This is the fourth edition of the Black Diamond Newsletter, and a good time to take a look at who reads it. The department developed a map to see where our WV alumni live. (A United States map will be next.) Of the 963 names in the mailing list 41% live in West Virginia, including 315 graduates and 77 friends. Each symbol in the map shown here is where one of 296 B.S. (hammer and pick), 17 M.S. (green mountain), and 2 Ph.D.’s (blue X) lives.

Stop in our booth at the SME Exhibit in Cincinnati to see if you are listed correctly and to say hi to the current students. We’ll all be there.

**West Virginia Alums: Involved in Mining Everywhere!**
Wall of Distinguished Engineers Complete... ...except for those who will be added to it

Calender of Events  
Spring, 2003  
Feb 3-4  ABET Accreditation Mock Visit by Dave Eyer  
Feb 24-25: SME Annual Meeting  
Cincinnati, OH  
TBA*: Mineral Resources Awards Banquet  
TBA*: William Poundstone Lecture and Distinguished Engineer of Mines  
TBA*: Spring Visiting Committee Meeting  
May 1-2: WVCA/WVCMII Joint Spring Meeting, Pipestem State Park  

Come if you can; we’ll be happy to welcome you home. We’ll leave the light on for you.

*All three to-be-announced items will occur on Thursday and Friday of the same week.

Richard M. Whiting Named Distinguished Engineer of Mines, Fall 2002  
Lectures on “The Stability of Coal”

Who better to lecture on the “Stability of Coal” than one of the leaders of the world’s largest coal company? Mr. Richard M. Whiting is our latest alumnus to be awarded the title of Distinguished Engineer of Mines. Starting with Peabody in 1976, Mr. Whiting rose from trainee and then face boss to his current position overseeing the sales and trading of the largest coal producer in the world. And don’t think that he has been immersed in just Peabody’s work. He has also served the industry in the Bituminous Coal Operator’s Association (current chair), the National Mining Association (current chair of Safety and Health Committee), the National Coal Council, the Presidential Advisory Board of the SME, and the CEMR Visiting Committee (see related story on page 3).

His Poundstone Lecture focused on where coal is now in our economy, and where it is going. His words should be encouraging both to industry workers and to those who are worried about our national energy supply. In essence: We have lots, and we will always have lots.

Coal is not displaceable. It is too large of a segment of our energy industry, and it will continue to grow as our energy needs grow. With statistics, graphs, projections, and data, Mr. Whiting clearly displayed his vision of the role that coal will play for the foreseeable future.

One aspect of the analysis that came through time and time again is that this understanding is not based on esoteric theory or the analyses of a committee of economists. It is based on simple data, available to anyone who wants to dig them up, that is approached with standard engineering economic concepts:

- Coal is our cheapest energy source
- Economically, coal is the least volatile energy source
- US energy usage is increasing twice as fast as energy production
- Improvements are substantial in learning to use coal efficiently and cleanly

His lecture contained far more than can be summarized here, but there is one thing that is certain. At the end of the lecture, it was difficult for anyone in the audience to be anything other than upbeat about a career in coal.

The permanent display of our Distinguished Engineers of Mines by the Department entrance, with the plaques for W. Douglas Blackburn, Jr., Robert H. Quenon, James O. Bunn, and James W. Boyd installed. Mr. Whiting’s plaque will be installed when completed.
Robert Murray presents Poundstone Lecture

The high interest in Bob Murray’s lecture is well indicated by the cluster of industry leaders surrounding him afterwards with their own questions.

Like a lot of people, Robert Murray has a lot to say. Unlike a lot of people, almost everybody is interested in what he has to say. In November, 1999, when Coal Age did a cover story on Mr. Murray, they also wrote their editorial on him and titled it, “He’s a maverick, but he has something to say.” We’re not too sure about being a maverick, but we are very sure about his message: Coal is here now, tomorrow, and for the future. And there are other ways to operate besides in the manner of publicly owned corporations. Indeed, the operating philosophies are very different. A corporation’s goal is to satisfy stock holders and a board of directors; an independent operator’s goal is to operate in the best manner he knows how. This means that there are differences in the way profit and growth are viewed, and that many basic decisions are made differently in an independent organization.

Let’s examine the Oxford English Dictionary’s definition of Maverick:

a. A masterless person; one who is roving and casual; an independent person; an individualist; ... Also attrib. in sense ‘independent, unattached’.

While casual doesn’t fit, as anyone who knows Mr. Murray will attest, the remainder of the definition fits like a glove. He is the master, is fiercely independent with his coal operations, and he has no attachments or responsibilities other than to his own company and his employees.

It was this uniqueness of perspective that made him an ideal candidate to be a Poundstone lecturer. It was informative to the professional audience, and more importantly, it was inspiring to our student body. Mr. Murray used his skills to maximum effect — he is the largest independent coal operator in the United States, and, as far as we know, he may be the largest in the world. Since he was formerly the CEO of a major, traditionally owned and operated publicly held corporation, it was also inspiring to hear how he made the change in approach.

One thing is for sure: When Robert Murray speaks, you know exactly where he stands. Could we get him to train our politicians?

The Visiting Committee: Advice from the Best

What does the visiting committee do? A better question is, what would we do without them? As anyone familiar with the coal industry can see in this photograph, this committee is comprised of well-known mining professionals who jointly possess a wealth of knowledge and experience too large to describe. And therein lies their value to the Department of Mining Engineering.

We exist to produce professionals for the industry, to advance the state of the scientific and technical arts of the industry, and to serve the state and the professional community. In short, these are industry, academic, and government roles. The committee reflects these needs. Some of these members areas of expertise is obvious from their titles. However, there are past positions in the experience package as well. For example, one led the USBM Pittsburgh research facility, two have been professors (one a department head), and uncountable committees and volunteer work. The industry experience reflected in this group runs the gamut, from what may be the nation’s most recognized consulting company to leaders in coal production.

So what do they do? They examine our program, and tell us what needs to be improved, changed, or added. They tell us what industry needs. They suggest directions to pursue. And they believe so strongly in this effort that they do this at their own expense without compensation. For that they have earned our, and your, gratitude.

Gentlemen: Thank-you.
From the Faculty, Personally Speaking

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

One of the things I get to do is teach a class of freshman engineering students. This is not a mining course, nor does this course belong to any other department. The responsibility for teaching it is divided among all departments, and it is the first exposure to engineering that any WVU student receives. It is both an eye-opener and a pleasure to teach.

There is a fair amount of flexibility accorded to the professors in the course, but it must contain three team-based design projects and include some basic engineering skills. The specific approach I have developed covers three major engineering skills and the tools necessary to achieve them:

**Engineering Perspective:** Engineers have a very direct way of approaching problems, which includes sorting through the available data and deciding which facts are important and which are not.

**Communication:** An engineer who cannot communicate is worthless. No matter how brilliant the design, if it cannot be passed along in a way that cannot be misunderstood, it is worthless.

**Teamwork:** Engineers who succeed are assigned larger projects which require the teamwork of a number of professionals with varying skills packages. Any successful engineer must be able to work on a team.

It may not come as a surprise that many of today’s engineers could stand to review these skills!

Felicia Peng, Ph.D.

My graduate students and I are involved in trying to improve fine coal separation using the hinder settling separator to process coal. To process fine coal, spiral concentrators are commonly used but are limited to specific gravities of 1.8 or higher. We hope to lower this specific gravity limit. A mathematical model has been developed using computational fluid dynamics (CFD) to understand flow patterns and fluid mixing within the separator. Our research goals are to use this knowledge to further improve solid and water feed locations and to further understand density distributions in the hinder settling process.

This Fall we had an exciting presentation by Thomas J. Porterfield, P. E., Vice President of Operations for Farnham & Pfile Engineering and Construction Company, and his associates, about the 3-D digital design and simulation of coal preparation plants. Incorporation of 3-D flight simulation technology and GIS concepts in coal preparation plant design and simulation enables the plant engineers to have a 3-D view and actually “walk” through the plant before construction. Thus plant refinement may be done before construction begins. The software may also be used as a maintenance package. Subsequently the MiNE students and faculty took a plant tour of CONSOL’s 2000 TPH preparation pant at Moundsville, WV, which was built by Farnham & Pfile Engineering and Construction Company using their software.

A. Wahab Khair, Ph.D.

In the Fall I attended two international conferences. I presented two technical papers at the II International Conference on Mining Techniques, 2002, at the University of Mining and Metallurgy of Cracow, Poland, September 18–20, 2002. I also presented a paper to the International Society of Rock Mechanics (ISRM) at Euro Rock 2002, Maderia, Portugal, November 25–28, 2002. All three of these technical papers were associated with cutting tools and bits and drum design for continuous miners in order to reduce energy and dust generation during coal or rock cutting.

I have seen 55 countries and all 50 of the United States, but there are a few countries still on my list to visit. I like cultural diversity and enjoy meeting people and exploring their minds. As an adviser to the SME Student Chapter I continue to support their student activities and help them to achieve their professional goals.

Dr. Khair confers with Jim Laurita, an alumnus and very active supporter.
Keith Heasley, Ph.D., P.E.

One of my main areas of research is numerical modeling of the geo-mechanical behavior of mines. About ten years ago, as part of my doctoral work, I created a laminated boundary-element program, LAMODEL, which continues to be increasingly used within the coal industry to calculate mine pillar stresses, particularly for multiple-seam applications. This past summer, my graduate assistants, my colleagues and I further enhanced the LAMODEL program by adding the capability of automatically generating mine and topography grids for program input from AutoCad files of pillar plans and topographies. In one case study, these program enhancements have reduced the time required to create a working mine model from 20 hours to 3 hours.

This fall begins my second school year in the Mining Engineering Department here at WVU. It has been very exciting. I have been becoming greatly involved in the senior design class and in teaching various software programs (SurvCADD, ALPS, ARMP5, STOP, LAMODEL, FLAC, etc.) in other undergraduate and graduate classes. I feel that the contribution of my knowledge in these areas can provide the students with good practical class experience. On the home front, Kelly and I have been in our house in Bruceton Mills just about one year now. Last year it seemed that winter was very nice to us; however it is not even Christmas yet and already I have shoveled more snow than all last winter. There was one advantage to this snow. During the recent deer hunting season, the snow helped me to harvest two nice bucks (6 and 7 points, respectively) on the first day of both the WV and PA seasons (allowing me to regain some respect after I was shut-out in deer season last year by my wife 1-0.).

Dan Alexander

How time flies...I have been taking classes and teaching the Mine Design class for two years now. Its time to get after the dissertation part of the PhD program. Last year I learned to roll a whitewater kayak in moving water. I also learned that my 17 year old son Scott learns quicker and better. He can do it in class IV rapids while I am at class II. My 19 year old son James, who started college last year and expects to major in mechanical engineering, found out how many distractions exist on campus. I’m sure he will find the right balance. He bought his first car, suffered through repairs, body parts, and learned how to spray paint. All useful skills to know.

And that is the spirit of our mining students; they can do it, given a chance and a little instruction. By the time they graduate they have been tested in many areas of mining and shown that they are ready to learn in the greater mining community. One of the best parts of the program at WVU is the helpfulness of mining operators and engineers when asked to give a tour to students or discuss what real mining is actually like.

Each undergraduate student has different class and work experiences by the time they reach their senior year. However, when they have a mine design project to complete they must put it all together as a system. It is then that they realize how that job they did last summer contributed to meeting an organization’s objectives. We try to fill in the gaps with help from the mining community, one success at a time.

Yi Luo, Ph.D., P.E.

I was very busy performing my research and teaching duties in the past fall semester. In addition to teaching two courses, I have been conducting a research project entitled “Evaluation of Roof Bolting Requirements Based on In-Mine Roof Bolter Drilling,” funded by the Department of Energy’s Industry of Future – Mining Program. At this time, I and my colleagues are still field-testing and refining the methodology for estimating roof rock strengths using data on drilling parameters acquired during roof bolting operations. The acquisition methods were developed by myself and Dr. Peng. This fall I also secured a three-year research project entitled “Engineering Control of Longwall Machine Noises,” funded by NIOSH. As a researcher, I have also conducted many subsidence-related projects for local coal mining companies and one power company in this past fall semester. I also earned my Professional Engineering registration in West Virginia.

By the way, we drove a long trip to Orlando, FL during this Christmas break. We visited all four of Disney’s parks as well as the Island of Adventures, Universal Studios and the Kennedy Space Center. Somehow we managed to pack all of that into the five and half days that we were in Orlando! The kids enjoyed everything, and I enjoyed some much-needed family time.

Dr. Luo in the classic photographer’s dilemma: I can take yours, but don’t you take mine!
**International Student Enjoys Challenge**

Coming to the United States in August 2001 was very exciting, and the airport checks were easy and smooth (at least by Federal Law in my country, then). I can remember vividly the first time I was exposed to major computer network design and they had not really been there to integration. After the year was confirm their obscure image of the pillar stability factor of the modeled section.

Aside from the rigors of academics, I have really enjoyed the various extra curricular activities arranged by the grad students and sometimes by our Professors. In the Fall 2002 semester, I was really privileged to see for the first time a longwall operation when we visited CON-SOL’s Blacksville No. 2 mine. When we are not out visiting different mines all around the country, I take QUALITY time out with my wife or I attend departmental organized picnics and cook outs where I’ve had the opportunity of meeting the family.

I am a graduate student where I worked before coming to West Virginia. I was raised in a fast city-like environment with a sternly disciplined graduate students enrolled in the academic as a father and an education acquisitive mother (who presently the graduate student has also just finished another body consists of students from degree in a new field of study). I China, Egypt, India, Nigeria, was raised speaking both English Pakistan, Ukraine and the US. and my native language (Yoruba) From my experience so far, I can and I was exposed to different say that the department is living countries while growing up. That up to its recognized tradition of explains why most of my professors think my spoken English is for the coal industry all over the very good.

I got my Bachelors degree in Mining Engineering mining engineering is in rock from Federal University of Tech- mechanics, specifically numerical modeling of rock mass behavior under different underground conditions. My present research is the development of a two dimensional (2D) boundary-element computer program (LAM 2D), using the displacement discontinuity (DD) method to analyze displacement and stress associated with the extraction of single or multiple tabular deposits. This program also estimates numerically the pillar stability factor of the modeled section.

**Student SME: A Valuable Way to Learn**

The SME maintains student chapters that are a major aid in helping students to develop their skills and understanding of the industry. I think (but I’m not sure) that every university that has a mining program has its own student chapter. Since students plan and arrange their own activities, they even develop some management skills.

For example, last year we made trips to the Greenbrier Center and Washington, PA, (for regional SME meetings), the Century mine for a tour, Charleston WV (for an SME/WV Coal meeting), and to the national SME meeting in Phoenix AZ, Pittsburgh PA, Washington D.C. This doesn’t include many shorter trips we made to visit mines, manufacturing facilities, and items of interest. All of these meetings we go to not only help us understand the mining industry but also help us to meet and talk to working professionals and leaders in the industry. Since the people in the mining industry are a very close-knit group it is very easy to meet most of them at these meetings.

When our society goes to these places we always try to show WVU and the Mining Department in a positive way; we are proud of our department. In addition to many other trips, we hope in particular to demonstrate that pride at the next Annual SME Meeting in Cincinnati where, this year, we will have a booth.

In addition to making trips to see things and meet people, we also arrange to have people come to our monthly meetings to speak to us about various relevant topics: shaft drilling, environmental concerns, project management equipment design— in fact, almost any mining topic. Of course, we also use these meetings to plan and make arrangements for our activities.

All in all the SME is an excellent way for the students to gain social contacts and industry skills before graduation.

The student chapter has had outstanding support from its student advisor, Dr. Khair, and its industry advisor, Bill Maloney, Managing Director of Shaft Drillers International.

Kris Lilly  
2002—2003 President  
SME Student Chapter  
WVU Department of  
Mining

Students and Faculty on a field trip to a Long-Airdox manufacturing facility.
Gerald Finfinger: Leading but still studying

In the fall of 1998 I returned to school. At 47 years of age with an undergraduate degree in Geology from California State College, an MBA from Katz Business School at the University of Pittsburgh, a full-time position with The National Institute for Occupational Safety and Health as a Research Supervisor, a wife and a nineteen-year-old daughter, I certainly did not need to go back to school. I was not desperate for a better career nor looking for a way to fulfill my life. I was, however, looking to complete a life-long dream of earning a PhD.

My thesis became a very detailed and involved piece of research. "The Use of Drilling Parameters for Identifying Geologic Characteristics of Roof Rocks" which became a major theme in my life.

My daughter and I began school within a year of each other. She began her freshman year at the University of Pittsburgh in 1997. She was about to learn "something about everything" as I sat down to attempt to learn "everything about something".

I continued to have responsibilities at NIOSH while I attended classes at WVU. I had taken on the roles of Acting Deputy Director and Acting Director while the Research Center transitioned from The U. S. Bureau of Mines to NIOSH in 1997. I continued to travel, but now for work and research both.

Since my family and I live in Pittsburgh, Pennsylvania, I was commuting the two-hour drive to Morgantown two times a week for classes. Eventually, my trips to campus were fewer and fewer as I completed my coursework, but I stay connected to the department via phone and e-mail.

With both work and research demanding my time, something had to give. Sadly, that included golf and family time. Now, in the later phases of my writing, family time has returned.

In 2000 my wife, Diane, met with my adviser, Dr. Syd Peng and his wife Felecia Peng at the Mine Expo in Las Vegas, her first meeting with them. We had a great time. It was one of the rare times that I got a chance to combine my personal life with my academic life. It was also probably the only time my wife heard the term "roof bolt" uttered by someone outside of our home.

Once the classes had been completed and the research had been done, I still needed to do a great deal of revision. My advisors gave tips, added insight, and assisted in the final draft of my thesis. Once again I found a way to combine my family life with academics: My daughter, the one who finds no use for terms such as "stress fields" and "lithologic interfaces" studied English at Pitt and was therefore a great asset to me when I had a question about how or when to use a semi-colon.

After I complete my PhD, my family will be as thrilled as I. Life will return to a slower pace. But chances are I won't stand still for long, because as, Norman Mailer once said, "I don't want to retire. I'm not that good at cross-word puzzles."

David Eyer Helps Department Prepare for ABET

Preparing our department for the upcoming ABET inspection (Accreditation Board for Engineering Technology) has been a major task for the Mining Engineering Department. This time it’s different; there are a host of more complicated rules and more criteria to meet.

Dave Eyer, formerly with CONSOL, has been active with ABET and has agreed to assist us in our preparations. In this most difficult task, Mr. Eyer is giving us the benefit of his experience with ABET, his participation in inspection activities, and his training in the most recent set of ABET guidelines. In fact, he served on the Education Assessment Committee which promulgated these rules. He is providing this service at his own expense and out of his own time. He is an alumnus of ours (MSEM, ’68) and enjoys helping his old school. And we appreciate the helping hand.

WVU Mining Students Continue to Capture Awards

Kris Lilly being congratulated by A. W. Khair and K. Wu, on receiving his $500 scholarship from the SME (See preceding page for a note from Kris about the student

Ryan Murray receives his SME Mine Design award from S. Peng and J. Murphy; he also won the design award from Carlson Software, makers of SurvCADD.

Nancy Dorset receives the 2002-3 Henry DeWitt Scholarship from Dr. Barbara Arnold, herself a previous winner of this scholarship.

A Sobering Reminder to All

Dave Eyer was recently privileged to visit the site of the memorial for the Westray Mine disaster, which cost 26 men their lives. We have used this disaster in our ventilation course as an example for students to see the potential for such a disaster when professionals do not live up to their responsibilities. All concerned groups—owners, managers, inspectors, workers—failed to execute their responsibilities. In accordance with ABET recommendations, this portion of the ventilation class is going to be expanded to include a full examination of engineering ethics and professionalism. As engineers, let us never forget the responsibility to have to ensure the safety of others.
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Lloyd M. English, Ph.D., PE, Editor

**Greetings from the Chair**

**Dear Alumni and Friends:**

In Fall 2002, the Faculty spent a lot of time in preparing for the Fall 2003 ABET (Accreditation Board for Engineering and Technology) visit for accreditation renewal. In particular the Faculty jointly developed an assessment plan, collected and analyzed the student feedback data, and finally designed changes for improvements as indicated. We have asked David Eyer (MSEM, 68) who, representing SME and served on ABET's EAC has been very active in ABET accreditation visit in the past few years to perform a mock visit in February, 2003. David has graciously agreed to volunteer his service.

This Fall we had two William N. Poundstone lectures. The first one was given by Robert E. Murray, President and CEO of Murray Energy Co. The second one was given by Richard Whiting (BSEM 76), Executive Vice President of Sales, Marketing and Trading, Peabody Energy in conjunction with the Distinguished Engineering of Mines Award. The additional Poundstone lecture was established for non-WVU BSEM graduates because of the number of people who did not realize that their nominees for the Distinguished Engineering of Mines Award were not WVU graduates. The Distinguished Engineer of Mines Award itself is restricted to alumni.

We have a very active Department Visiting Committee, currently under the capable leadership of John Murphy, former director of USBM's Pittsburgh Research Center. The Committee meets with us once every semester. They recommend and assist in the improvements of department affairs, including student and faculty recruiting, ABET assessment, Poundstone lectures, and Distinguished Engineering of Mines Awards, and more.

The Mineral Resources Alumni Chapter (MRAC) held its annual banquet on September 20, 2002. Under the leadership of President Jim Laurita (BSEM 82), the banquet included a 1982 class reunion. It was a rousing success — we had a large turnout of MinE alumni - altogether there were 19 BSEM and BSMinE graduates.

We are doing very well with our graduate program - student enrollment and research funding are among the largest in the nation. In particular our faculty received three new grants this semester with a total annual funding of approximately $440,000 from NIOSH as a result of national competition. The total number of grants awarded in this round of competition was seven.

Finally, we are proud to tell you that Ryan Murray’s (BSMinE 02) senior mine design project report won the First place awards for, not one, but two different design project competitions, one from the SME and the other from Carlson Software (producers of SurvCADD).