-Eric Deerson (Blue), Ashley Miller (White), Erin Thilliander, and Brandon Wolfe (Red). As a team, they received a red. Jr. Livestock Judging-Cody Moravac, Adam Rasmussen, Kelley Murray (White), Mark Treptow (White).

Another contest area is Leadership Skills Events, which tend to be public speaking. Lisa Rasmussen qualified in Sr. Public Speaking and received a bronze medal. The Mead FFA Chapter was also recognized with a Governor's Excellence Award and received a \$1000 grant.

Four students also received the highest honor one can bestow at the state level, the State Degree. Those students were Eric Deerson, Lisa Rasmussen, Brandon Wolfe, and Brendan Murray. Way to go!

Twelve Jr. High students also competed in the Jr. High Ag Quiz Bowl that was held during State FFA Convention. Those students participating were: Jaclyn Thorson, Chelsea Bergman, Emily Bergman, Dallas Vogt, Matt Heanue, Dan Parsons, Tyler Vaughan, Jessica Guyle, Colby Kontor, Lisa Kuhr, Tracy Ballard, and Rachel Glenn.



The FFA Mission
FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

Congratulations to all the FFA members for their hard work and dedication! □



Members of the floriculture career development team participated at the State Convention - from left: Ashley Miller, Erin Thilliander, Breanne Biehl, and Betsy Kruse.

This issue of *Extended Visions* was produced and edited by Deloris Pittman, Marketing & Promotions Manager. *Extended Visions* is published bimonthly by the University of Nebraska ARDC & NU Cooperative Extension in Saunders County, 1071 County Road G, Room A, Ithaca, Nebraska, 68033-2234. For more information, call 402-624-8000 or 1-800-529-8030. Check out our web site at <http://ardc.unl.edu>. E-mail dpittman1@unl.edu.

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