

**CONTRIBUTIONS OF
ALAN JAMES HARGRAVES**

BY BOB KININMONTH

**AND
PERSONAL TRIBUTES**

CONTRIBUTIONS OF ALAN JAMES HARGRAVES

Bob Kininmonth

Retired Senior Inspector of Coal Mines, Wollongong

Alan James Hargraves is rightly regarded as a pioneer in the development of systems to understand the occurrence of gas in coal measures and control outbursts of coal and gas in Australian coal mines. His many colleagues throughout the mining industry have followed his achievements. This colloquium gives the opportunity to formally record the recognition which his work deserves.

Alan was born in Melbourne on 5/10/1919. He attended Melbourne High School with which he still has close associations. He was granted a scholarship to the University of Melbourne where he gained a Bachelor of Engineering Science and a Bachelor of Mining Engineering.

Between 1937 and 1941 he gained practical mining experience at Captains Flat in NSW, at MT Lyell in Tasmania and at Woods Point in Victoria where he was working at the time of the devastating bushfires of 1939.

In 1941 Alan became assistant to the Mine Manager at Aberfoyle Tin NL a position which he held until 1947 when he became the Engineer-in-Charge of Exploration for the Zinc Corporation Ltd. In this position he was involved in assessing deposits in Tasmania and South Australia. It was during these periods that he became interested in mineral specimens and gemstones, an interest which he still retains.

In 1950 he took the position of Assistant Tunnelling Superintendent with the SEC of Victoria which involved him in work on the Kiewa Project and the Yallourn Power Station. Between 1951 and 1953 he returned to Tasmania as the Tunnelling Engineer with the Hydro Electric Commission. It was his appointment in 1953 as Senior Lecturer in the Department of Mining Engineering at the University of Sydney which brought him into close contact with the coal mining industry and led to his pioneering work in the understanding of gas emissions and outbursts.

The fatal outbursts at Metropolitan and Collinsville in 1954 indicated a need to concentrate on reducing the risk of outbursts in areas of high carbon dioxide in the seam gas. Alan's work at those two collieries involving large hole drainage and inducer shotfiring together with the introduction of the emission testing device, the isobaric desorbometer, improved the control of mining conditions. He used this work as the basis for gaining a PhD degree at Sydney University.

As mining was carried out under deeper cover and particularly away from the South Coast escarpment it became apparent that outbursts were liable to occur in areas of high methane content. The Management Plans now in place to control and prevent outbursts are a development from an understanding of the phenomena which has followed the experimental work of Alan Hargraves and later workers in the field including Les Lunarzewski and Ripu Lama.

Apart from his work on gas and outbursts Alan also has Mine Managers Certificates Metalliferous for NSW and Victoria and he has been a prolific writer of technical papers mainly on gas or gas and stress affecting coal mining. The majority of his 76 papers are sole author but he is associated in 24 co-author papers.

His international reputation in the field of gas drainage and outbursts has resulted in his appointment to a number of local and overseas posts namely:

1966	Visiting Professor, West Virginia University, USA
1969-76	Honorary Associate, Department of Earth Sciences, Macquarie University
1977	Visiting Professor, University of Hokkaido, Japan
1978-97	Visiting Professor in Mining Engineering, University of Wollongong

The need for research facilities particularly in the field of strata control was recognized by the industry in the early 1960's and this resulted in the establishment of Australian Coal Industries Research Laboratories. BHP/AIS as a major producer with increasingly difficult and complex mining conditions decided to consolidate their in-house expertise and in 1968 Alan was appointed as Superintendent of Rock Mechanics and Strata Control based in Wollongong.

In that position he brought together a staff of specialists who were available to provide a service and a scientific approach to problem solving in the group. Alan's personal interest in his staff coupled with his challenge and encouragement to individuals to perform to the best of their ability, a characteristic which he brought with him from his University days, proved successful in building staff loyalty and professional competence. Many of his past students and work colleagues who have had successful careers in industry recognize and appreciate the influence which he has had on their careers.

In 1981, Alan was appointed as Principal Research Associate Steel Division Collieries, Broken Hill Proprietary Co Ltd, a position which he left in 1982 to take up a private consulting practice.

Throughout his working life Alan has maintained a close association with the Australasian Institute of Mining and Metallurgy which he joined as a student in 1937. He became a member in 1956 and a Fellow in 1994. He has seen service as Secretary of the Sydney Branch between 1958 and 1965, as Panel Leader of the Coal Panel of the Proceedings Committee between 1983 and 1994 and he was elected Councillor of the Institute for two periods 1966-69 and 1987-90.

Alan's work in the Illawarra as The AusIMM Branch Chairman, Secretary and Committee Member at various times and his enthusiasm and dedication to contributing, convening and editing various Symposia has been instrumental in making the Illawarra Branch so active and successful. His work in this area has been recognized by his election as an Honorary Branch Committee Member.

It is difficult to visualize Alan as being "retired" and in recent years he has made major contributions to the publications of the Institute by way of his editing with Con Martin of Monograph 12 Australasian Coal Mining Practice and his co-authorship of Monograph 21 History of Coal Mining in Australia.

We join in honouring him for his technical expertise and achievements and for his promotion of, and dedication to, the organisation of educational conferences, symposia and colloquia similar to the one we are now attending.

PERSONAL TRIBUTES

- I have known and worked with Alan Hargraves for thirty years or so. Alan was prominent, in hands on way, with letting scientists, mining engineers and mine managers to work together to overcome major problems facing higher capacity systems of mechanized mining in the NSW Southern Coalfield and then Queensland Bowen Basin. Of particular importance was his pioneering work in the understanding and prevention of instantaneous outbursts of coal and gas, and other gas control measures. Alan's mostly direct and pragmatic approach and particularly his part in establishing and maintaining useful, longterm contact networks for frank technical exchange, both locally and worldwide has, in my opinion, been of great value to our underground coal industry.

Alan Fisher, Secretary, NSW Coal Mines Managers Association

- Even though I was only at BHP/AIS Rock Mechanical and Strata Control (RM & SC) for a relatively short period, the encouragement I received during my stay and the interest kindled has kept me around the area of coal mine geomechanics for most of my working life. My subsequent time at CSIRO has allowed me to remain engaged in the evolution of coal mining geomechanics in Australia. A lot of that effort has directly built on the initiatives I witnessed while I was at RM & SC, and those areas with which I was directly involved. My on-going association with Alan over the last thirty years has continued to influence me, both professionally and at a personal level. My best wishes are with him at this moment.

Jim Enever, Principle Scientist, CSIRO Petroleum

- Alan's passion for mining, his humble focus on making mining safer and his constant focus and drive, urge us all to 'pass the baton' onto a new generation. If we accept that baton it will ensure that safe mining conditions are an eminent focus in all of our professional lives. I trust that we will continue with Alan's pursuit of technical and safety education.

Rod Doyle, Anglo Coal

- Alan's personal interest in his staff coupled with his challenge and encouragement to individuals to perform to the best of their ability, a characteristic which he brought with him from his University days, proved successful in building staff loyalty and professional competence. Many of his past students and work colleagues who have had successful careers in industry recognize and appreciate the influence which he has had on their careers.

Bob Kininmonth, Retired Senior Inspector of Coal Mines



Photo 1 Alan and Con Martin at Illawarra Rock Bolting Symposium 1971



Photo 2 Alan and SEC engineer during the tunneling of power station cooling water conduits in a soft ground adjoining Yallourn Open Cut



Photo 3 Alan and other investigators of Collinsville Outburst 1954



Photo 4 Alan and friends on a *Cockatoo* train trip organised by Illawarra Branch of The AusIMM



Photo 5 Alan on his way to look for gold 1994



Photo 6 Alan and Illawarra Branch Members (Bob Kininmonth and Alison Ogden) at Oberon looking for gold 1994



Photo 7 Alan and The AusIMM Mineral Heritage looking for gold at Oberon 1996