DOWN TO EARTH

An EMS Staff Publication

Winter 1991

Volume II, Issue No. 5

Now that the wave has stopped rolling and the RV is prepped for winter hibernation, what will we do with our Saturday afternoons? Oh sure, we've got a good week of bowl games to look forward to over the not-long-enough holiday break, but soon our traditional gridiron gatherings will be nothing more than exaggerated memories.

...is there life after football?

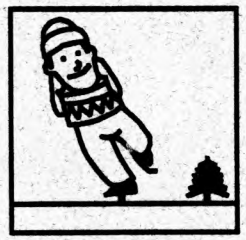
Not to worry, sports fans! The upcoming winter season has much to offer in the way of sports, theater, and arts. Whatever your interests may be, Penn State and the surrounding communities can provide entertainment practically every day. Most season-ticket holders have their seats reserved for the men's and women's basketball challenges at Rec Hall, but if you don't, get them at the door. The season has opened for the men and women cagers, but there's plenty of action left. From the outset, 1992 March Madness has the potential for some real excitement! The Penn State Ice Hockey team hit the ice October 25 and goes through March 15. Though this is a club team, as opposed to varsity, the action is fast and furious. If you'd like to take to the ice yourself, try strapping on a pair of skates at the Greenburg Indoor Sports Complex during public hours. For a varied routine, try men's and women's gymnastics; the women open with a home meet on January 12. The wrestling team began grappling for a winning season on November 17. All of the sports schedules, including swimming, diving, fencing, volleyball, and track and field are noted on the next page.

But let's say you are in the mood for more cerebral activity. There are plenty of areas to choose from. The Center for Performing Arts has lined up a thought-provoking and inspiring repertoire of dance, drama, and music. Check the calendar of events at the back of the newsletter for the various events throughout the winter. The University Resident Theater Company (URTC) will be performing the Pulitzer Prize winner *Buried Child* by Sam Shepard on February 21-28 at the Pavilion Theater and *Peer Gynt* by Henrik Ibsen on April 17-25 at the Playhouse Theater. The Thespians will render *The Wiz* later in the season, and the Playhouse Theater comes alive with a Winter Gala Celebration from the Pennsylvania Dance Theater on February 22. Look for the details of when and where in the *Intercom*. Have you ever gone to the Recital Hall in the School of Music for their free concerts? These recitals range from brass to piano, faculty to student, and are thoroughly enjoyable.

If you are in the browsing mood, take a look at the exhibit entitled "Art of American Livestock Breeding" at the Palmer Museum of Art, February 7 - March 29. Come in from the cold to many of the walking galleries across campus. Have your kids seen the fluorescent rock display in our very own Earth and Mineral Sciences Museum and Art Gallery? Hmmm?

Whether you prefer seeing a play, cheering on a team, skiing down the seven slopes of Tussey Mountain, or winter bird watching at Shaver's Creek, the whole family can join in the fun. Believe it or not, the answer to the initial question is "yes!" there is indeed *lots* of life after football!

Sandi Grenci
Office of the Dean



"DOWN TO EARTH"

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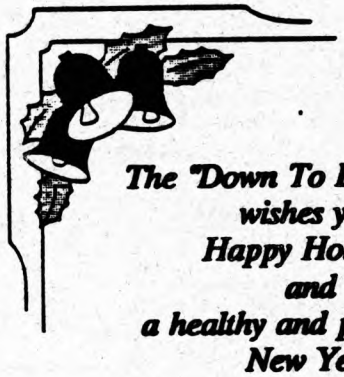
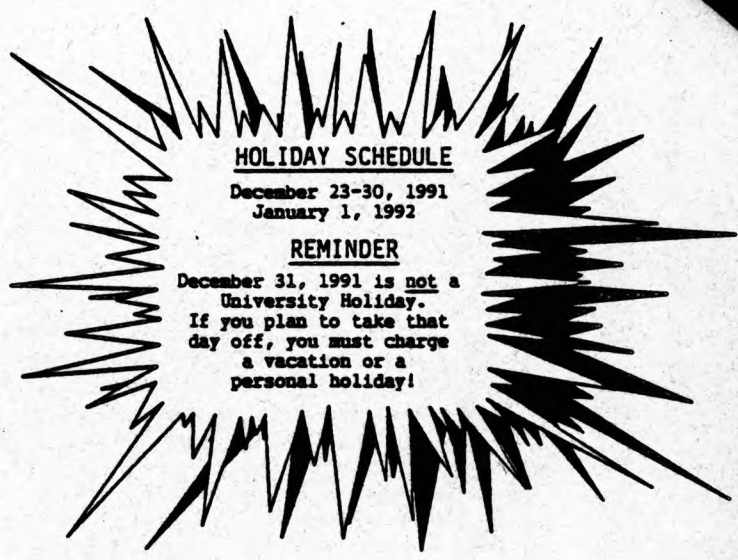


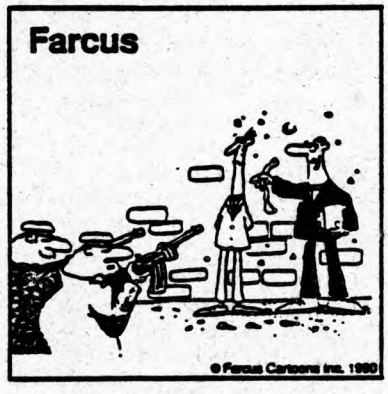
The "Down To Earth" Staff
wishes you
Happy Holidays
and
a healthy and prosperous
New Year!



PLEASE NOTE:

EFFECTIVE OCTOBER 31, 1991,
THE USE OF PRIVATELY-OWNED VEHICLES IS REIMBURSABLE AT THE RATE OF $.25 PER MILE.

Deadline for submission of articles for "Down To Earth's" Spring Issue is Friday, February 28, 1992!



After all Freemont... a deadline is a deadline.

The Sports Page

Men's Basketball

Nov.	3	Marathon Oil (Exhibition)	
	11	Cuban National Team (Exhibition)	
	25	at Illinois	8:00
	27	BUFFALO	7:30
Dec.	2	at American	7:30
		First Bank Classic at Milwaukee	
Dec.	6	Penn State vs. St. Francis (N.Y.)	7:00
		Marquette vs. Columbia	9:00
	7	Consolation & Championship Games	7 & 9:00
Dec.	14	BOWLING GREEN	7:30
	18	Drexel at the Palestra, Philadelphia	7:00
	21	Georgia at the Omni, Atlanta	7:30
		Palm Beach Classic at West Palm Beach Florida	
Dec.	27	Penn State vs. George Washington	6:00
		Miami (Fla.) vs. Marshall	8:00
	29	Consolation & Championship Games	6 & 8:00
Jan.	2	at Ohio State (ESPN)	7:00
	8	at James Madison	7:00
	11	MORGAN STATE	7:30
	13	BROWN	7:30
	16	at Marshall	7:30
	18	MIAMI(O.)	2:00
	21	at Butler	7:35
	25	Pennsylvania at Hersheypark Arena	2:00
	27	TOLEDO	7:30
Feb.	1	MARYLAND-BALTIMORE COUNTY	2:00
	3	DUQUESNE	7:30
	5	at Old Dominion	7:35
	9	Temple at Hersheypark Arena (ABC-TV)	1:30
	12	BUTLER	7:30
	17	Maryland-Baltimore County Baltimore Arena	7:35
	20	LAFAYETTE	7:30
	24	OLD DOMINION	7:30
Mar.	2	AMERICAN	7:30

Women's Basketball

Nov.	11	Cuban National Team (Exhibition)	
	22	at Notre Dame	7:30
	25	at Prudue	7:30
		Texaco-Hawk Classic at St. Joseph's	
Nov.	29	St. Joseph's vs. William & Mary	4:00
		Penn State vs. Delaware	6:00
	30	Consolation & Championship Games	4 & 6:00
Dec.	2	SYRACUSE	7:30
	5	MARYLAND	7:30
		Buckeye Classic at Ohio State	
Dec.	7	Penn State vs. Louisville	2:00
		Ohio State vs. Boston College	4:00
	8	Consolation & Championship Games	2 & 4:00
Dec.	20	MICHIGAN STATE	7:30
	28	at Tennessee	1:30
Jan.	3	at Iowa	7:30
	5	at Illinois	3:00
	9	at Temple	7:00
	12	at Minnesota	3:00
	17	DEPAUL	7:30
	19	ILLINOIS	2:00
	21	NIAGARA	7:30
	26	OHIO STATE	1:00
	30	at Texas	7:30
Feb.	2	WISCONSIN	1:00
	8	at Rutgers	2:00
	11	TEMPLE	7:30
	15	ST. JOSEPH'S	1:00
	18	at Vanderbilt	8:00
	25	at Holy Cross	7:00
		Northern Lights Invitational at Anchorage, Alaska	
Feb.	28	First Round Games	
	29	Semifinals	
Mar.	1	Consolation & Championship Games	
Mar.	8	at Michigan	TBA

Wrestling

Nov.	17	East Stroudsburg Open (JV)	9:00*
	24	Mat Town Open at Lock Haven	9:00*
	30	PENN STATE DUALS	10:00*, 2 & 7:00
Dec.	7	at Clevaland State	1:00
	7	at Clarion	8:00
	28-29	Midlands Tournament at Northwestern	
Jan.	4	at Edinboro	3:00
	5	at Ohio State	2:00
	7	OKLAHOMA	7:30
	18	NAVY	6:00
		MARYLAND	8:00
	26	WEST VIRGINIA	4:00
		PITTSBURGH	6:00
	31	at Iowa State	7:30
Feb.	1	at Iowa	7:30
	8-9	National Team Dual Meet championship at Michigan	
	14	at Lock Haven	7:30
	16	at Lehigh	2:30
	21	at Bloomsburg	7:30
	23	OKLAHOMA STATE	1:00
Mar.	6-7	EWL Tournament at Pittsburgh	
	19-21	NCAA Tournament at Oklahoma City, Okla.	

Fencing

Nov.	2-3	at Temple Open	8:30*
	9-10	GARRET-PENN STATE OPEN	8:30*
	15-17	Junior NAC #2 Meet at Minneapolis, Minn.	
Dec.	1	NAC Sabre Championship at Morristown, NJ	
	7	JAMES MADISON(W), NORTH CAROLINA STATE, NYU, RUTGERS & ST. JOHN'S(M)	9:00*
	8	NAC Sabre Championship at Morrisville, N.J.	
	14-15	NAC Foil & Epee Championships at Louisville, KY	8:00*
Jan.	18-20	NAC #2 at Portland, Ore.	
	25	CAL STATE-LONG BEACH(M), CORNELL,DUKE, FAIRLEIGH DICKINSON(W), NORTH CAROLINA, NORTHWESTERN, NOTRE DAME(W), STANFORD(W)	8:00*
Feb.	1	at Pennsylvania with Yale	10:00*
	8	at Temple with Columbia, Haverford (W) & Navy (M)	10:00*
	14-17	Junior Olympics at Kansas City, MO	8:00*
Mar.	7-8	NCAA Mid-Atlantic South Regional at site	TBA
	14-15	International Sabre Championship at Washington, DC	8:00*
	20-24	NCAA Championships at Notre Dame	9:00*

Men's Track & Field

Jan.	18	NITTANY LION INVITATIONAL	12:00
	25	at Michigan with Michigan State & Ohio State	12:00
Feb.	1	at Syracuse Open	
	8	Hardee's Classic at West Virginia	
	15	St. Valentine Meet at Boston	
	22	WASHINGTON'S BIRTHDAY INVITATIONAL	11:00*
	28-29	Big Ten Championships at Michigan State	
Mar.	13-14	NCAA Championships at Indianapolis	

Women's Track & Field

Jan.	4	LADY LION INTERSQUAD	1:00
	11	at Ohio State	10:00*
	18	LADY LION CLASSIC	12:30
	24-25	USAIR Invitational at Johnson City, Tenn.	
Feb.	1	at Syracuse Open	10:00*
	7	Millrose Games at New York	
	8	Hardee's Classic at West Virginia	
	9	Mobil Invitational at George Mason	
	15	Big Ten-Pac Ten Challenge at Ohio State	
	22	Last Chance Invitational at George Mason	
	28	USA/TAC National Championships at New York	
	28-29	Big Ten Championships at Ohio State	
Mar.	7	LADY LION LAST CHANCE INVITATIONAL	
	7	Kodak Last Chance Invitational at Johnson City, Tenn	
	13-14	NCAA Championships at Indianapolis	

Men's Gymnastics

Jan.	10-11	at West Point Open	7:00
	25	at Navy	1:00
Feb.	1	KENT STATE	7:30
	7-8	USA Nationals at Colorado Springs, CO	
	15	OHIO STATE (DD)	7:30
	22	at Illinois	7:00
	28	TEMPLE	8:00
Mar.	8	at Iowa	2:00
	13	at Michigan State	7:00
	14	at Michigan	7:00
	21	BRIGHAM YOUNG	7:30
	27-28	Big Ten Championships at Illinois	
Apr.	11	NCAA Eastern Regional at Iowa	
	23-25	NCAA Championships at Nebraska	
May	14-17	USA Championships at Ohio State	

Women's Gymnastics

Jan.	12	GEORGIA	1:00
	19	at Towson State	1:00
	25	UTAH	7:30
Feb.	7-8	Cat Classic at Missouri	7:00
	15	OHIO STATE(DD)	7:30
	22	IBM Invitational at Minnesota	
	29	IUP & PITTSBURGH	7:30
Mar.	6	at Stanford	7:30
	9	at Utah	7:00
	21	MASSACHUSETTS, NEW HAMPSHIRE, W. VIRGINIA	2:00
	27-28	Big Ten Championships at Michigan State	
April	11	NCAA NORTHEAST REGIONAL	
	24	NCAA Championships at Minnesota	

Men's Volleyball

Jan.	18	ALUMNI	
	24-25	NITTANY LION INVITATIONAL	
	30	at Ohio State	
	31-	Feb 1 at Indiana Purdue-Fort Wayne Invitational	
Feb.	5	CAL STATE-NORTHRIDGE	
	7-8	Hall of Fame Classic at Holyoke, Mass.	
	11	Manitoba at Lancaster, PA	7:30
	13	PEPPERDINE	7:30
	14	Pepperdine at Lake Shore HS, Buffalo, NY	
	15	Ohio State at Lake Shore HS, Buffalo, NY	
	28	GEORGE MASON	7:30
	29	NAVY	7:30
Mar.	2	EAST STROUDSBURG	7:30
	7	at Brigham Young	
	10	at San Diego State	7:30
	12	at Cal State-Long Beach	
	14	at Cal State-Northridge	
	20	at George Mason	
	21	at Navy	
	26	STANFORD	7:30
	27-28	Dutch Country Classic at Lancaster, Pa.	
	30	RUTGERS-NEWARK	7:30
April	3	at Ball State	
	4	George Mason at Ball State	
	6	at East Stroudsburg	
	7	at Rutgers-Newark	
	17-18	EIVA CHAMPIONSHIP	
	24-25	NCAA Championship at Ball State	

Men's Swimming & Diving

Nov.	2	Quad Meet at Northwestern	7:00
	3	at Northwestern Relays	12:00
	14	at Villanova	4:00
	23	ST. BONAVENTURE	3:00
Dec.	6-8	at Princeton Invitational	
	17	at Michigan State	1:00
Jan.	11	at LaSalle	1:00
	17	VIRGINIA	12:00
	18	at Pittsburgh with Ohio State	1:00
	25	SHIPPENSBURG	2:00
Feb.	6-8	Big Ten Championships at Minnesota	
	22	at Cleveland State Invitational	3:00
	28-29	NCAA Diving Prequalifying Meet at site	TBA
	29	NITTANY LION INVITATIONAL	12:00
Mar.	1-6	Olympic Trials at Indianapolis	
	26-29	NCAA Championships at Indianapolis	

Women's Swimming & Diving

Nov.	2	at Northwestern with Indiana & Michigan State	6:00
	3	at Northwestern Relays	12:00
	9	ST. BONAVENTURE	1:00
	15	at Villanova	4:00
	22	at Michigan with Iowa	3:00
Dec.	6-7	PENN STATE INVITATIONAL	10:00*
	16	at Michigan State (first five events)	7:00
	17	at Michigan State (concluding events)	1:00
Jan.	4	at Minnesota	10:00*
	11	PITTSBURGH	1:00
	17	VIRGINIA	3:00
	25	at American	3:00
Feb.	13-15	Big Ten Championships at Indianapolis	
	22	VILLANOVA	
Mar.	1-6	Olympic Trials at Indianapolis	
	13-14	NCAA Diving Prequalifying Meet at Minnesota	
	19-21	NCAA Championships at Texas	

All times local to site

* AM

Ice Hockey

Oct.	25	DUQUESNE	9:00
	26	at Canisius (Buffalo,NY)	7:30
Nov.	1	at St. Bonaventure	7:30
	3	LEHIGH	3:30
	8	NIAGARA	9:00
	9	WEST VIRGINIA	3:30
	16	at Univ. of Buffalo	3:10
	17	at Erie (Buffalo, NY)	2:00
	22	NORTH CAROLINA STATE	9:00
	23	NORTH CAROLINA STATE	3:30
	29	at Rhode Island Tournament	6:30
	30	CCRI, S. CONN., URI	6:30 & 9:30
Dec.	6	CONESTOGA	9:00
	7	CONESTOGA	3:30
Jan.	4	at Erie	7:30
	10	at Niagara (Welland,ONT)	8:00
	11	at Niagara	8:00
	17	UNIV. OF BUFFALO	9:00
	18	UNIV. OF BUFFALO	3:30
	24	PEPSI/BEST WESTERN	5:00 & 8:15
	25	NITTANY LION INVITATIONAL (OU,EMU,URI)	5:00 & 8:15
	31	at Conestoga (Kitchener, ONT)	7:30
Feb.	1	at Buffalo State	7:30
	7	ERIE (Alumni Wknd.)	9:00
	8	ERIE	3:30
		Alumni Game	6:00
	14	BUFFALO STATE	9:00
	15	BUFFALO STATE	3:30
	21	at Duquesne	TBA
	26-29	AMERICAN COLLEGIATE HOCKEY ASSOCIATION CHAMPIONSHIPS	TBA
Mar.	14-15	ICHL Championships at Buffalo State	TBA

Ice Rink Public Hours

M	none
T	2-4
W	none
Tr	2-4, 8-10 (adults & PSU students only)
F	6:30-8:30
S	1-3, 8-10
S	1-3

Tussey Mountain Skiing (7 slopes)

Opening as soon as the snow flies

M-F	2-10
Sat	9-10
Sun	9-5

Learn-to-Ski Group rates (15-20 people)
All Age Groups from 3 and up Private Lessons (call ahead)
Entertainment at the Lodge on Weekends
Rentals/Ski Shop

PROFILE

Joe Schall

Writing is often hard work! Actually putting pen to paper (or fingers to keyboard) can be an intimidating experience. Thankfully, EMS has had the foresight to prepare our undergraduates for the writing which will inevitably become a fact of their professional lives. Expert assistance is offered in the guise of a tall, personable young writer named Joe Schall.

Joe serves our college as technical writing tutor (a position which was created about three years ago by Dean Dutton and Dean Cahir), working exclusively with undergraduates to help improve their writing. Individual meetings with students on a drop-in basis involve lots of dialogue; Joe does not correct a student's writing, but rather works with the student through discussion to improve and expand existing skills.

After several months in this job, Joe saw the need for different writing resource materials than were available to our students. Over the past two years he has developed the "Writing Manual for Students" which is currently being distributed to all EMS undergraduate students and faculty. This guide to real-life writing includes basic grammar "rules" and advice for writers, useful information about writing business letters and resumes, word processing guidelines, and even interview tips. Most of the positive example sentences throughout the manual have been gleaned from Joe's work with students and faculty here.

Upon request, Joe presents workshops and class lectures on a variety of writing-related topics, including resume- and letter-writing. He teaches a section of English 15 exclusively for EMS students and a fiction writing course through the English Department; during spring semester Joe will teach an advanced fiction writing course.

Joe stresses that he has received terrific support. He applauds our college for recognizing that technical people need superior writing skills, and for implementing a program to fill that need.

Born in Jersey Shore, Pennsylvania, Joe received his Bachelor of Science Degree in English Education from nearby Juniata College. After teaching for five years in James Creek, Pennsylvania, Joe decided to pursue graduate studies at Penn State. In 1988 he was awarded a Master of Arts Degree in English, then began his official tutoring duties.

When Joe leaves the Mineral Sciences Building, his penchant for writing goes with him. The recent publication of his first book, *Indentation and Other Stories*, was part of the recognition he received with the 1990 Elmer Holmes Bobst Award for Fiction. This award in Arts and Letters was presented by New York University Library to honor Joe Schall as a promising fiction writer. Joe's work has also been published in various literary journals, and he is now working on his second book, a collection of short stories which are thematically related. Yet Joe remains unpretentious; a focal point of his office is a framed collage of rejection letters.

Joe's wife, Lisa Rose, is also a fiction writer. Several short stories have already been published; her first novel is now completed and her agent is currently seeking a publisher. Lisa teaches fiction writing on campus.

With their year-old daughter, Delaney, Joe and Lisa reside near Nittany Mall. Joe notes that Delaney has never spoken in "just single words," she always speaks in phrases. Maybe wordsmithing will become a family tradition.

Anne Harshman
Meteorology

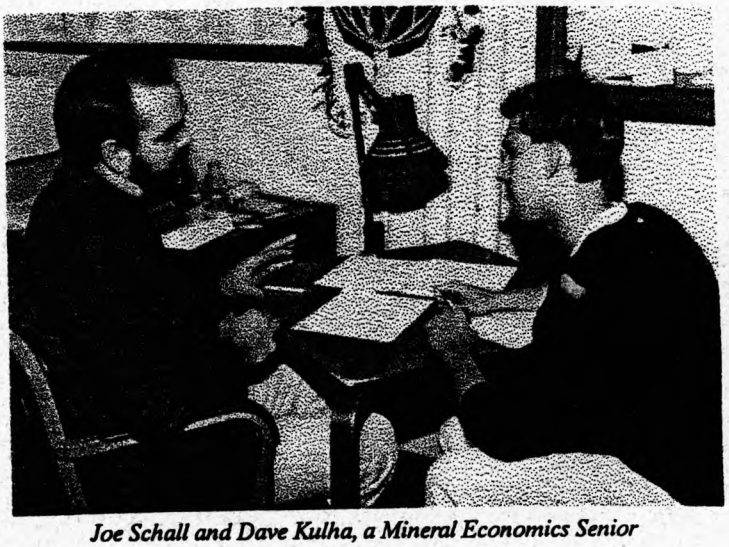


photo by Joe Bodkin

Joe Schall and Dave Kulha, a Mineral Economics Senior

1991 Alumni Fellows Visit

Each year our college nominates several individuals as outstanding EMS alumni and leaders in their fields to return to campus, specifically to our College, to lend their expertise in informal contacts with students, faculty and administrators of the College. The program began in 1973 and is a continuing annual project financed by the Colleges of the University and the Penn State Alumni Association. The Board of Trustees has specified the Alumni Fellows title as a permanent, lifelong designation.

This year two EMS alumni returned to receive the honor. Ki Hyung Kim '61 Ceramic Science, visited University Park on September 4 - 6, 1991. He gave a talk on "Perspectives on the Industrialization of Korea." Dr. Kim is chairman of the Korean Advanced Institute of Science and Technology and is one of the most highly respected scientific leaders of Korea. He received his B.S. in chemical engineering from Seoul National University in 1949 and M.S. degree from Virginia Polytechnic Institute in 1957 and Ph.D. in Ceramic Science at Penn State in 1961.

Mr. John T. Ryan, Jr. '34 Mining Engineering met informally with graduate students on November 6, 1991. Mr. Ryan is Chairman of the Executive Committee of Mine Safety Appliances Company in Pittsburgh, PA. Among many other prestigious awards, he received the Distinguished Alumnus Award of Penn State in 1961 and was named Pittsburgh Man of the Year in 1962. After completing his B.S. degree here in 1934 he received an M.B.A. at Harvard in 1936. He also holds honorary doctorate degrees at Duquesne University and the University of Notre Dame.

EMS Research Staff Members Recognized

Deb Detwiler, ESSC, and Robert Peters, Meteorology, were nominated for and attended the recognition luncheon hosted by Dr. Charles L. Hosler, Senior Vice President for Research and Dean of the Graduate School on October 31, 1991. Each year Dr. Hosler honors staff members for their outstanding contributions, efforts and dedication in support of faculty and students in acquiring financing, executing the research, and administering the diverse activities that make up Penn State's scholarship and research efforts. Congratulations to both!

IBIS News

The first two stages of the new Payroll System are nearly complete, and from November 19 the IBIS database will be the source of data needed to drive the payroll process. This will simplify some of the efforts that central offices have been expending in maintaining two payroll systems at the same time. The third stage will be completed by June 30, 1992, and the IBIS database will then be the sole source of data for all payroll functions. This will eliminate many of the data problems which have consumed so much time in central and user offices.

Some enhancements coming to IBIS soon include:

- Report of cash receipts using an electronic form
- Ability to upload payroll data for wage, biweekly and overtime for clerical and appropriate standing appointments
- Ability to upload purchase order forms
- Special request for check EASY form with paper backup

Remember not to let other people use your password or have access to IBIS or EMC2/TOA; if you do, you could be violating Penn State security policies. This could result in limitation of your access, legal action by the University (including criminal prosecution), restitution for any improper use of service, or disciplinary sanctions, which may include dismissal.

Marcia Haluga
Research

DEPARTMENTALLY SPEAKING. . .

MCL

(a.k.a. Materials Characterization Laboratories)

We are always being bombarded with acronyms and abbreviations of one type or another on TV, in the newspaper, and at work. Call MCI today for better savings; the EPA reported on CFCs; CATA rates are going up again; and PSU vs. Pitt blood drive continues! Well here's one more: MCL is a quicker and more friendly way of saying *Materials Characterization Laboratories*. They are an important part of the EMS research operation.

A tremendous amount of forethought went into the founding of the laboratories in 1951. Dr. Thomas F. Bates, emeritus professor of Mineralogy and the first director of the Labs, and former dean E. F. Osborn, emeritus professor of geochemistry, realized that the surface of mineral industries research had only been scratched. Equipment and technology became obsolete very quickly, and the high cost of purchasing the equipment was prohibitive for individual departments with limited funds and specialized research projects.

Approximately $120,000 was invested in 12 new pieces of equipment (how many pieces of equipment would that buy today?) to create the three centralized laboratories known as the *Mineral Constitution Laboratories;* Electron Microscopy and Diffraction, X-ray Diffraction, and Spectrochemistry. The primary functions of the laboratories were to provide instruction research and service. In the early years the operation of the labs was largely supported by grants made by the various project supervisors within the College from research funds. However this method of funding lent itself to uncertainties and inequities, and in 1953-54 a direct charge system, supplemented by annual College contributions to provide salaries and instruction, was initiated making MCL an auxilliary enterprise. In 1988-89 the labs became known as *Materials Characterization Laboratories*.

MCL serves the characterization needs of the College, the University, and the scientific community at large. Many of you may remember Norm Suhr who headed the labs since 1970. Upon Norm's retirement inDecember 1990, Dr. Carlo Pantano, professor of materials science and engineering, was appointed director.

Presently there are nine instrumentation labs located on the third floor and in the basement of Mineral Sciences building that make-up the MCL, each equipped with specialized equipment and served by personnel specially trained for various types of analyses. The Analytical Chemistry Laboratory, added in 1958, is where you will find Joe Bodkin, chief analytical chemist, pondering over inorganic materials. He has witnessed many changes in the labs over the last 25 years, both in equipment and technology. Presently he uses a Coulometrics Coulometer and a CEM Microwave Digestion System, among other high-tech equipment, to perform analyses.

Henry Gong, senior analytical chemist and crossword puzzle wizard, runs the Atomic Absorption Spectrophotometry (AAS), Emission Spectroscopy, and X-Ray Diffraction Labs. To put it briefly, he uses the atomic absorption and emission spectrometers to determine the types and concentrations of elements in solutions and solids and uses the x-ray diffraction spectrometers to study how elements are combined in solids.

Tom Rusnak, electron microscopist, and Vince Bojan, research assistant, spend their days in the basement of M.S. in the Electron Microscopy and Secondary Ion Mass Spectrometry/Ion Microprobe (SIMMS) labs, respec-

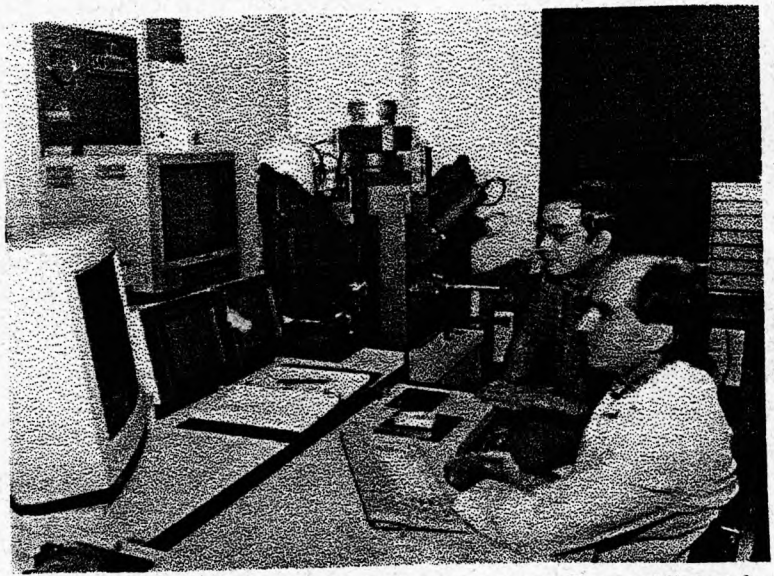


photo by Joe Bodkin

Mark Angelone and Henry Gong working with the new Electron Microprobe

tively. Evidently, they have an eye for small details.

The newest addition to the range of analytical equipment is the Electron Microprobe, operated by Mark Angelone, electron probe analyst. When he is not using this instrument, he is determining the elements greater than atomic number 8 in solids and powders in the X-Ray Fluorescence Lab. Measurements are made of reflected radiation and absorption of radiation in the Infrared and UV-Visible Spectrophotometry Lab, one of the smaller labs in the group.

Kay Bickle, resident technician, logs samples in and prepares them for analysis a.s.a.p. after arrival in the lab. Rounding out the MCL staff is Sharon Rondeau, secretary and EMC/TAO^2 fanatic. She handles the billing for the wide variety of services performed daily in the labs.

As you can see, the many facets of MCL, the labs and the equipment, are real tongue-twisters. But it doesn't take a Ph.D. to realize that MCL is A-OK by EMS standards.

Sandi Grenci
Office of the Dean

A former "be-knobbed, be-dialed" electron microprobe analyzer, photographed for the 1969 issue of Earth and Mineral Sciences

Electron microprobe

Explaining the micro-computer-operated Cameca-Camebax SX 50 Electron Microprobe was not my idea of an easy assignment. But Mark Angelone, our Probe Analyst, allayed my fear of the number-crunching beast in 316 Mineral Sciences and the magnificent microprobe. Mark started working several years ago with the microprobe, learning and developing proficient techniques with hands-on experience. This is my layperson's understanding of this most fascinating tool and its effect on scientific research.

What is the function of an electron microprobe?

The Microprobe makes possible qualitative and quantitative characterization of microscopic portions of solids. That is, it can distinguish the elements present in a microscopic sample of any solid. It can decipher the weight percentage of any separate component. For example, it can ascertain whether a sample is 50% iron. This numerical analysis can aid in identifying the atomic formula and tell scientists exactly what kind of material they are working with.

What makes the probe different from all the other existing methods of identifying elements, such as "Wet" chemistry or other instrumental techniques?

The probe can analyze microscopic proportions of an area—one to two square microns—independent of, and without interference from the surrounding area. (The area of the head of a pin is 1,000,000 square microns!) The probe can uncover the history of the temperature and pressure in the environment when the rock or mineral formed. By examining substances at this scale the analyst can detect miniscule impurities in what seems to be homogeneous material. In metals and ceramics, for example, these impurities can produce major problems in construction or manufacturing. Numerous companies are in need of this state-of-the-art technique. Mark Angelone has done important investigative research for North American Refractories and Standard Steel, among others.

What makes a probe a probe?

The two basic parts that constitute a probe are (1) the electron beam-forming devices—the "gun" and the optics and (2) the x-ray collection and counting devices, called the wavelength dispersion x-ray spectrometers.

How does it work?

The typical sample is cylindrical, about an inch high—a little smaller than a roasting-size marshmallow. The sample substance is molded into an epoxy ring and polished flat. A high-energy electron beam in the probe's vacuum chamber is then focused with electromagnetic lenses into a small spot on the sample (the earlier-mentioned one-to-two square microns.) This excites characteristic x-rays of the atoms in the sample. These x-rays are collected through crystal dispersion; various energies of different x-rays are separated and counted. By studying this x-ray spectrum, the scientist can determine how much of any given element is present.

The probe's History

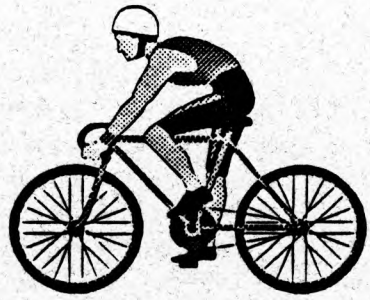
The ETEC Autoprobe was the predecessor to the SX 50 probe. Purchased in the 1970s, this was a bulky, be-knobbed, be-dialed contraption, compared to the newer, sleeker model. The 70s probe introduced a miraculous advancement in research, particularly in its exceptionally fast quantitative chemical analysis capabilities. A sample could be analyzed for 10 different chemical elements in about 2 minutes—a job that previously would have required at least an hour with the most up-to-date laboratory techniques. Today's probe does all this and more—only faster, more efficiently and with much-enhanced computer visuals. The SX 50 probe was installed this past August, and was purchased, as was its predecessor, with a matching grant from the National Science Foundation. The proposal was fostered by Drs. David Eggler and Derrill Kerrick of our Geosciences Department.

Paving the way for the future

With the Electron Microprobe and other state-of-the-art technology, Penn State can continue to join ranks with the best research institutions in the country. We are proud to be part of the ongoing evolution of scientific discoveries that will help us to uncover the Earth's mysteries.

Martha Traverse
Resident Instruction

Health and Fitness



Did You Know . . .

30 minutes of water walking is equal to 2 hours of walking out of water

WHY IS EXERCISING IN THE WATER BETTER THAN EXERCISING OUT OF THE WATER?

1. Just being in the water causes you to exercise. The continual pressure on your body makes you resist the pressure by "pushing out" to resist the pressure.
2. There is continual resistance to each and every move you make in water.
3. 90% of your body is buoyant in the water and so you are not hitting the floor of the pool as hard as you would out of the water. (You are not smashing your joints or muscles.)
4. The water temperature is the same all year long (indoor heated pools).
5. You don't need to buy any expensive workout clothes or equipment.

WATER

DO YOU THINK YOU'RE DRINKING ENOUGH WATER?

If you're not, you could end up with excess body fat, poor muscle tone, digestive complications, muscle soreness–even water retention problems.

Next to air, water is the element most necessary for survival. We can go without food for almost two weeks, but without water only a few days. Yet most people have no idea how much water they should drink.

Without water, we'd be poisoned to death by our own waste products. Water is vital for chemical reactions in digestion and metabolism. Water also lubricates our joints.

So if you don't drink sufficient water you can impair every aspect of your physiology.

Proper water intake is a key to weight loss. If you are trying to lose weight and you don't drink enough water, the body can't metabolize the fat adequately.

The minimum amount of water intake for a healthy person is eight to ten eight-ounce glasses a day. An overweight person should drink an extra glass every 25 pounds they exceed their ideal weight. Also, your water intake should be spread throughout the day and evening.

By consuming those eight to ten glasses of water throughout the day, you could be on your way to a healthier, leaner body.

Excerpt from
Prevention and Readers Digest
Magazines

New College Network Server. The College network (EMSnet) continues to expand at the rate of one or two new machines per week. The network now consists of 200 machines of all types located in 6 buildings on campus. Due to this rapid expansion, the College has purchased a dedicated network server to function as:

a. The primary name server for host name lookups. Backup support is provided by Petroleum and Natural Gas Engineering and Geosciences.
b. A mailserver for network users who do not have a host mailserver in their department. The mailserver is capable of supporting workstations, MACs, and PCs.
c. A net news server.
d. A net time server.
e. A "home" for College faculty and staff who only want to receive/send electronic mail and read net news.

The above functions are available now. Future functions include:

a. A "white pages" personnel directory for College faculty and staff.
b. A controlled software source code repository.
c. A possible repository for library-type services.

I want to thank Bill Peterson (ESSC), Tim Kohler (PNGE), Jim Leous (ESSC), and Scott Dickson (CAC) for bringing the new server on-line.

Electronic Mail. With the new College network server on-line, we can now offer complete electronic mail services for College faculty and staff. The software uses the College network server as the "postoffice" and each MAC or PC as the "mailbox."

PC-NFS Version 3.5. The Center for Academic Computing has negotiated a campus-wide licensing agreement with Sun Microsystems. All Sun workstation owners in the college have paid a fee to receive the benefits of this program. One benefit is that PC-NFS software is now free to College members for installation on PCs. PC-NFS software provides numerous network services such as terminal sessions, file transfers, printing, and file server mounts.

E-Mail to and from Management Services. This is a twice repeated item; however, I continue to get inquiries on whether it is possible to send electronic mail between the College network and users on ISIS and IBIS (Management Services). In fact, it is very easy for a user on ISIS or IBIS to send electronic mail to a user on the College network or vice versa. If you are on Management Services and sending E-mail to a College address, simply use the recipient's userid along with the College address (for example, diercks@ems.psu.edu). If you are on the College network and sending E-mail to a user with a Management Services address, use the address: userid@ms.psu.edu.

Network Security. Network security is becoming extremely important as networking expands at a rapid pace. Remember, it is a violation of University regulations to:

a. "Intentionally and without authorization, access, alter, interfere with the operation of, damage or destroy all or part of any computer, computer system, computer network, computer software, computer program, or computer data base."
b. "Intentionally or knowingly and without authorization, give or publish a password, identifying code, personal identification number or other confidential information about a computer, computer system, computer network, or computer data base."

Copyright Violations. The illegal copying of computer software is receiving increased attention nationwide. Recently, the University of Oregon paid $130,000 to the Software Publishers Association of America to settle a lawsuit charging the University with copyright violations in their continuing education center.

Penn State policy and federal law prohibit copyright infringement. If you copy licensed software without authorization, you violate federal law and University policy.

Bottom line: You should be able to show a license (individual, Department, College, or University) or sales receipt for all software on your machine or machines that is not in the public domain. Please respect the legal rights of others.

Center for Academic Computing (CAC). CAC offers many services for faculty, staff, and students. For example, you can:

a. Purchase microcomputers, printers, modems, and software through the Microcomputer Order Center (5-2100).
b. Use the Help Desk (3-1035) which provides problem consultation by telephone as well as by electronic mail (HELPDESK@PSUVM) and in person.
c. "Test drive" both microcomputers and new software in the Software Evaluation Center (12 Willard).
d. "Test drive" workstations in the Workstation Evaluation Lab (222 Computer Building).

John Diercks (863-6089)
diercks@ems.psu.edu

NICE TO KNOWS. . .

* * *

Births

Caitlyn Elizabeth Stevens, a daughter born to Philip and Donna on October 18, 1991. Phil is a research associate in Meteorology.

* * *

New Appointments

Elizabeth Daye is our college's new proposal and awards assistant in the EMS Research Office. Elizabeth previously worked in the Dean's Office of the College of Engineering.

Kathleen Sherman has joined the Department of Geography as a secretary; she previously was employed in Comparative Literature.

Peggy Zentner is a new secretary in Meteorology. She and her family recently returned to State College from Rhode Island.

* * *

IDTs
(Interdepartmental Transfers)

Shelley Gette is now the EMS assistant to the financial officer, research. Shelley previously served as our administrative computer systems specialist.

* * *

Partings

Frank F. Aplan, distinguished professor of metallurgy and mineral processing, will retire this month after 23 years at Penn State.

Lisa Davis, research technologist in Meteorology, will leave our college at the end of December to pursue graduate studies in Health Policy and Administration. Lisa will still be on campus, as she will be affiliated with Penn State's College of Health and Human Development.

Pat Ishler, senior accounting clerk in the EMS Financial Office, will retire December 31 after 29 years of service. Pat plans to remain in the area.

David Snell, curator of the EMS Museum for 38 1/2 years, will retire December 31. He plans to continue with an active interest in our museum and library.

Helen Solt, secretary in Mineral Engineering, will retire on December 31, after 30 years with Penn State.

Roseann Thal, secretary in Mineral Economics, will retire on December 31. Roseann has been at Penn State for 25 1/2 years.

William Vogely, professor of Mineral Economics, will retire December 31, with 17 years of service.

Ethel Williams, assistant to the financial officer for EMS, retired October 31, after 46 years of service to Penn State.

Merle Wilson, machinist in the EMS shop, will retire December 31. Merle has been associated with our college for over 36 years.

* * *

Milestone

Elburt F. Osborn, professor emeritus in Geosciences, recently celebrated his 80th birthday.

* * *

A.K.A.
(Also Known As)

For those of you who have tried to find *Kelly Bair* in the new College directory, look under "M." She is now known as *Kelly Monihen-Bair*.

The *Solid State Science Program* has been given a new identity. Now called the *Intercollege Graduate Program in Materials*, the program is administered by Dr. Charles Hosler's Research and the Graduate School Office. The program is under the direction of William B. White, Professor of Geochemistry.

FIRE ALARM

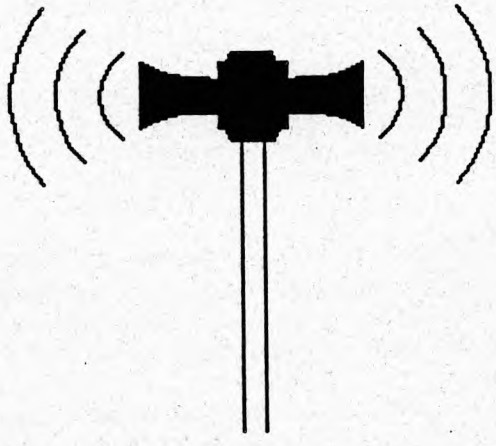
When the fire alarm sounds in your building, you MUST do the following:

1. Gather up your important personal belongings (e.g., coat, purse, etc.) and your keys;

2. Close and lock your door and any other doors you are responsible for;

3. Exit the building as quickly as possible by way of the steps (DO NOT USE THE ELEVATOR); and

4. Remain outside the building until the alarm stops sounding or you are told by a safety official that it is safe to reenter the building.



Safety Questions

The maximum number of multi-strip outlets one should use per receptacle is two. (a) true or (b) false.

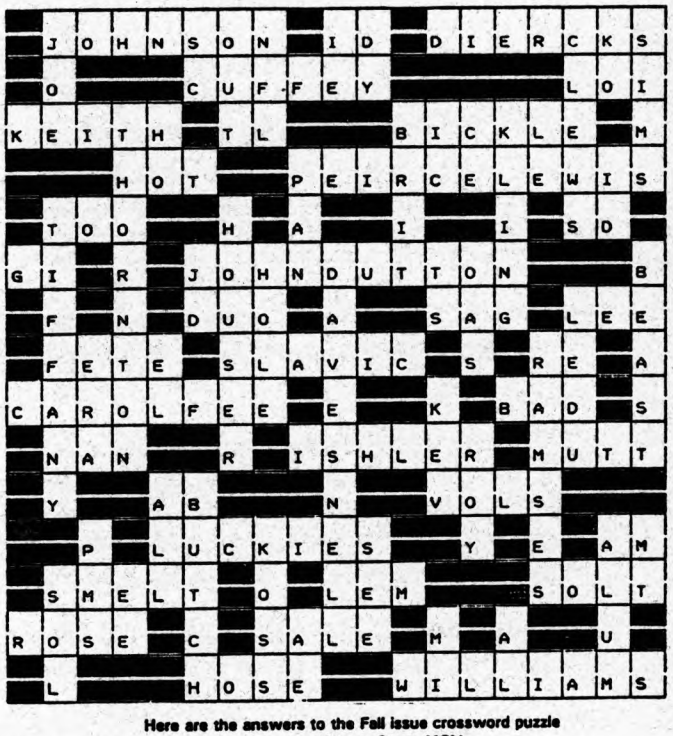
If your skin contacts liquid nitrogen, you should immediately: (a) flood that part of your body with large amounts of hot water (b) apply vaseline to the area (c) flood that part of your body with large amounts of cold water or (d) bandage the area and go to Ritenour.

It's OK to block open a fire door during hot days when air circulation benefits cooling of the building. (a) true or (b) false.

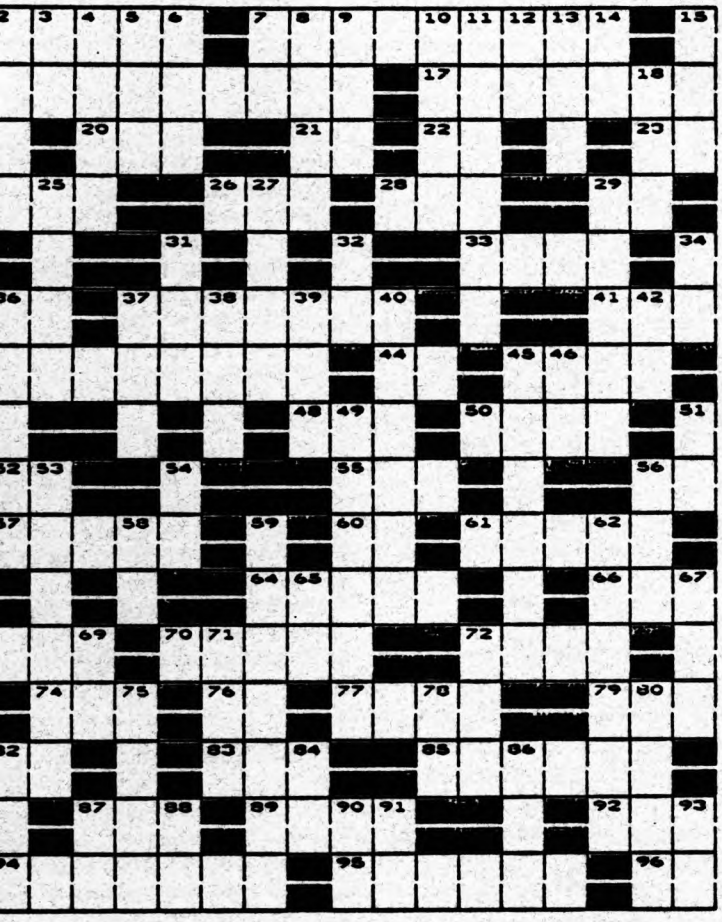
Its OK to store empty boxes in your office. (a) true or (b) false.

If you discover a fire, the first thing you should do is: (a) activate the nearest fire alarm (b) call for assistance (c) attempt to extinguish the fire with a fire extinguisher or (d) evacuate the building.

Answers: 1. (b); 2. (c); 3. (b); 4. (b); 5. (a)



Here are the answers to the Fall issue crossword puzzle (compliments of Henry Gong, MCL)



(Crossword puzzle - compliments of Henry Gong)

Are you Ready to Try Again ?? Puzzle #2

(Answers will appear in the Spring issue)

Across

S Librarian Linda ____
f. in Metallurgy George ___
nda Coordinator, former Santa
ret. Met. Char. Lab Sharon ___
mical symbol for nickel
and a sheep makes
wless love
st coast state
's predecessor
of. Emer. in Geosci. Thomas ___
livery service
al student organization
oscience's Prof. Traverse
brev. for bachelor's degree
airman Min. Proc. Richard ___
rmer Director of MCL Norm ___
of. in Polymer Science Paul ___
hare Nittany Lions stay
st. Prof. of Min. Processing
ocery chain
cretary in research Rosalyn ___
aler of sick
ctron Microscopist Rusnak
MS Glassblower Smith
breviation for drive
computer on 2001-Space Odyssey
opposite of stop
Assist. Prof. in Meteo. George ___
wild rice state
Secretary in Cont. Ed. Kelly ___
what R2D2 is
bowling pin manufacturer
material studied by geologists
mystery circles in these fields
Prof. Davis of Energy Research
Land of Lincoln
our college
cry of pain
mysterious cloud beyond Pluto
Research Assistant Voight
Australian greeting
golden pharaoh
restart a computer
headed by Prof. Digby MacDonald
Microprobe Specialist Angelone
the PSU of Boston
Head of Combustion Lab Alan ___
former Dean of EMS Charles ___
baseball for stolen base

Down

1. *EMS Copy Center Operator*
2. *a precise quantity*
3. *baseball for a sacrifice fly*
4. *cries*
5. *What the Paleozoic was*
6. *one of life's building blocks*
7. *South America*
8. *sicknesses*
9. *where geologists find hard rock*
10. *belonging to Roni in Mat. Sci.*
11. *volcanologist Barry ___*
12. *opposite of out*
13. *local newspaper*
14. *male or gas (chemical symbol)*
15. *Ryder and Davis are examples*
18. *laundry detergent*
24. *recording tape manufacturer*
25. *to make a living*
27. *Prof. Emer. in Meteo. Ross ___*
29. *getting old*
31. *what a cartographer makes*
32. *opposite of NW*
34. *Davey Crockett's state*
36. *Director of MMRI H. Reginald ___*
37. *Sr. Acct. Clerk Ishler ___*
38. *French for island*
39. *explosive*
40. *Head of Min. Eng. R. V. _____*
42. *California murderer*
45. *Prof. Emer. in Mining Harold ___*
46. *last two vowels*
49. *Prof. in Geosciences Hiroshi ___*
51. *he knows all*
53. *secret. in Min. Proc. Susan ___*
54. *what Craig Fayak can make*
56. *found in Rec Hall*
58. *negative*
59. *Assoc. Prof. in PNG Michael ___*
62. *what R represents in computer RAM*
63. *Prof. in Geology Duff ___*
65. *type of grad. student*
67. *a shark has one*
68. *nearby star*
69. *chemical symbol for samarium*
71. *what lava feels like*
72. *past tense of eat*
75. *what the sun is*
78. *what the Union Pacific is*
80. *first name of O.J. McDuffie*
82. *cancer organization*
84. *another type of grad student*
86. *maker of honey*
87. *state on the Pacific Ocean*
88. *method used by criminal*
90. *blood type description*
91. *occurs in boxing ring*
93. *what the disease consumption was*

College/University Events

January 8	Arrival Day (Spring Semester 1992)
January 9-10	Advising, New Student Registration
January 10	Registration Deadline
January 11	Commencement
January 13	Classes begin (8:00 a.m.)
January 15	Complete department promotion and tenure review
January 15	Faculty Scholar Medal Nominations due in Office of Vice President for Research
January 15	Vienna Choir Boys (Artist Series)
January 17-18	Bartok Quartet (Artist Series)
January 20	Drop/Add with $6.00 fee begins
January 22	Late Registration deadline, Course Drop/Add Deadline
January 28	Professional Women at Penn State (Topic:Life on the Technical Staff)
January 31	Puccini's Tosca (Artist Series)
February 1	Clerical Performance Evaluations to be conducted
February 1	CES faculty promotion and tenure reviews due in Vice Provost's Office.
February 8	Limon Dance Co. (Artist Series)
February 14	Marvin Hamlisch (Artist Series)
February 15	Complete College tenure and promotion review.
February 16	Freedom Train (Artist Series)
February 20	Betty Carter (Artist Series)
February 25	Professional Women at Penn State (Topic: Open Agenda)
February 29	Barnum (Artist Series)
March 1	Complete Dean's tenure and promotion and review
March 1	Applications for Graduate School Fellowships for 1992-93 to Grad School
March 1	Staff performance reviews to be conducted
March 9-13	Spring Break
March 17	Faculty meeting (location to be announced) Reception in Steidle Art Gallery
March 27	The Borodin Trio (Artist Series)
March 27	Applications for summer semester graduate school tuition grants-in-aid due in Graduate School
March (TBA)	Cats (Artist Series)
March 31	Professional Women at Penn State (Topic: Negotiating Skills)
April 1	Academic year faculty Self-Evaluation reports due in Dean's Office.
April 3	Applications for Tuition Assistance Programs for Summer 1992 due in Graduate School. (Requires two semesters on general funds)
April 5	Faculty-student Awards Banquet
April 10	Late Drop Deadline
April 15	Nominations for Minority Graduate Fellowships due in Dean's Office
May 1	Classes end (9:30 p.m.)
May 2-3	Study Days
May 4-7	Final Exams
May 8	Registration deadline (Intersession)
May 11	Intersession Begins (8:00 a.m.)
May 16	Commencement for College
May 16-17	Commencement
May 30	Alumni Society Board Meeting
June 1	Consulting reports due in the Dean's Office
June 5	Intersession ends (9:55 p.m.)
June 7	Arrival Day for New Students
June 8	Advising
June 9	Eight-week Registration Deadline
June 10	Eight-week Classes Begin (8:00)
June 15	Eight-week Late Registration Deadline
June 15	Eight-week Drop/Add Deadline
June 16	Eight-week Late Drop/Add with $6.00 Fee begins
June 23	Six-week Registration deadline
June 24	Six-week Classes Begin (8:00 a.m.)
June 26	Fall applications for graduate school tuition grants-in-aids due in Graduate School
June 29	Six-week Late Registration Deadline
June 29	Six-week Course Drop/Add Deadline
June 30	Six-week Drop/Add with $6.00 Fee begins

Major Professional Meetings

January 5-10	72nd American Meteorological Society Annual Meeting
February 24-27	Society of Mining Engineers Annual Meeting
February 26-29	10th Annual World Coal Conference
April 7-11	23rd Intl. Symposium on Computer Applications in the Mineral Industries (APCOM)
April 18-22	Annual Meeting of the Association of American Geographers, San Diego, CA
May 3-7	American Mining Conference Coal Convention
May 3-7	Coal Prep Conference
June 18-21	75th Annual National Coal Assoc. Coal Convention
June 21-24	American Association of Petroleum Geologists, Calgary, Canada
August 9-14	International Geographical Congress, Washington, D.C.

Religious/Secular Days

January 1	New Year's Day
January 20	Martin Luther King, Jr. Day
February 12	Lincoln's Birthday
February 14	Valentine's Day
February 17	Washington's Birthday Observed
February 22	Washington's Birthday
March 4	Ash Wednesday
March 17	St. Patrick's Day
April 1	April Fool's Day
April 12	Palm Sunday
April 17	Good Friday
April 18	Passover
April 19	Easter Sunday
May 10	Mother's Day
May 16	Armed Forces Day
May 18	Victoria Day (Canada)
May 25	Memorial Day Observed
May 30	Memorial Day
June 14	Flag Day
June 21	Father's Day