



Black Diamonds

from the
Department of Mining Engineering
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MAJOR STORIES

- Boyd Named Distinguished Engineer
- Student Speaks Out on Scholarships
- Peng Receives Ramsey Medal
- Hallway to Honor Distinguished Alumni Nears Completion
- New Ventilation Analysis Method Presented

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Jim Boyd Most Recent Distinguished Engineer of Mines Also Inaugurates William N. Poundstone Distinguished Lecture Series

Jim Boyd is a favorite visitor among the students, and it is easy to see why. He listens to them and respects them. He helps sponsor student SME activities. And he is an example of what a mining engineer can accomplish. Mr. Boyd lived up to this reputation by aiming his lecture at the students and opening up the world of international mining ventures to them. Right now, what could be more fascinating than working on the world's largest mine, in one of the world's largest coal reserves, in a region untouched by development, and hundreds of miles from the nearest major population and manufacturing center? This is the world Mr. Boyd opened up to his audience in the first William N. Poundstone lecture. The faculty, staff, and distinguished visitors were no less enthralled by the presentation where numbers once un-imaginable to a serious mining engineer several short years ago kept popping up on the screen.

Mr. Boyd has made the John T. Boyd Company a well-known name in the world mining community.; there is not a major mining company in the world that is unfamiliar with the firm and its capabilities. His work has led Jim Boyd to become a registered Professional Engineer in numerous states. Mr. Boyd is also a director of Resultant Management Group, L.L.C., a business that provides proactive results for clients facing strategic, tactic, and economic challenges.

But Jim Boyd's story is not limited to his success at the helm of a mining consulting firm. He has always gone the extra mile when engaged in service to his profession. He not only supports student SME members, he sits on the West Virginia University Mining Department Advisory Committee, helping to ensure that the program meets the needs of new graduates. He has been President of the Society of Mining Engineers and lent his expertise to the number one professional organization in the country. He has even advised his caddy on the benefits of an education and enticed him to enroll as

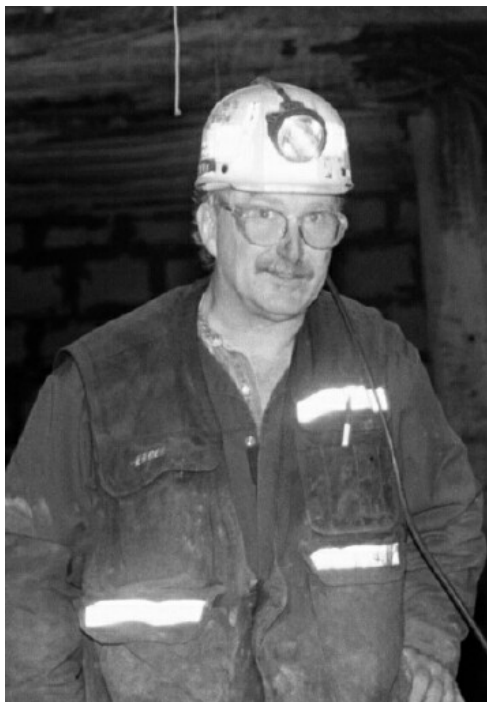


Jim Boyd responds to a question after presenting the first William N. Poundstone Lecture

a mining student in our department (where, incidentally, he received a scholarship; see article on page 3). Possibly the most important insight Mr. Boyd gave the students is the fact that the rest of the world's coal industry is growing at 35 times the United States' rate. This means that students will have almost unlimited opportunity in international work.

The John T. Boyd Company was established in 1943 in and has since grown to include offices in Pittsburgh, Pennsylvania; Denver, Colorado; Scottsdale, Arizona; London, England; and Brisbane, Australia.

Steve Tadolini Merges Road Warrior with Academics: Another non-traditional student that brings as much as he gets



Steve Tadolini, Mining Engineering Road Warrior and WVU Graduate Student

Returning to school after a 13-year hiatus has been both challenging and invigorating. Before it closed, I previously worked for the U.S. Bureau of Mines for 15 years as a Principal Investigator performing research in the areas of health and safety, primarily ground control. When I transferred out here from Colorado I started thinking about finishing my PhD in Mining Engineering, almost a prerequisite for teaching, research, and consulting job opportunities.. With my primary interests in underground mining, rock mechanics, and ground control, the chance to study under the direction of Professor Syd S. Peng was just too good to pass up.

Transferred “out here” means Cadiz, OH, the Corporate headquarters for Excel Mining Systems, Inc. where I currently serve as Vice President. Unfortunately Cadiz is about 120 miles away from campus! I am always questioned about the drive time but car-pooling with friends and class times in the late afternoon and evenings make it possible. The time spent in class is well worth it and those that examine case studies and practical solutions are my favorites.

Working in class with the most talented technical students has given me insight into

my practical observations and hypotheses. It is always exciting when you can begin to understand the cause-and-effect relationships of complex underground opening behaviors. Hopefully, my observations and practical explanations of these behaviors can help my classmates understand the results of a complex 3-dimensional model or the behavior of longwall gate road pillars.

My research topic deals with the multifaceted issues of mining a longwall system into a room previously supported with bolts and cribs. While “full face” recoveries have been performed for more than 25 years, they have ranged in success from “record longwall move time” to “complete face collapse and disaster.” Hopefully, between the combination of 3-dimensional modeling techniques developed recently for tensioned bolting and the application of practical empirical relationships we can design recovery rooms where verbal assurances are not the extent of your risk analysis program. Field and computer laboratory work is well underway. I figure the 25,000 miles this will take to complete will be well worth it.

— Steve Tadolini

Dr. Peng Awarded Erskine Ramsey Medal

Calendar of Events Fall, 2002

- Sept 20** Mineral Resources Alumni Chapter (MRAC) Annual Banquet at Erickson Alumni Center
- Oct 17 -19** West Virginia Coal Mining Institute / SME / CAS Joint Annual Meeting at the Greenbrier
- Oct 24 -25** Pittsburgh Coal Mining Institute / SME- Pittsburgh Section Joint Annual Meeting
- Nov 14** William N. Poundstone Lecture and Distinguished Engineer of Mines Award
- Nov 15** Mineral Resources Visiting Committee

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

The Erskine Ramsey Award is one of the most prestigious awards that the coal industry can bestow upon an individual. This year they awarded it to Dr. Peng. The citation reads:

The Erskine Ramsey Medal "...is presented to Dr. Syd S. Peng for his accomplishments as an engineer, educator, researcher, and consultant to the mining profession, with particular emphasis on the advancement of ground control and longwall mining theory and practice."

Dr. Peng's contribution over a long career include three textbooks, 265 journal and proceedings papers and articles, and the establishment of the most respected ground control conference in the world, which will hold its 21st meeting this August.

Dr. Peng's other awards include the 1987 Rock Mechanic's Award, the 1988 Education Excellence Award from the Pittsburgh Coal Mining Institute of America, the 1992 Institution Overseas Award from the Institution of Mining and Metallurgical Engineers, the 1998 Howard N. Eavenson Award, and the 2001 Donald S. Kingery Award from the Pittsburgh Coal Mining Institute of

America. We expect that, as time goes on, this newsletter will be reporting yet more awards!



Syd and Felicia Peng with Dr. Syd S. Peng's Erskine Ramsey Medal

Recent Graduate Speaks Out About Scholarships

As a May 2001 graduate of West Virginia University's Department of Mining Engineering, I would like to extend my sincere gratitude and appreciation to all those who contributed scholarship funding for mining engineering students. The combined monetary contributions from individuals, industry representatives, professional organizations, and others have helped me to eliminate the common financial stresses often faced by college students. Without a financial burden and the associated pressures, I was able to focus a great deal of attention on academics. I successfully completed the mining engineering degree requirements in a three-year time span, and am

now enrolled as a student at the West Virginia University College of Law for the coming academic year.

Had it not been for all those who so generously contributed scholarship funding for mining engineering students, I would not have been able to obtain a degree in such a timely and academically successful manner. Thank you to all those who have financially supported the West Virginia University Department of Mining Engineering, as well as to those who will continue to support future students in their efforts to overcome academic and financial challenges. You do indeed make a difference.



Carrie Daugherty

2002 Ph.D. Graduate Presents New Ventilation Analysis Technique to CONSOL Company engineers learn new method for analyzing multiple fans

It is always a pleasure to find a knowledgeable audience to whom you may present your research. Khaled El-Negdy recently defended his PhD dissertation "Analyses of Complex Ventilation Networks in Multiple Fan Coal Mines" in the Mining Engineering Department. Then on May 9th he was invited to make another presentation of his work to engineers and programmers at Consol Energy's corporate office.

What started out as an hour long presentation became three hours plus lunch and a tour of CONSOL's graphical ventilation modeling software. Attending were from left to right, Larry Taylor, CONSOL Ventilation Engineer, also in the Mining MS degree program at WVU, Bobby Hall, Scientific Systems and Programing, Paul Gorder, Manager-Ventilation, Khaled (standing), and

Jürgen Brune, PhD, formerly involved in the development of ventilation modeling software for CONSOL and now Manager-Business Process Improvement. Not shown is Dan Alexander, retired from CONSOL and a doctoral student at WVU Mining.

Khaled explained his research to mathematically model the ventilation network of a multi-fan mine to predict all operating points. His model may be used to determine if physical changes in the mine or fan settings will force any of the fans into a stall condition. He validated the model on data from three mines. In general, his computer model was within 10% of the actual data, consistent with the accuracy of the original measurements.

The model could be developed to

allow ventilation engineers to study the effects on fans of barometric pressure changes due to weather systems, sudden changes in mine resistance from falls or stopping failures or even in the case of a mine fire. Jürgen was interested to know if the model could be used to predict the safest and most efficient fan shutdown sequence as a mine is temporarily or permanently sealed.

Khaled has already returned to the University of Suez in Egypt where he will join the faculty as an Assistant Professor. He hopes to be able to continue to work on applications for his model. He can be reached at kelnagdy@hotmail.com.

— Dan Alexander



Khaled El-Nadgy presents the results of his research on determining multiple operating points for multiple fan networks to CONSOL engineers

From the Faculty, Personally Speaking

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



The new hall display for recipients of the Distinguished Engineers of Mines display beside our department entrance.



Felicia taking time before the Syd and Felicia Peng Endowment Ceremony to advise a student.

Felicia Peng, Ph.D.

Prior to the 2002 SME Meeting the MinE faculty and graduate students took a field trip to Phelps Dodge Sierrita Mine. We had a most enjoyable tour of the surface mine, the seismic slope stability and ground movement stations, the heavy duty crushing and grinding equipment and the plants themselves. The Sierrita mine reserve is among the largest, with

low grade, hard ore. This was a very educational field trip for all of us.

At the SME meeting, I had three technical papers: Stability of foam and frother evaluation methodology; Evaluation of solvents for the frothers of copper-Molybdenite sulfide mineral flotation; and Dynamic medium stability and performance of dynamic cylindrical dense medium separator.

lecture. In this manner, future students, future honorees, and visitors will not see merely a wall of head shots, but see the work of our mining engineering alumni and the reason that they have been so honored.



The Distinguished Engineer of Mines Award.

In May, I joined MinE faculty and students for the first white water rafting in Cheat River. (Our newest faculty member, Keith Heasley, is a certified whitewater guide). One raft tilted over after hitting the rocks, and some undergraduates were suddenly in the swimming mode! The trip was a great out door exercise for fun, socializing, and adventure.

A. Wahab Khair, Ph.D.

Dr. A. Wahab Khair has been involved in the upgrade and updating of the structural testing facilities in the Rock Mechanics Laboratory. Approximately \$50,000 were allocated by the department for this purpose, which will be extensively used for undergraduate teaching and research. For the past 20 years Dr. Khair's major area of research has been the reduction of respirable dust generated by continu-

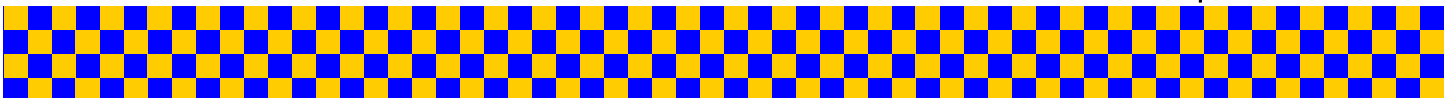
ous miners in underground coal mines. He has developed tools and concepts which reduce both respirable dust and energy consumption in the lab. His current objective is the optimization of the continuous miner's cutting head, where he is emphasizing the design of the bit and the geometry of the head. Preliminary results show that his design is 100% more efficient than the typical tool used in underground

coal and rock cutting. To achieve this, he uses the free-face concept – that is to say, he designs the tools to cut toward a free face, thereby reducing both dust and the energy required for cutting. He has built a laboratory model of this device.

Dr. Khair continues to serve as faculty advisor to the student SME chapter.



Dr. Khair and his wife Judy at the Awards Banquet..



Keith Heasley, Ph.D.

Designing pillars and support plans for multiple-seam mines continues to be a problem in West Virginia. High stresses from pillars in overlying mines or ground subsidence from underlying caved areas can greatly affect the stability conditions in the active mine. One of my research goals in the upcoming months is to develop a simple, easy-to-use program which can predict the stresses and strains in the active mine due to the adjacent mining. This program will clearly show the degradation in pillar safety factors and roof stability due to the multiple-seam influences. Armed with this information, mine design

engineers will be better able to modify pillar sizes and/or roof support capacities in order to mitigate the adverse effects of the multiple-seam mining.

On a personal note, I organized a rafting trip this spring on the Cheat River for the mining engineering department. On April 28th, twenty-two 22 students, graduate students, faculty and friends went to Albright W.V. and traveled 11 miles through the rapids of the Cheat canyon. Due to all of the recent rain, the river was pretty high, but the sun did come out while we were on the river. In general, the trip was pretty exciting

and a lot of fun even though a few of the undergraduates and Nancy had a hard time staying in the rafts (please note that none of the faculty fell out of the rafts). After the river trip, everyone came to our new home for a cook-out dinner and some relaxation. Based on the comments that I received, I



Keith Heasley and Syd Peng share a word and a bite at the student SME picnic.

believe that this will be an annual trip for the mining department.

The Whole Murray Clan Comes to the Awards Banquet

Awards banquets and graduation ceremonies have become a family affair for the Murray clan. All three of the Murray sons have now graduated from WVU, two of them from the Department of Mining Engineering. Ryan graduated this term, and also received the Old Timer's Award, the most prestigious student award for a mining engineer.

Mr. Murray has always been a dedicated supporter of our department and has demonstrated that faith directly by having his sons study here. He has always made his

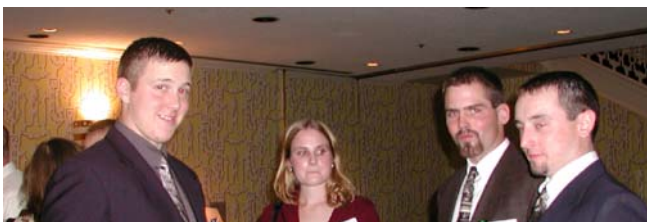
mining facilities available for our students giving them first-hand tours of the mines, of the preparation plants, and feeding them royally before they return to school. And he leads those tours himself! For a man with a schedule like his, that is a clear demonstration of how important he thinks communicating with students is. We are proud to have had his confidence.

One more thing: Notice the smile on Mr. Murray's face. This is an expression seen frequently at graduation ceremonies — it is not only pride, it means that the cash flow is now

going to go the other way!



From left-to-right: Dr. Khair, Robert Murray (BSEM '98), Brenda Murray, Ryan Murray (BSEM '02), Bob Murray, Jonathan Murray (Geology '00), and Drs. Felicia and Syd Peng.



Paul McGee, Carrie Daugherty, Justin Bushneck, and Brad Zimmerman

The Winning Team

West Virginia's students captured 2nd runner up in this year's SME student chapter competition. This is the first time since the early eighties that our students have placed in this competition. This year's officers, led by chapter president Paul

McGee, set winning a student chapter award as one of the goals for 2002 — and he and his team succeeded admirably. Officers not included in the photo include Daniel Curry, Michael Necessary, and Ryan Murray. Way to go, team!

Yi Luo, Ph.D.

As we went to press, Dr. Luo was on a well-earned vacation, visiting mainland China and showing his children their roots. Dr. Luo has been quite busy on a large number of projects for the department and for various other companies. We hope he has a refreshing visit to his home.



Yi Luo and his son at the student SME picnic.

Address change? Do you know someone else who would enjoy receiving our newsletter? Let us know!

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Alumni and Friends

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

Everything starts with mining!

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Greetings from the Chair

Dear Alumni and Friends:

For the academic year 2001-2002, the Department produced eight (8) BSMInE and one PhD graduates. Among the eight BS graduates, six went to work for coal companies in West Virginia and Ohio, one continued on to law school and one went into the stone quarry industry. The PhD graduate returned to his home country, Egypt, to teach at the University of Suez (see the related story on page 3). Contrary to the recent trends in most other mining engineering programs, the preferred career choice for our graduates is still in West Virginia coal, and we are proud to maintain that tradition!

In the Spring of 2002, there were 36 undergraduate and 29 graduate students enrolled in the program. Obviously the graduate program is very strong with excellent research funding. To increase undergraduate enrollment, we are still seeking assistance from alumni and friends for high school recruiting. For the 2001-2002 school year, we visited the following high schools: Chapmanville High (arranged by R. Baldwin, BSEM '82), Woodrow Wilson High (arranged by Randy Hansford, BSEM '78), Phillip-Barbour High and Buckhannon-Upshur High (arranged by Jeff Kelley, BSEM '81), both Bluefield High Schools (West Virginia and Virginia) and

the Mercer County VoTech Center (arranged by Marshall Miller), Logan High (arranged by Bill Wooten and R. Baldwin, BSEM '82) and Preston High. We will continue the program to promote coal and its importance not only to the state of West Virginia, but also the nation as a whole.

Jim Boyd (BSEM '68) was selected as the Spring 2002 Semester Distinguished Engineer of Mines. To honor Mr. Boyd and all other alumni named distinguished engineers we asked Professor English to design a permanent wall display in front of the Department office in the Mineral Resources Building. It is scheduled to go on display by the end of June 2002 (see related story on page 4).

The Spring Semester 2002 marked the beginning of the William N. Poundstone lecture series, and the first one was delivered by Jim Boyd as part of the Distinguished Engineer Award ceremony. It will be held regularly once every semester in conjunction with the Distinguished Engineer of Mines Award. Distinguished speakers in the coal industry will be selected for this honor every semester. The William N. Poundstone lecture is funded by an endowment donated by CONSOL Energy in honor of the distinguished William N. Poundstone (BSEM '49).



Dr. Peng sharing a friendly moment with Bob Murray at the Awards Banquet

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