



Black Diamonds

from the
Department of Mining Engineering
 CEMR WVU

Volume 1, Issue 2

For the latest, visit our web site at www.cemr.wvu.edu/~wwwmine

December, 2001

Main Stories This Issue

- Dr. Peng Endows Department
- Keith Heasley Joins Faculty
- James O. Bunn Most Recent Distinguished Engineer of Mines
- Non-Traditional Student Speaks Out
- Recruiting Means You!
- Award Winners

Syd and Felicia Peng Give \$250,000 Endowment to Department

Drs. Syd and Felicia Peng understand what is important to the effective running of a world-class mining department. And they want to make sure that the Department of Mining Engineering remains world-class after their eventual retirement. Thus they have presented West Virginia University, the College of Engineering and Mineral Resources, and specifically the Department of Mining Engineering with an endowment of \$250,000 that ensures that the Department Chair will always have discretionary funding available for unforeseen needs, contingencies, or unique opportunities.

On September 8, Felicia and Syd established the *Syd and Felicia Peng Mining Engineering Chair Endowment*. A dedication ceremony was held with faculty, students, and friends attending. David Hardesty, President of WVU, and Eugene Cilento, Dean of the College of Engineering and Mineral Resources, were there to thank Syd and Felicia for the gift, and to present the plaque that will be installed in the main foyer of the Mineral Resources Building to honor their gift.



Syd and Felicia Peng admiring the brass plaque to be installed in honor of their endowment. Joining them are Jim Laurita of Meppo, WVU President David Hardesty, CEMR Dean Eugene Cilento, and WV Coal Association President Bill Raney.

It takes an astute manager to understand what the availability of uncommitted funds means to the ability of a chair to do what is best or to grab unexpected opportunities. This endowment will

(Continued on page 3)

Inside this issue:

Greetings from the Chair	6
James Omer Bunn Receives Distinguished Engineer of Mines	1
Calendar	2
Dr. Peng Receives Kingery Award for Health and Safety Contributions	2
Recruiting Students into Mining Engineering	2
Dan Alexander: Making a New Career	3
Experienced Researcher Newest Faculty Member	3
Personal Notes from the Faculty	4-5
Capital Campaign Continues	5

James Omer Bunn Named Distinguished Engineer for Fall, 2001



Jim Bunn making a point in his lecture

James Omer Bunn is a self-made man. That description is certainly over-used, and it tends to be a bit uncomfortable to those who are unassuming, but the description fits Mr. Bunn well. Starting with little more than determination and a well-developed business sense, and blending in a mining education from West Virginia University, Mr. Bunn grew into a multi-national coal operator who has enhanced the industry and improved the West Virginia economy.

Mr. Bunn opened up with a description of how he got into the coal business right after high school by buying an auger at a bargain price from a bankrupt company, and operated it at a substantial profit. Shrewd decision-making, knowing when to take a risk, and that all-important mining engineering degree from WVU brought Mr. Bunn to where he is today.

He carefully explained to the audience that shrewd decisions are the result of hard work and paying attention to detail. Especially for the

(Continued on page 2)



James Omer Bunn receives the Distinguished Engineer of Mines Certificate from Department Chair Syd Peng

(Continued from page 1)

students' sake, he devoted a large portion of his talk to those details that, when ignored, catch up to and damage mining operations. Of course, these "details" involve money; in the case of Workman's Comp, substantial quantities of it.

The talk was well-received, and on the left is James Omer Bunn accepting the certificate that officially makes him our third Distinguished Engineer of Mines.

Students Do Well at PCMIA

WVU mining students did well at this year's PCMIA meeting. Shelly Shalvis and Ryan Toler received the *PCMIA/SME Design Award* for best senior project for their mine design. Shelley has accepted a position with Rockwell Automation, and is currently in their Customer and Product Training Program in Greenville, NC. Ryan is now employed by Peabody Holding Co., Inc./ Eastern Associated Coal Company at the Federal #2 Mine in Northern West Virginia. Carrie Dougherty received a SME-Pittsburgh Section Grant Award for her performance at WVU. Carrie is secretary for the student SME chapter, Vice-President of the Golden Key National Honor Society, and member of the Society of Women Engineers, Tau Beta Pi, Mountaineer Council, and the National Society of Collegiate Scholars. Good going, students!

Calendar of Events

Spring, 2002

February 25-27 – SME Annual Meeting in Phoenix; don't miss the alumni reception

March 10 – AIME/ISS meeting in Nashville, TN, where Dr. Peng will be awarded the Erskine Ramsey Medal

April 14 – Student Awards Banquet at Lakeview

April 25 – William Poundstone Lecture

April 25 – Distinguished Engineer of Mines Award

April 25-26 – Visiting Committee

May 3-5 – Joint meeting of WV Coal Association and WV Coal Mining Institute

May 19 – Graduation

Come if you can; we'll be happy to welcome you home.

Syd Peng, Department Chair Adds the Kingery to a Long List of Career Awards

The *Pittsburgh Coal Mining Institute of America* (PCMIA) annually honors an individual who has made substantial contributions to health and safety in the mining industry by presenting him or her with the *Donald S. Kingery Memorial Award*. On October 25, 2001, Dr. Peng was honored with this award. The list of accomplishments leading to this honor is too long to cite here, but highlights include the following:

- Author and co-author of three engineering books
- Development of four computer programs in use around the world:
 - 1 PILLAR for coal pillar design
 - 2 ROOFBOLT for roof bolt design

3 DEPOWS for the design and selection of shield supports

4 CISPM for subsidence prediction and damage assessment

- Establishing the Annual International Conference on Ground Control in Mining
- Computer analysis of dust distribution in longwall faces

Dr. Peng's other accomplishments includes hundreds of papers, numerous technical presentations, and the molding of our next generation of mining researchers.

Perhaps his next award should include added wall space!

Recruiting: The Key to a Successful College Mining Program

Recognize the picture on the left? Unfortunately so does most of America, and that is our problem. Very few people outside of the industry ever see a modern mining operation. It is as if the Smithsonian Aerospace display stopped at WWI biplanes.

I still remember an engineering freshman, a student who had achieved high enough science and mathematics scores to be admitted to the engineering program, who told me that he was "...against mining in any form." Not just coal, but all mining. This science-adept student was obviously unaware that his computer, his car, and his CD's had been mined. This is what the mining department and the entire mining industry are up against.

We need the help of concerned alumni to reach out to high school students, to show them that mining is the foundation of American industry, and that challenging, rewarding careers

are available in mining. If you can help by visiting high schools, or by helping us to visit them, please contact us. I have materials that can help. Please contact me.

Lloyd M. English, Assistant Professor
(304) 293-7680 x3309
lenglish@wvu.edu

Too many bright students are being lost to perception; let's show them the reality.



The Public Perception...

*Recognize this picture?
Unfortunately, so does most
of America.*



...and the modern reality.

Newest Faculty Member No Stranger to Research

Keith may be new to WVU and to the Department of Mining Engineering, but he certainly isn't new to research.

And in addition to all of this, he is an avid, experienced outdoorsman. He is a licensed white-water guide, a kayaker, hunter, hiker, fisherman — a regular Mark Trail. Anybody who thinks that mining professionals aren't interested in the environment need to talk to Keith, or at least check out the picture of him in a kayak in class VI water that is on his office door. The same is true for Kelly. This deer season, Kelly got hers, he didn't get his! (Sorry Keith. I just had to let them know.)

Keith obtained his doctorate from the Colorado School of Mines the hard way. He took a year off of work and completed all of the required coursework in an intensive study program.

Then while working full time for the Bureau of mines he completed his dissertation and its defense part time from Pittsburgh, PA.

You can read more about Keith in the faculty section of *Black Diamonds* on page 5.



Dr. Keith Heasley with his wife, Kelly, at a department gathering

A Non-Traditional Student: Academic Life Beckons to Retired Mining Engineer

As I look around the ranks of the WVU graduate student body, the term "unconventional" seems out of place. Many of the students here have some industrial experience in the US or another mining country or are currently working and attending class part time.

I am in the beginnings of a second career. I worked for CONSOL in the research and engineering departments for 29 years and retired last year. In 1996 I started a Masters of Energy Resources degree in the University of Pittsburgh Chemical and Petroleum Engineering Department, and finally completed it in December, 2000. It took five years of night classes.

My case study project was to rewrite the Energy Merit Badge Pamphlet for the Boy Scouts. The previous pamphlet was written in 1978 so it needed a complete update. I am currently working with the editors on the final copy for publica-

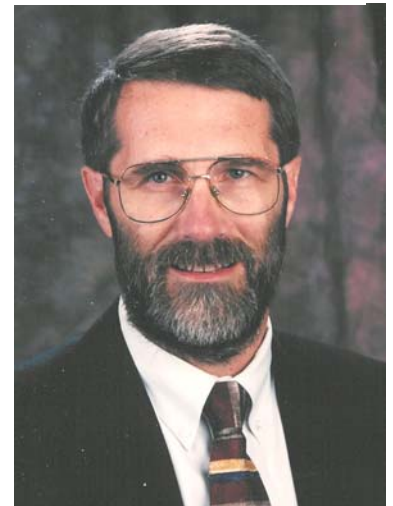
tion in 2002.

Today, I am enjoying classes at WVU and filling the roll of teaching assistant for the Mine Design Class. It fits me well because I worked in the mine evaluation and acquisition group at CONSOL and also served on the judging committee for the Mine Design Project Contest run by PCMA/SME for seven years.

It is invigorating to see the commitment of the seniors to this class. They realize it helps them prepare for their careers and that it ties together their undergraduate mining education. In two semesters at WVU, all the seniors have excelled. Of course, it helps to have one team receive second place in the national contest too.

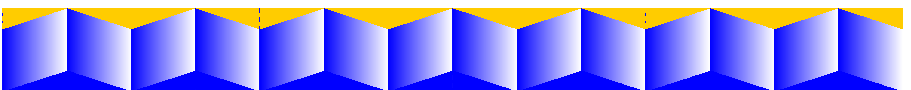
On average, I travel back and forth from Pittsburgh four days per week. My wife and I decided not to move because we wanted my sons, a senior and sophomore, to be able to graduate from high school with their friends. As it turns out, the drive from my home to WVU has been less stressful than going into downtown Oakland to the University of Pittsburgh.

My research interests include mine management and financing issues, energy production and utilization, mine mapping, forecasting and GIS, acquisitions and mergers and coal



Danrick W. Alexander, PE

supply issues. The dissertation topic I have begun work on concerns the financial consequences of mine catastrophes like fires and explosions that temporarily or permanently close a coal mine. I believe that firms respond best to problems where the costs are clearly identified and efforts to control the risks can be financially justified.



(Continued from page 1)

ensure that the chair always has this flexibility.

This is the first major contribution to Mining Engineering in the current Capital Campaign (see related story on page 4).

To the left is a photo of the bronze

plaque that WVU and CEMR will be installing in the main atrium of the Mineral Resources Building in Syd and Felicia's honor.

From the Faculty, Personally Speaking



Felicia Peng trying on a hard hat presented to her by Continental Conveyor

Felicia Peng, Ph.D.

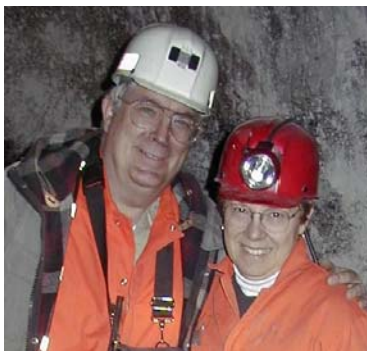
Currently I am an Associate Professor in the Mining Engineering Department, WVU. I obtained my Ph.D. in Chemical Engineering from West Virginia University. My courses include coal preparation, advanced flotation of fine coal, mineral processing, and mining and milling wastes management and closures. I also teach algorithm development for problem solving, computer software tools, computer aided design, and graphics software tools such as AutoCAD and SurvCADD, which are used in mine planning and in process plant flowsheet by undergraduate students in our

department.

My research interests and specialties are in coal and mineral processing. They include frother evaluation; micro-mechanisms and dynamics of column flotation of fine coal and minerals; manganese and arsenic removal from mine water; polymer flocculation and coagulation mechanisms and dewatering; removal of radionuclides from contaminated soils; carbon dioxide adsorption and sequestration technologies. I also am interested in the mathematical modeling and simulation of processes, including column flotation; stratifica-

tion in packed column jigs; geo-statistics applications in quality control; development of computer-based and web page-based multimedia courseware.

Currently I am researching the economic impact of carbon dioxide adsorption, mineralization and sequestration technologies, and the Kyoto Treaty on the West Virginia economy; frotherability of residual solvents; mechanisms of pack column flotation for fine coal separation; dolomitic phosphate separation; and the simulation of packed column jigs.



Lloyd English and his wife, Sarah, underground at the Galatia Mine.

Lloyd English, Ph.D., P.E.

My interests are in ventilation and project management — and in many ways designing and managing a mine is the ultimate project! For the majority of a career in industry I specialized in methane issues in coal mines: it's assessment, it's mitigation, its capture, and its sales. I also have a long-standing interest in the basics of mine ventilation theory.

I teach mine exploration and valuation and ventilation to undergraduates, and I teach advanced mine ventilation courses to graduate students. This year I taught gen-

eral engineering to incoming freshmen, and it was quite an experience! I was concerned at first, but quickly started to enjoy this class because of their interest and enthusiasm.

My recent research includes an investigation of fugitive dusts and fumes from blasting at surface mines in two phases (larger mines and smaller mines), and a look at coal's ability to adsorb carbon dioxide, and if that ability deteriorates with age. The last project determined that there was indeed a change, and I am currently trying to quantify that

change. I am also pursuing some research in the ventilation of very-large entry mines, one ventilation application that theory does not currently describe adequately enough to model.

My wife and I enjoy travel and history — a very convenient match. We have started using digital photography which permits us far greater flexibility than does film. We also enjoy bike riding and camping. If we go to the C&O Canal, we are able to wrap up all four interests in a single trip! I am planning a future trip to some historical mining sites.

Syd S. Peng, Ph.D., Department Chair



Dr. Peng in conference on one of his projects

I currently have two federally-sponsored research projects. The first, a 3-year project sponsored by NIOSH, involves developing an improved yield pillar design. The concept of yield pillars is not new, but they are poorly defined and there is no uniform, proven method for designing them. This project is in its 2nd year and it supports one PhD student, Khaled Morsy.

The 2nd project which I am co-directing with Dr. Luo is

also for three years and is sponsored by the US DOE. This project is cost-shared by CERB (Coal & Energy Research Bureau) and industry partners, including JH Fletcher & Company of Huntington, WV. We are developing a feedback control system that is installed in a modern roofbolter which will be used to conduct our experiments. The idea is to monitor the drilling parameters (thrust, torque, rpm, & penetration rate) in real time while drilling roof bolt holes. These pa-

rameters may then be used for roof mapping, i.e. to predict rock types or voids/fractures being penetrated by the drill. Once the roof is mapped, a site-specific roof bolting system can be designed for it. This project began in December 2000 and is currently supporting four PhD students and one MS student.

Last Spring I visited the last two operating French coal mines, both longwalls, and both slated for closure in 2005. We are truly lucky in America.

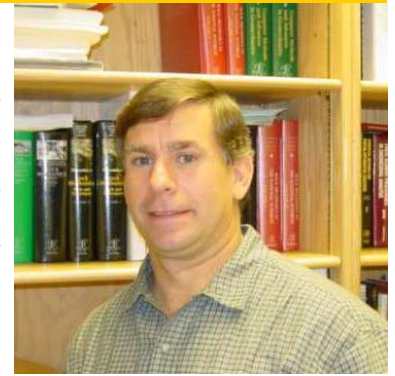
Keith Heasley, Ph.D.

Over the last several years I developed a program called *LaModel* that may be used to model the stresses and displacements in single or multiple coal seams for improved mine design. At the present, the mine and topographic grids must be input manually and this can become quite tedious – it may take several days. One of my research goals is to add automatic mine and topographic grid generation capabilities to the *LaModel* program. This improvement should greatly simplify *LaModel* application and increase its usability

for the coal industry, and thereby increase the level of design technology, productivity and safety in underground coal mines.

The biggest personal news in my life this fall is accepting the professor's position in the mining engineering department at WVU and moving to West Virginia. After a couple of months in the mining department, I am feeling right at home and I look forward to making significant contributions in the months and years to come. On the home front, my wife, Kelly,

and I just bought a house outside of Bruceton Mills, WV, a small community about fifteen miles to the east of Morgantown. We had been looking to move into the "country" for quite some time, and this home is perfect, situated on 20 acres in a wooded rural area. We are very happy with the house and location. We formally moved on Oct. 27th and have mostly unpacked, but are still hanging pictures and organizing the last boxes.



Keith Heasley moving his library into his new office

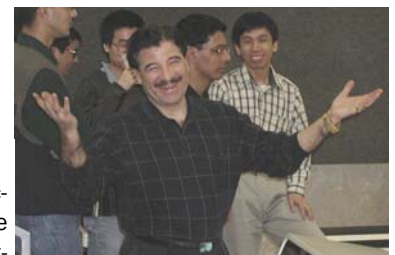
A. Wahab Khair, Ph.D.

As we "went to press" Dr. Khair was out of town for an extended holiday, so we used this opportunity to show him enjoying one of his favorite

activities, an outing with the student members of the SME. His research interests continue to be the design of coal-cutting bits and the minimization of dust

that they create while cutting.

Judging from the picture, it is our guess that maybe he also needs to study converting "spares" to "strikes"!



Dr. Khair on a bowling outing with the SME student chapter.

Yi Luo, Ph.D.

I have been most active in research on mining subsidence including developing prediction methods and control techniques. These methods and techniques have been successfully applied in a large number of projects. I am co-directing (with Dr. S.S. Peng) a

research project to map the roof geology in underground mines using measured drilling parameters from the roof bolter in roof bolting operations. The objectives of this project include estimating strengths of roof strata, detecting rock interfaces in the roof strata, and locating and

estimating the sizes of voids in the immediate roof strata.

Although I am a research professor, I help out the department by teaching advanced strata control methods, and the introductory course for underground mining.



Yi Luo enjoying the department picnic this fall.

Capital Campaign Moves Forward

The theme of the WVU Capital Campaign is "**Building Greatness.**" That is just what the Department of Mining Engineering has done and is doing. Our graduates lead the industry. But the infrastructure needs a boost, and we need your help.

STUDENT SUPPORT

Scholarships are essential. They provide students an enhanced chance to succeed, and increase the opportunities to study by reducing their need for part-time work.

FACULTY ENHANCEMENT

WVU has had many distinguished mining professors, such as Lawall, Spindler, Kelly, Leonard, and Holland.

But competition for faculty has become fierce in a shrinking pool of viable candidates. We need endowed professorships to attract the best that the industry and the academic community have to offer.

ACADEMIC INITIATIVES AND RESEARCH, LABORATORIES, CLASSROOMS, AND EQUIPMENT

Technology is advancing rapidly, as the industry is well aware. It is advancing so rapidly that laboratories, computer facilities, and teaching aids need to be replaced with greatly increased frequency. We used to be able to wait until things "wore out." No more.

Laboratories are in serious need of endowment funding that will enable them to maintain pace with changing technology. This would not only enhance our research, but also enable us to produce students that graduate at the cutting edge of technology.

OPPORTUNITY FUND

Discretionary funds are the lifeblood of innovative management. Dr. Peng's unique endowment is his strong recognition of that fact. An opportunity fund would enable mining administrators and faculty to act upon unexpected opportunities that arise. "Unexpected" means

"unbudgeted", and such opportunities rarely wait for the next budget cycle. This fund would enable the department to exercise its creative potential and remain at the forefront of mining academics.

This is your opportunity to have a direct and lasting impact on the Department of Mining Engineering and on America's most basic industry.

*"Unexpected"
[opportunities] means
"unbudgeted", and such
opportunities rarely wait for
the next budget cycle.*

Department of Mining Engineering

CEMR
West Virginia University
PO Box 6070
Morgantown, WV 26506-6070

(304) 293-7680 office (304) 293-5708 fax



Non-Profit
Organization
U.S. Postage
PAID
Morgantown, WV
Permit No. 34

Alumni and Friends

Lloyd M. English, Ph.D., PE, Editor

Everything starts with mining!

WE'RE ON THE WEB!

www.cemr.wvu.edu/~wwwmine

Greetings from the Chair

Dear Alumni and Friends:

In the past six months the department has undergone several major changes. First of all, we added Keith Heasley to our faculty in August, 2001, and wish to welcome him. He is well known in the mining R&D community. He was formerly employed by the National Institute of Safety and Health Research, Pittsburgh Laboratory.

On September 8, Felicia and I established the *Syd and Felicia Peng Mining Engineering Chair Endowment*. A dedication ceremony was held with faculty, students, and friends attending. This is the first major contribution to Mining Engineering in the current Capital Campaign.

On November 8, Jim Bunn presented the Fall 2001 Distinguished Engineer of Mines Lecture. This series of lectures to honor our distinguished alumni have been well received. We plan to so honor one of our alumni each semester, so please forward any nominations you might have to Dr. Khair or to me. Dr. English is working on the design for a hallway exhibit to be placed by our department entrance. This will be a permanent display honoring all recipients of the Distinguished Engineer of Mines Award, and should be

completed in the Spring of 2002.

Dr. Felicia Peng continues to work on and maintain our department web site. Be sure to visit it and pass along any suggestions you might have.

As you all know, the BSMInE (formerly the BSEM) has been and is ABET accredited. The current accreditation expires in July, 2004, and the department will be revisited and re-examined by ABET for continuing accreditation in 2003. ABET is using new criteria that emphasizes student assessment, and input from alumni and employers; it is quite a different approach from previous years. Some of you may have already received requests from us — your department — for an assessment survey. Please help us by filling out and returning these forms.

We continue to visit high school students to educate them about the opportunities in a minerals career. Please read the article in this issue to see how you might help.



Dr. Peng with a rare bit of time from his office to spend in the lab

IF IT CAN'T BE GROWN,
IT MUST BE MINED!