

America; and countless caves, alcoves, and rock shelters that await the investigations of trained researchers. Add to those potentials all

the salvage and mitigation activity produced by the expansion of industry, housing, and transportation systems, and it seems archaeological

geology will be an active, vital area of research for a long time in the future.

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## GILBERT H. CADY AWARD presented to FRANK E. KOTTLOWSKI

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### Citation by GRETCHEN HOFFMAN

Frank Kottowski is best known for his years (1974–1991) as director of the New Mexico Bureau of Mines and state geologist, but the study of coal has been a part of his professional pursuits for over 40 years. Frank's work in coal began with a cooperative project between the Indiana Geological Survey and the U.S. Geological Survey, mapping the coal deposits in the Dugger quadrangle. Frank's dissertation at Indiana University, entitled "The Geology and Coal Deposits of the Coal City and Switz City Quadrangles, Southwest Indiana" continued his work on Indiana coals. This study, guided by Eugene Callaghan, then at the Indiana Geological Survey, included detailed geologic mapping and coal resource evaluation. These three quadrangles were later published by the U.S. Geological Survey in the Coal Investigations map series.

After receiving his Ph.D. in 1951, Frank accepted a job as economic geologist at the New Mexico Bureau of Mines and Mineral Resources, working for Dr. Callaghan, who had become director of the bureau. Frank probably thought he would never work in coal again, given the dismal state of the New Mexico coal industry in the 1950s. However, by the late 1960s the state's coal industry was improving with the advent of large-scale surface mining, and Frank was one of the few professional geologists in New Mexico whose background was in coal. Frank, along with Ed Beaumont, saw the need for New Mexico coal studies, particularly in the San Juan Basin. Several major coal investigations were organized and directed by Frank, first as acting director and then director of the New Mexico Bureau of Mines. These studies, often in cooperation with the U.S. Geological Survey, included coal mapping and coal resource and quality evaluations. A primary reference came from the first study "Strippable Low-Sulfur Coal Resources of the San Juan Basin in New Mexico and Colorado." This is one of the 40+ coal publications by Frank and co-authors that is indicative of the contribution he has made to the field of coal geology.

Frank has actively promoted coal development in New Mexico by serving on many committees, including the Four Corners Regional Commission Advisory Committee on Minerals and Fuels, as a mining representative on the

New Mexico State Land Commission Advisory Council, and as chair of the New Mexico Coal Surface Mining Commission. As an adjunct professor at New Mexico Tech, he supervised many coal-related theses and dissertations. For his active role in many professional organizations, Frank has received Distinguished Service Awards from the GSA Coal Division, the AAPG at large, and the AAPG Energy and Minerals Division. Frank is a GSA Fellow, and an honorary member of AAPG and the New Mexico Geological Society.

Frank has certainly made significant contributions to coal geology in New Mexico, through his research and as an administrator. He has encouraged many others in their work in this field, both as a mentor and as a friend. His many contributions to the mineral's industry and to professional organizations reflect a dedication Frank has for all aspects of our profession. No one is more deserving of the Coal Division's Cady Award than Frank E. Kottowski.

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### Response by FRANK E. KOTTLOWSKI

Thank you, Gretchen, for your kind citation. I am most grateful to the Coal Geology Division of the Geological Society of America for this utmost recognition that a coal geologist can receive, the Gilbert H. Cady Award. The award panel, chair John Calder, Gretchen Hoffman, Steve Greb, Robert Gastaldo, Jim Staub, and Brenda Pierce, had many worthy candidates; I am honored to be their choice.

Although I was not fortunate enough to be closely associated with Dr. Cady, to me he was a legend comparable to the stratigrapher William Smith of British geology fame. However, I have enjoyed association with Dr. Cady's coworkers and professional offspring, many of whom have received the Cady Award: Jim Schopf, Jack Simon, Aureal Cross, Bill Spackman, our recently departed dear friend Bob Kosanke, and Hal Gluskoter.



Particularly applicable to me is the thought that we stand on the shoulders of our mentors, are uplifted linking arms with our coworkers, and are sustained by our spouse and family.

Mentors? Many. At Butler University, Indianapolis, I had three years of business administration as an accounting major. During a 39 month interlude for WWII, serving as aerial navigator and photographic interpreter in Eighth Air Force, I enjoyed a few weekend passes looking at Great Britain's geology with a geologist buddy. Then in my seventh accounting semester, Charles Deiss, chairman of Indiana University's geology department (geology was an elective course), convinced me that knocking on rocks in the sunshine was more intriguing than sitting at a desk calculating taxes. Eugene (Pat) Callaghan, economic geology professor at IU, along with Paul Dean Procter, my dissertation chairman, guided my graduate research. Charlie Wier, outstanding coal geologist, head of Indiana Geological Survey's Coal Section, oversaw my coal projects, beginning a lifelong friendship. Joe Guennel, IGS paleobotanist, provided technical and morale support, as well as acquaintanceship with Bob Kosanke. Under a cooperative program of IGS with USGS, I reported on the coal geology of three 7-1/2 minute quadrangles, all published as USGS Coal Investigation reports. One of the USGS reviewers was Edward Beaumont.

Pat Callaghan became director of the New Mexico Bureau of Mines and Mineral Resources in 1949. He hired me as an economic geologist in 1951; he had broad shoulders on which to lean.

The early 1950s were dull years for coal mining and coal geology in New Mexico, because of the dieselization of the previously coal-fired transcontinental railroads, which utilize the southern, winter-warm routes in New Mexico. As Gretchen noted, the coal industry picked up in the late 1960s owing to the opening of large-scale strip mines to feed mine-mouth generating plants. Our low-sulfur Cretaceous coals became more important in the 1970s with EPA restrictions on sulfur. We were at the right place during the right time to have cooperative projects with USGS, EPA, and the New Mexico Research and Development Institute. These encompassed geologic mapping and coal resources and quality evaluations for northwest and west-central New Mexico. I was mainly the organizer. The detailed work was done mostly by Ed Beaumont, New Mexico's Mr. Coal, with his coworker John Shomaker, and our NMBM&MR staff members Dave Tabet, now with the Utah Geological Survey, Gretchen, who is now our senior coal geologist, Orin Anderson, senior field geologist, Steve Hook, now with Texaco, Frank Campbell (1947–1988), Art Cohen, then with Los Alamos

National Laboratory, and many others. We benefitted from the cooperation of USGS geologists Ed Landis, Bill Cobban, Jim Fassett, Chuck Pillmore, and many others. Recent support of our coal projects has come from our director, Charles Chapin.

In the early 1970s, New Mexico passed a coal surface-mining reclamation act, which was blended with the federal law and regulations in 1978. Almost from the beginning, I represented coal geology on the New Mexico Coal Surface-Mining Commission. It was crucial to have the realities of geology (in a semiarid state) interspersed with considerations of engineering, hydrology, and revegetation. The results have been significant, thanks also to efforts of Don Wolberg and Aureal Cross in paleontological resources conflicts. Service on the New Mexico commission led to service on coal reclamation issue committees of the National Academy of Sciences, including chairing several, and close working friendships with Don Haney, Charles Mankin, Bill Fisher, John Rold, and many others.

Some of the most pleasant and informative times have been with the Coal Geology division of GSA in technical sessions and field

conferences. I chaired the division 27 years ago—what a difference today, especially the technical papers. The field trips were—and are—legendary. Where could one better experience coal geology than in Indiana, Kentucky, Illinois, West Virginia, Utah, Colorado, Wyoming, Oklahoma, Texas, Washington, Pennsylvania, and of course, New Mexico (led by Ed Beaumont and John Shomaker). Trips also included the Everglades (twice) and the Okefenokee Swamp. Most enjoyable was the 1968 trip to the Sabinas coal basin in northeast Mexico, led by our Mexican amigos and USGS's Chuck Pillmore and Bion Kent. The Mexico City 1968 GSA meeting featured a Coal Geology Division symposium in English and Spanish, which led to GSA Special Paper 179, *Coal Resources of the Americas*, published after a ten-year struggle with Spanish and Portuguese articles, ramrodded with Aureal Cross and Art Meyerhoff.

Working on division committees with the geologists already mentioned, as well as loquacious Sam Friedman, Russ Dutcher, Peter Hacquabard, John Crelling, Bob Finkelman, Gary Glass, Hermann Pfefferkom, Jeremy Platt, Gilbert Smith, and Larry Woodfork, and those

of you of the younger generation too numerous to be named individually, has been a highlight of my professional and personal experiences. Hopefully, by the caliber of my friends I should be judged.

I thank my mentors at Indiana University, Indiana Geological Survey, and New Mexico Bureau of Mines and Mineral Resources, and my hard-working, honest, caring Hoosier mother and father. Nothing could have been done without the love, support, and understanding of my wife of 51 years, Florence, and my family: daughters Karen Harvey, Janet Wallace, and Dianna Schoderbek, husbands Albert Harvey (solid-state physicist for Tiokol) and David Schoderbek (geophysicist-geologist for Burlington Resources, Farmington, New Mexico—coal gas exploration!), grandchildren Adam (with wife Angie) and Benjamin Harvey, Zachariah Wallace, and Donald and Florence Schoderbek, and great-grandson Rick Harvey. As I gratefully accept this overwhelming Gilbert H. Cady Award, I do so in appreciation of my many coworkers, especially Ed Beaumont and Gretchen Hoffman, who should be co-recipients. Muchas gracias, thank you.

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## E. B. BURWELL, JR., AWARD

presented to

## GERARD SHUIRMAN and JAMES E. SLOSSON

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### Citation by

SCOTT F. BURNS

It gives me great pleasure to announce the winners of the 1996 E. B. Burwell, Jr., Award, given each year by the Engineering Geology Division of GSA to the publication that best advances the knowledge concerning the principles and practice of engineering geology. The selection of the award committee is *Forensic Engineering: Environmental Case Histories for Civil Engineers and Geologists*, Academic Press, 1992. The authors are Gerard Shuirman and James E. Slosson.

The authors have filled a void in the literature with an excellent book on forensic engineering geology. This topic has been covered many times in short course notes, but their book is one of the first that discusses the topic with detail and then uses case histories to illustrate how to do it. The authors define forensic engineering as "of or suitable for public debate." Geologists and civil engineers need to contribute scientific-based data and conclusions to help in this "public debate" by making scien-



Shuirman



Slosson

tific investigations of accidents, engineering failures, and disasters in order to discover their causes. Forensic engineering geology really deals with determining why something happened.

The authors mention that forensic engineering geology is a growth industry. Maybe the growth comes from the overabundance of lawyers, the scarce-land syndrome, the decline in the immunity of public agencies, and/or the failure to strengthen outdated codes and enforce them. Getting involved in forensics

is not for everyone. The authors state that the geologist-civil engineer must be able to explain complex items simply, to have patience to educate the client's lawyer on the nuances of the case, and to remain cool while under attack by opposing attorneys. The book emphasizes the steps necessary to complete a forensic investigation, the important court procedures, the needs of the expert witness, the relationship of the client to the attorney, and the challenges of the whole process.

The case histories include the natural and geologic hazards of floods, landslides, subsidence, erosion, and sediment deposition. Two of my favorites are the Malibu Big Rock Mesa slide and the Thistle slide in Utah. Each case-history summary includes sections on the investigation and analysis, the case preparation, the litigation phases where the investigator presents the data to prove causation, and the postmortem. The last step is so important. The authors discuss how the failure could have been prevented and what was learned for future planning, design, and public policy. Throughout the case histories the authors stress the importance of integrity and honesty and the responsibility to the court.

Gerry Shuirman was born in 1922 in Minnesota but grew up in Michigan. He received his B.S. degree in civil engineering in 1944 from the University of Michigan. He then became a member of the Navy civil engineering corps, the Seabees, and served for two years in the South Pacific. After the war he returned to Michigan to complete his MBA. He then moved to California, where he practiced civil engineering for ten years for the highway department and different consulting firms. In 1957 he became the presi-