

A history of the Standing Committee on Coalfield Geology of NSW and its successor, the Coalfield Geology Council of NSW

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We are travelling in the footsteps of those who've gone before (Trad "When the saints go marching in")

ARCHAIC

The writing of a history of the Standing Committee on Coalfield Geology of New South Wales and its successor, the Coalfield Geology Council of New South Wales was first raised in September 1997 and progress was, for some time, very slow. It was not until June 2000, when details of publishing options were discussed, that the work began to acquire some momentum and the approach of the 40th anniversary of the committee/council was seen as a realistic target to aim for.

The story is almost the history of the phrase *coal geology* in New South Wales. It is a story of determined scientific and technical development and a story of comradeship that exists in few professions other than geology. Geologists are truly the salt of the earth and I am indebted to the following people who helped me during the writing of this work.

Mike Armstrong (DMR)	Julie Moloney (DMR)
Kim Bayly (DMR)	Imelda Mosher
Cathy Brown (AGSO)	Tony Osman
John Cramsie (DMR)	Michelle Smyth
Michael Creech (Powercoal)	Brian Vitnell
Rod Doyle (Dartbrook Coal)	Colin Ward (UNSW)
Bruce Kirby (DMR)	Ken Wood
Cliff McElroy	Sharon Zwi (USyd).

I hope I have all the facts right but if not, then I alone am responsible for the errors. I have not avoided drawing my own conclusions in places and it must be realised that not all members of the committee/council, whether past or present, will agree with me.

This is a story that could be sub-titled *Things ain't what they seem to be*. In common usage, seam implies a join or a boundary but no geologist who has spent any time working in a coal mine can be other than indoctrinated with the concept of coal seam as a bed of material with a significant thickness. This is understandable — you literally work **in it**. You also know that when coal can be seen in outcrop or in a bore core, someone is likely to ask, "Can it be mined?" Coal is a rock that is always a potential commodity. That mining terminology should collide with stratigraphy is not surprising. This story starts with such a collision.

NEOPROTEROZOIC (PRE OCTOBER 1961)

Is a coal seam more than it seems to be? By early 1961 the geologists of the Geological Survey of New South Wales thought so. Why couldn't a coal seam be a recognised stratigraphic unit? *Seam*, as applied to a stratum of coal, is at least as old as the first half of the 18th century and was universal as a coal mining term in New South Wales in the 19th century. For some stratigraphers, however, *seam* in particular and coal terminology in general were a problem — seam names were thought to be so entrenched in the mining industry that it was considered unrealistic to subject coal seam naming to the Australian Code of Stratigraphic Nomenclature. The 3rd edition of the code (1959) noted that "rules should not be laid down for coal seam nomenclature" (Prefatory d) and "It is considered inadvisable to lay down rules for coal seam nomenclature" (Clause 32). The Code did allow that "The term 'Coal Measures' may be used, where appropriate, instead of 'Group' or 'Sub-Group'" (Clause 16).

For administrative purposes, the Geological Society of Australia's *Code of Stratigraphic Nomenclature* was "owned" by the Bureau of Mineral Resources, Geology and Geophysics (BMR) in Canberra. The BMR's position on coal terminology reflected an attitude that was, and still is, part of the nature of science itself — "pure" science differs from "applied" science. That the BMR had taken a stand on the use of coal seam names in formal stratigraphy is not surprising — coal seam names were applied inconsistently, both locally and regionally, and the problem was to get worse with the development of the black coal export industry and the emergence of seam names as "brand" names.

The correspondence between the Stratigraphic Nomenclature Committee (of the Geological Society of Australia(GSA)) and the Geological Survey of NSW during 1961, on the matter of coal seam terminology, has not been located but it is probable that there was some friction between the two groups. As became apparent some years later, the friction was largely due to a certain narrowness of view on both sides. Why did the BMR

not see that *coal* is a perfectly good lithological name and hence, unremarkable as part of the formal name for a formation or member? Why did the Geological Survey not see that *seam* is a mining term and too imprecise to be used formally?

Cliff McElroy, Senior Geologist in the Geological Survey of NSW, was secretary of the NSW branch of the Stratigraphic Nomenclature Committee of the Geological Society of Australia in 1961 and “was frustrated at that committee’s inability to handle coal problems” (McElroy, 1998). As discussed later in this history, the “problems” were essentially twofold — the perceived need by the Geological Survey to use *seam* as a formal term and a reluctance to change the names of many coal measure units when the long-established names were invalid under the Australian Code of Stratigraphic Nomenclature. McElroy discussed the matter with Joe Whiting (Geological Survey of NSW) and Ken Mosher (Joint Coal Board) and all agreed that the NSW Department of Mines should establish a “Standing Committee on Coal (or Coal Seam) Nomenclature”.

During the first half of 1961, McElroy prepared a submission to this effect and it was forwarded to Fred Booker (NSW Government Geologist) above the signatures of McElroy and Whiting. Booker took the matter to heart, “pushed it along” (McElroy, 1998) and put a submission to C. St J. Mulholland, Under Secretary for Mines. Mulholland responded on 31 July 1961, writing to The Secretary, Joint Coal Board and advising that it was “proposed to establish a Standing Committee on Nomenclature of NSW Coal Measures” (Mulholland, 1961). Reference was made to the fact that the “Geological Society of Australia Sub-committee on Stratigraphic Nomenclature specifically excludes from consideration the nomenclature of coal seams”. The first meeting of the Standing Committee on Coalfield Geology of New South Wales took place at the Department of Mines on 6 October 1961.

EARLY PALAEOZOIC (OCTOBER 1961 TO OCTOBER 1968)

The first meeting of the committee was held at the Department of Mines offices in Goldsborough House, Loftus Street, near Circular Quay on Friday 6 October 1961. The building no longer stands, the site now being a small park.

Government Geologist Fred Booker formally opened the meeting and drew attention to “the long standing need for uniform treatment of coalfield problems in their many aspects” (Whiting, 1961). Those present were:

- Jeannette Adrian (Joint Coal Board),
- Allan Carter (representing GSA stratigraphic nomenclature sub-committee),
- Arthur Hams (NSW Combined Colliery Proprietors’ Association),
- Fred Loughnan (University of NSW),
- Cliff McElroy (Geological Survey of NSW),
- Peter McKenzie (BHP Ltd, Newcastle),
- Ken Mosher (Joint Coal Board),
- John Smith (NSW Department of Mines coal mines inspectorate),
- Jack Stuntz (Australian Oil and Gas Corp. Ltd),
- Dennis Tompkins (University of Sydney),
- Joe Whiting (Geological Survey of NSW), and
- Ron Wilson (Australian Iron and Steel Pty Ltd, Wollongong).

Joe Whiting was elected chairman, Cliff McElroy secretary and Jeannette Adrian assistant secretary, after which Fred Booker left the meeting saying that he did not wish to take a formal part in the committee’s activities due to “many commitments”. The formal name *Standing Committee on Coalfield Geology of NSW* was adopted and the difference between this name and the informal name used prior to the meeting *Standing Committee on Coal (seam) Nomenclature* shows that the participants were taking a broad view of the committee’s function from the beginning. Hereafter, the committee will be referred to by the abbreviation SCCG.

The aims of the SCCG were established as:

- bringing together detailed knowledge of the various coalfields,
- correlation studies of coal seams and coal measures generally with associated nomenclatural aspects, on both local & regional basis,
- standardisation of coal terms,
- methods of calculation and calculation of coal reserves,
- the appropriate distribution of the results of its activities, and
- a method of working adopted.

The working method to be “That the committee operate on the principle of sub-committees, generally of 2 to 4 members; the full committee having power to co-opt both to the full committee and the sub-committees; the sub-committees having power to co-opt to the sub-committees; all findings of the sub-committees to be ratified by the full committee before issue.”

Sixteen sub-committees were established and the needs to draft a set of rules and examine the boundaries of coal districts were raised. The minutes of the first meeting also contain an oblique reference to the friction between the GSA and Geological Survey of NSW, hypothesised in the previous section. There is mention of a GSA letter of 5 September 1961 and a minuted response of “no action taken”. Further support for the “friction” hypothesis is provided by the minutes of the second meeting of the SCCG which record that “no further action” be taken with respect to the SCCG/GSA relationship and a reference to “imperfections” in the Australian Code of Stratigraphic Nomenclature. The second meeting, held three weeks after the first, was at the offices of the Joint Coal Board (JCB) — a collection of vintage huts at the corner of Goulburn and Brisbane streets, and part of the site now occupied by the Sydney Police Centre. The business of the meeting

included an expansion of aim (c) above, to *exchange of ideas on geological techniques and terms employed in coalfield geology with a view to standardization* ¾ again, evidence that the SCCG was thinking of its role as being more than deliberating on coal nomenclature. This second meeting also saw a discussion of the use of geological terms compared to those used by mining engineers, and the adoption of rules and a schedule of quarterly meetings on the first Fridays of March, June, September and December, at 2pm.

Sub-committee work during the last quarter of 1961 was intense:

- rules were drawn-up,
- work began on a “Stratigraphical code for coalfield geology in NSW,
- a revised stratigraphy of the Newcastle Coal Measures was prepared by Dick Britten (JCB) and Peter McKenzie (BHP, Newcastle),
- a revised stratigraphy of the Greta Coal Measures in the Cessnock area was submitted by Kazys Kemezys (JCB),
- a proposed revision of the Tomago Coal Measures was submitted by Brian Robinson (JCB),
- suggested rules for calculating and reporting coal reserves in NSW (Ken Mosher and Ernie Wright, JCB) were foreshadowed, and
- co-operation between the SCCG and Standards Association of Australia (SAA) was with members of the SCCG serving on the SAA sub-committee preparing the draft of standard coal terms.

It is clear that this period of activity reflected the existence of a large amount of work that was already “in the pipeline” and waiting for the emergence of a body such as the SCCG. The prominence of the JCB in the SCCG’s workings is apparent at this early stage — a position that was to last for almost 30 years.

Within a year of its establishment, the SCCG had:

- ratified a stratigraphic code (referred to informally in early records as *nomenclature rules*),
- prepared a draft code for the calculation of coal reserves, and
- come to an agreement with SAA on a set of coal and petrographic terms.

The draft code for the calculation of coal reserves was a very tentative document indeed, with references to its being a “guide”, not a “binding specification” and particular attention paid to the idea of distances between outcrops and bore holes (the term *points of observation* had not yet been coined) being “desirable”, rather than mandatory. The reserves code was to be a long time coming — it was not formally presented for discussion until September 1967 and was not ratified until June 1968. At this time, the SCCG did however affirm that the scope of the SCCG referred to coal **field** geology, not coal **measure** geology.

The *nomenclature rules* were a continuing worry to the SCCG and there is evidence that the SCCG was loath to “go it alone”. The rules, as first circulated at the end of 1961, make it clear that the material was intended to

be supplementary to the Australian code. The three “difficulties” which such a supplementary code would address included:

- the retention of names for seams and coal measure units which did not comply with the Australian code,
- the avoidance of “unwieldy” classifications due to the variability of both coal and intervening sediments, and
- the need for “special provisions”, established by the detailed information of the sedimentary sequence within coal measures.

A copy of the SCCG rules was sent to the NSW branch of GSA in June 1962, asking that the rules be added to the Australian code as a supplement. There is no record of a response, but it is probable that the SCCG continued to hope for a change in the GSA’s approach to coal terms. Such a change never came and by 1964 the Australian Code of Stratigraphic Nomenclature included a reference to the work of the SCCG, but the Australian code was overtaken by the adoption of the international code (Hedberg, 1976) before any formal resolution could occur. Australia adopted the International Stratigraphic Guide *in toto* as a replacement for the 4th edition of the Australian code in 1978 (Staines, 1985), and the only mention of coal terminology is a note (Note 15, p 98) which records the Australian practice of accepting *Coal Measures* as a formal term and the informal nature of *seam*. Although the SCCG had difficulties with the Australian code it could not be said that the SCCG was unanimous in its own approach to nomenclature. As early as December 1962, two JCB geologists (Owen Shiels and Helena Basden) wrote to the SCCG, disagreeing with the view that the Australian code could not be applied to NSW coalfield terminology without modification. They wrote as individuals and they could not have been more direct — “the needs of the industry should not be allowed to intrude into formal stratigraphy to its detriment”.

The scope of the membership of the SCCG had to be considered in 1962, when two members changed jobs (Ken Mosher to Conzinc Rio Tinto and Cliff McElroy to University of NSW). The rules were changed to allow company membership additional to BHP, AIS and AOG, and Conzinc Rio Tinto and Clutha Ltd were admitted.

At the second general meeting of the SCCG in March 1963 Ken Mosher was elected chairman and the office bearers of the SCCG were referred to as “the executive” for the first time. The second general meeting also marked a turning point in that, on the subject of the *nomenclature rules*, a letter to the SCCG from Norm Fisher of the BMR was discussed and taken as sufficient reason for the SCCG to proceed with its own code of stratigraphic nomenclature for coal measure sequences. This meeting also seems to be the first occasion on which the matter of the word *seam* was discussed at length and the concept of *coal formation* suggested. This year also saw the establishment of the procedure for holding meetings in “the field”, ie outside Sydney. The first such meeting was at BHP, Newcastle

in May 1963. At this meeting the stratigraphies of the Tomago Coal Measures at East Maitland, the Singleton Coal Measures, and the Muswellbrook Coal Measures were ratified. Also, the concept of a stratigraphy of a Central Coalfield was raised (with some dissention) and the term *tuff* adopted as a valid term for the Newcastle Coal Measures.

After the first two years of almost explosive action, activity decreased somewhat — only 5 people attended the August 1963 meeting. The decision to include a “symposium” on a specific topic as part of each meeting was made, but it seems that the “symposium” on the South-western and Southern Coalfields, scheduled for the December 1963 meeting, did not occur. True symposiums on coalfield geology topics had to wait until the establishment of the coal geology specialist group of the GSA in 1978 but the idea of the SCCG meetings including a talk on a specific topic did survive and is now a feature of current meetings.

The SCCG acquired its own letterhead in December 1963 and, with regard to new work, 1964 proved to be a period of quiescence. Matters that were dealt with in this period include:

- further work with SAA on standard methods for sampling coal in situ and from bore cores,
- the adoption of the JCB’s new standard code for rock and coal symbols,
- a procedural change to allow conveners of sub-committees to be people other than the secretary and assistant secretary, and
- Coal and Allied Industries Limited was admitted as a member, with Brian Vitnell as representative.

Despite the March 1963 “go it alone” decision on stratigraphic nomenclature there was a continuing interaction between the SCCG and the GSA. On the subject of stratigraphic nomenclature, there are references during 1964 to “pursuing the matter” with GSA, “detailed consideration” of the GSA’s position and, with reference to the SCCG’s own position, the absence of “finality on several major principles”. By September 1964 the SCCG was hoping to have the impending 4th edition of the Australian Code of Stratigraphic Nomenclature include a “supplementary code” on coal nomenclature, ie the SCCG’s code. This did not occur but the GSA included a reference to the SCCG’s “Stratigraphic Code for Coalfield Geology in NSW” in the 4th edition of the Australian code (1964).

Work on coalfield geology included the ratification of the Cessnock-Greta stratigraphy (with *Seam* as a formal term) and the subdivision of the Illawarra Coal Measures into two sub-groups (Sydney and Cumberland). The impending GSA journal volume on the geology of NSW was noted and it was hoped that the work of the SCCG could be included in this volume. This did in fact happen, but in a hybrid way. The GSA volume (Packham, 1969) was not published until November 1969, by which time the SCCG had decided to use the formal terms *Formation* and *Member* for stratigraphic units and limit *seam* to informal use. With regard to the Permian of the Sydney Basin the GSA

volume is a mixture of formal and informal naming — groups and non coal measure formations comply with the Australian code but coal beds are *Seams*, regardless of whether the units are formations or member. Interestingly, work on the Illawarra Coal Measures in the Southern and South-western Coalfields at this time was the beginning of a trend to consolidation of stratigraphies that continues to the present day. During the early 1970s, Ron Wilson (AIS) occasionally joked that the Southern Coalfield, having “taken over” the South-western in 1970, had its sights on the Western Coalfield. What was said, originally in jest, soon came to pass and we now have a “one basin – one stratigraphy” approach to coalfield geology in NSW.

Major controversy arose at the end of 1964 — a proposal to modify the past three years’ approach to coal seam nomenclature. Helena Basden (JCB) pointed out that there was no reason why the GSA code could not be used for coal measure sequences, with the word *seam* used informally. Basden even went so far as to suggest that the term *Coal Measures* not be used. Her position was impeccable scientifically (she pointed out, as an example, that the formal Wallarah Formation could contain the informal Wallarah seam and that the Newcastle Coal Measures should be renamed the Newcastle Group) but it did not carry the day. The SCCG decided to drop the idea of a “supplementary code” and submitted Basden’s views to the GSA, perhaps hoping that it might take up the matter again. Interestingly, Basden did not advocate an abandonment of the principle of the SCCG having its own rules for coal measure nomenclature — she merely pointed out the compatibility of the Australian code with the SCCG approach. Reading her December 1964 “Guide for coalfield geologists” today makes one wonder what all the fuss was about. Basden’s proposals were rigorous, and with the exception of the group/coal measure issue, are in accordance with current practice.

The somewhat confused reaction to Basden’s proposals was well demonstrated over the next year — at the same time as Basden’s views were being submitted to the GSA, the Newcastle Coal Measures type sections were ratified with *Seam* used. Soon thereafter the SCCG resolved to adopt *Seam* as a formal term, retain the use of *Coal Measures* as in the Australian code, and ask the GSA to incorporate the use of *Seam* in the Australian code. Having so resolved, the SCCG then ratified the Basden-prepared “Guide for coalfield geologists”, ignoring the boldness of the remarks on the use of *seam*. During this time the organisational aspects of the SCCG were modified by allowing for alternative or substitute representatives, giving the chairman a deliberate and casting vote, and expanding the membership to “any other company representative who, in the opinion of the committee, is eligible for membership”. Technical aspects first raised during this period were the use of the term *laminite*, the establishment of an editorial sub-committee, the need for standardisation in lithological logging and the retention of core samples in a core library.

After the drama of the use of *seam*, matters were

peaceful during 1966 and 1967, with a great deal of attention to detail in many areas. Activities included:

- the name “American Creek Formation” in the Southern Coalfield was replaced by “Allans Creek Formation,
- a suggestion that duplication of geographic names be allowed was defeated,
- sedimentary terminology was tightened up with *grit* proscribed, *laminite* defined, shale/mudstone usage clarified, *tuff* revisited and the matter of *carbonaceous shale* raised,
- the universities of Macquarie, Newcastle and New England were invited to join the SCCG,
- a reserves code reached the stage of formal discussion with a view to ratification,
- it was observed (as a clear indicator of the maturity of the SCCG) that “many young workers were often closer to geological problems than some members of the committee, and hence it might be profitable to hear their views in sub-committee”,
- consideration of the depth and thickness limits for coal reserves (3000 feet and 3 feet, respectively were suggested),
- the possibility of duplication of formal stratigraphic names in the Newcastle – Singleton area when all of Australia was considered,
- uniformity of terminology in describing splitting properties of rocks was considered, and
- a formal definition of coal, based on SG (RD) and/or % of non-carbonaceous material given.

The SCCG had the sad task, in its March 1967 annual report, of noting the death of one of its founding members — Peter McKenzie (died October 1966).

The meeting of 7 June 1968 saw the presentation and ratification of the SCCG’s first code for calculating and reporting coal reserves. This was a major achievement and the rigour imposed by this code was to have a significant and beneficial effect on the quality of coal exploration during the “boom” years that followed. The SCCG can be truly proud of this code — it not only paved the way for an Australian code but it also had some influence on international practice by eschewing the logically absurd concept of “undiscovered” reserves and resources.

The minutes of this meeting also reveal a small surprise — the *seam* issue had not gone away. The final draft of the stratigraphy of the Southern Coalfield was being held up while the merits of using *seam* were being argued! The matter came to a head at the October (sic) meeting with voting on a motion on notice by Ken Wood and Ken Mosher. The motion “**That the term *seam* shall not be used in a formal stratigraphic sense for either formation or member, and that in accordance with the Australian Code of Stratigraphic Nomenclature, (Article 16, proposed 5th Edition) such terms as Bulli Coal and Balgownie Coal Member shall be applied, and further that any previous recommendations made by the Standing Committee to G.S.A. in this matter be rescinded and G.S.A. notified**

accordingly” was agreed to.

After 7 years the SCCG had come full circle. Perhaps it is no coincidence that the resolution of the *seam* issue came with the consideration of the Southern Coalfield — a formation such as the Wongawilli Coal, with its mine working section (the Wongawilli seam), is a fine example of how the formal and the informal can coexist.

LATE PALAEOZOIC (OCTOBER 1968 TO JUNE 1984)

The SCCG finalised the matter of the use of *seam* in December 1968 by accepting the stratigraphy of the Southern Coalfield and affirming that the decision on the use of *seam* applied to all coalfields.

Although it now occupied the high stratigraphic ground, the SCCG was under considerable stress organisationally. As the mining “boom” of the late 60s developed there was a flight of geologists from the public service and universities, which had a significant effect on the membership of the SCCG. Between June 1968 and September 1970 there were numerous resignations and on two occasions there was no meeting — one seems to have not been called and one lapsed for want of a quorum. The position of assistant secretary was not filled when Jeannette Adrian resigned in June 1968 and no minute has survived of the biennial election in March 1969.

The period September 1969 to June 1971 seems to have been one of some dichotomy. On one hand the SCCG, probably encouraged by the publication of the GSA’s volume on the geology of NSW, was clearly eager to have its resolutions published, and on the other hand, was troubled by the small number of people attending meetings. It was decided to publish articles in the Records of the Geological Survey of NSW. First to be published included:

- the reserves code,
- the decision on the use of *seam*,
- the report on sedimentary terminology, and
- the stratigraphy of the Illawarra Coal Measures in the Southern and South-western Coalfields.

This material appeared in *Rec. Geol. Surv. NSW* **13** (2), 1971 — almost exactly 10 years after the establishment of the SCCG. At this time Helena Basden was appointed as convener of the Editorial sub-committee, a position she was to occupy with distinction for many years. There was also a feeling of a need to “tidy-up” the areas of activity. For the first time, the relationship of coal districts (a JCB statistical concept) to coalfields (an operational and partly geological concept) was discussed and it was decided to base sub-committee work on the coalfield concept.

The publication of the stratigraphy of the Illawarra Coal Measures led to a small controversy, which was to occupy the SCCG on-and-off for the next five years and which, in a somewhat desultory manner, occupies it even now. The issue was the status of the Bargo Claystone and the Darkes Forest Sandstone. The SCCG

had decided to include these two units as members in the Appin Formation and was probably unaware that a “revised stratigraphy” (Bowman, 1970), giving the two units formation status, was in the pipeline. Bowman’s work clearly had priority (manuscript dated December 1969, published December 1970) over the SCCG’s work (ratified June 1970, published December 1971). Harry Bowman wrote to the SCCG in December 1970 drawing attention to the anomaly but the only recorded response from the SCCG was a request for comment from the Geological Survey. It is not clear if such a request was actually made and the matter did not come to a head until late 1975.

The records of the SCCG’s activities in the first half of 1971 suggest that personal issues may have been significant at this time. Surviving minutes of the June 1971 meeting are incomplete — 2 pages have been removed and the remaining (hand-written) page is cryptic with regard to the membership of some people. With a decline in the turbulence caused by the nickel-led mining boom and the election of Ken Mosher as chairman there was a return to stability and a concentration on “bread and butter” issues, such as coalfield stratigraphy and the need to modify the reserves code to take into account the approach of metrification of measurement units. Dick Britten’s comprehensive work on the Singleton Coal Measures became the major issue for discussion at this time and the SCCG even arranged a special meeting (8 October 1971) at the Department of Mineral Resources’ core library at Londonderry. The Singleton Coal Measures (Super Group) proposals clearly polarised the SCCG — the value of the synthesis from a large amount of data was certainly appreciated but many members were not prepared to go as far as recognising the equivalence of the Wollombi and Wittingham Coal Measures with the Newcastle and Tomago Coal Measures of the Newcastle Coalfield. Ratification, with claims for equivalence removed, was forthcoming and it is ironic that, some 30 years later, the use of coal seam names from the Newcastle Coalfield is now accepted, without comment, in the Wollombi Coal Measures.

As the membership of the SCCG increased in the first half of the 1970s, a significant influence on the SCCG’s work came from the coal producing companies. The decreasing influence of the Geological Survey is well shown by the return of the Bargo Claystone/Darkes Forest Sandstone issue in 1975. The Geological Survey had maintained its position on this issue (see, for example, Bunny, 1972) but when the paper on the slope stability of the Wollongong area (Bowman, 1972) was eventually published, the SCCG took a stance and wrote, in October 1975, to the Geological Survey, noting “deviations” from the SCCG’s position. The “deviations” were twofold — the use of the term *mudrock* as a lithological descriptor and the status of the Bargo Claystone and Darkes Forest Sandstone as formations. The reply from Neville Markham, Director, (November 1975) was polite but blunt — *mudrock* was a perfectly acceptable alternative to *mudstone* (it was used by Robert Folk, one of the authorities that the

SCCG referred to in its own report on sedimentary terminology) and Bowman (1970) had precedence with regard to the status of the Bargo Claystone and the Darkes Forest Sandstone. That the Geological Survey’s position was entirely reasonable was of no consequence to the SCCG as a whole, even after taking to account the fact that some members of the SCCG agreed with the Survey’s view on the formation status of the rock units in question.

More constructive aspects of the SCCG’s work in the mid 1970’s were:

- the modification of the reserves code to take into account metrification (2nd edition, ratified March 1973),
- publication of the comprehensive report on the stratigraphic nomenclature of the Northern Coalfield (both as *Rec. Geol. Surv. NSW* **16** (1), 1975), and
- the definitions of the coalfields of the Sydney and Gunnedah basins (*Rec. Geol. Surv. NSW* **17** (2), 1975).

The report on the stratigraphy of the Northern Coalfield was a particularly welcome event. It reinforced the distinction between the informal use of *seam*, and the formal use of *Formation* and *Member*. Further, it brought together in a single publication the stratigraphies of the Greta Coal Measures, the Tomago Coal Measures, the Newcastle Coal Measures, and the Singleton Super-group.

Other matters that were considered at this time were:

- the work of the AusIMM on ore reserves,
- the application of confidence levels to estimates of coal reserves, and
- the influence that an international code of stratigraphic nomenclature might have on the Australian code.

An interesting aspect of the SCCG’s operations in the 1970s and early 1980s is the way that delays in publishing the SCCG’s findings overtook the implementation of some of the findings. Two examples stand out – a June 1975 decision to discontinue the use of the term *Coal Measures* fell by the wayside (September 1976 saw the ratification of the stratigraphy of the Coorabin **Coal Measures**), and the decision to delete the reserves category of *Assumed* (March 1983) was reversed when the concept of differentiating between *Resources* and *Reserves* was adopted with the 5th edition of the code (June 1984).

The above examples are indicative of the rapid evolution of the SCCG in the late 1970s. There was a concentration on technical expertise and scientific rigour, in part reflecting the changes that were taking place in the coal mining industry in NSW and Queensland. As the formation of a coal specialist group of the GSA was mooted (September 1976), the SCCG was thinking about the need to have specific guidelines for coal extracted by open cut. During 1977 the SCCG arranged technical talks on radiometric logging, the use of a gamma probe to study the roof strata of underground mines, and the potential use of in-seam radar.

A radical move came in June 1977 when the SCCG decided (by a margin of a single vote) to allow the calculation of recoverable reserves only from the measured and indicated categories. The appropriateness of this decision was demonstrated when an attempt at a rescission motion failed to get a seconder at the September 1977 meeting. This was also a period of increasing membership and the expression of some concerns at the proportion of consultants on the SCCG.

Published during this period were the 3rd edition of the Code for calculating and reporting coal reserves (ratified June 1977, published in *Rec. Geol. Surv. NSW 18* (2), 1978), suggested procedures for coal bore titles (ratified December 1976, published as above) and the 4th edition of the reserves code (ratified December 1979, published in *Rec. Geol. Surv. NSW 19* (2), 1980). The appearance of two editions of the reserves code in such a short time reflected the rapid change in attitude to this matter. The 3rd edition took the step of allowing the calculation of recoverable reserves only from the measured and indicated categories for possible underground mining, and only from the measured category for possible open cut mining. The 4th edition went further by adding a pro-forma “public statement of reserves”, intended for use in cases of public statements claiming the authority of the code. Some mining company representatives were alarmed by the extent of the disclosure required by the public statement provisions but the SCCG’s views were very much in line with the spirit of regulation that was abroad in the mining industry,

The other major issue at this time was an awareness that the SCCG had reached a turning point in its functioning. Relationships with coal mining groups in other states, the size of the SCCG, and the effect this had on the traditional sub-committee structure — these were all seen as being in need of examination. For the first and only time in its history, the SCCG held a two day meeting in December 1979 with the express purpose of examining “a different method of managing its affairs”. The meeting was notable for two things — ratification of the 4th edition of the reserves code (with 2 company representatives voting no!) and a re-drafting of the constitution to provide, *inter alia*, for the establishment of an executive. An executive was established to allow the making of decisions between quarterly meetings and it is a measure of the egalitarianism and democracy of the SCCG that the executive has never been seen as an elected “board of directors”.

The early 1980s was a period of consolidation in the coal industry in NSW and it saw the establishment of a Coal Strategy Division within the NSW Department of Mineral Resources (DMR). There were some rumblings when coal geology, after more than 100 years as part of the Geological Survey, was transferred to the new division. The SCCG concentrated on the refining of coalfield stratigraphies and examining ways in which the matter of reserve calculations for proposed open cut operations could be improved, including use of the

results of down-hole geophysical logs. Membership of the SCCG was 55 in March 1982 and at that time the stratigraphy of the Southern Coalfield had been revised. The revision (ratified June 1981, published in *Rec. Geol. Surv. NSW 21* (2), 1983) merged the previous Southern and South-western Coalfields but steadfastly continued to assign member status to the Bargo Claystone and Darkes Forest Sandstone.

Environmental aspects of coal exploration were of some concern in the early 1980s. The SCCG became embroiled in the middle of a small rumpus, between the NSW Department of Environment and Planning (DEP) and the NSW Coal Association. The DEP had prepared a document called “Guidelines for the conduct of coal exploration programmes” and had sent it to the NSW Coal Association for comment. The Coal Association’s response had come to the SCCG, with the original document, but when the SCCG’s executive advised the DEP that their document would be discussed by the full SCCG, it was rewarded with a terse letter from the DEP saying that the document was a confidential internal report and “was apparently improperly handed to your committee”! Not surprisingly, at the September 1983 meeting, the SCCG agreed that it was entirely proper that the SSCG consider the document and so advised the DEP.

Other matters considered at this time were:

- the revision of the guidelines for sedimentary terminology (Colin Ward was a member of the team which was producing a photographic “core book” of Sydney Basin sedimentary rocks),
- an agreement that the SCCG should not “set itself up financially”, and
- preparations for input to a proposed national code for the calculation of coal reserves.

There is no record of the SCCG reaction when it was reported that the co-ordinating body for the proposed national code might be the BMR, but it is known that the Queensland Geological Survey vetoed the idea. John Cramsie (then Chief Coal Geologist, NSW DMR Coal Strategy Division, later Director of the Geological Survey of Victoria and now Director of the Geological Survey of NSW) suggested that the Government Geologists Conference be the vehicle for consideration of a national code and this was the procedure adopted. Tony Galligan (NSW DMR) and Charlie Mengel (Geological Survey of Queensland) had carriage of the project after it was taken up by the Government Geologists Conference in 1984. As mentioned before, the category of assumed reserves was deleted from the SCCG reserves code in March 1983 but this change was short lived — the possibility of a national code led to the introduction of the distinction between resources and reserves and this distinction was used to re-introduce the concept of assumed *resources*. Despite this minor illogicality, the 5th edition of the SCCG’s resources and reserves code was a major advance and was to prove to be a very good basis for a national code.

A substantial body of work was published at this

time in *Rec. Geol. Surv. NSW* **22** (1), 1986 including:

- guide to the calculation of confidence limits for an estimation of coal reserves (ratified September 1982), terminology for classification and description of coalfield rocks (ratified June 1963),
- code for calculating coal resources and reserves, 5th edition (ratified June 1984),
- stratigraphy of the Jerrys Plains Subgroup of the Wittingham Coal Measures in the Singleton-Muswellbrook coal district of the Hunter Valley (ratified December 1984),
- stratigraphic subdivision of the Illawarra Coal Measures in the Western Coalfield (ratified December 1984), and
- redefinition of coalfields, in the Sydney and Gunnedah Basins (ratified March 1985).

MESOZOIC (JUNE 1984 TO DECEMBER 1994)

September 1984 saw the JCB in new premises (the former Qantas building in Chifley Square) and for the geological staff the new offices must have seemed almost luxurious, when compared with the 19th century “charm” of the Bulletin Place premises. As is the case with life forms, however, exoticism is sometimes a prelude to extinction. By early 1992 most of the board’s technical functions, including geology, had been disbanded. The organisational vacuum left by the JCB’s technical demise was filled by the DMR.

The national reserves code was a major consideration between 1984 and 1986. Galligan and Mengel were to report to the Government Geologists Conference in March 1985 and it seemed that progress would be smooth. It was — Queensland was happy to use the 5th edition of the NSW code as a base and a final product was completed by February 1986, ratified by the Government Geologists Conference in April 1986 and published in July 1986 (*Minfo* **12** pp. 33-36). An interesting aspect of the national code, now titled *Australian code for reporting identified coal resources and reserves*, is that although there is no mention of an *assumed* category it is there under a new name — *Inferred Resources, Class 1*. The definition of *coal resources* as, “all of the **potentially** (my emphasis) usable coal in a defined area” passed un-noticed at the time of the ratification of the 5th edition of the NSW code, but was the subject of some discussion when work on the national code commenced. It was realised that this had financial implications, eg in the calculation of front end payments. The definition was retained and the implications of it were to emerge again in a quite different setting in the 1990s — the procedures for calculating coal compensation payments under the NSW coal compensation scheme.

If the smooth progress on the formulation of a national reserves code is one of the high points of the SCCG’s existence, the same period saw a low point – a member objecting to the actions of fellow members of a

sub-committee. At issue was the publication of material that was still being worked on by the sub-committee. The matter was raised at the December 1984 meeting and the discussion centred on two issues — the release of conclusions based on confidential information, with no consultation with the suppliers of the material, and the criticising of other’s unpublished work with no prior reference to them. The SCCG moved a motion of regret at what had happened and it is perhaps not surprising that, when the material was ratified and published by the SCCG, there was no reference to the earlier publication in Quarterly Notes of the Geological Survey of NSW **57**.

By the time the Australian resources and reserves code was finalised, the DMR was active in re-visiting the stratigraphy of the Hunter Coalfield and was well established with a programme on the Gunnedah Basin. Other work being commenced at this time was attention to special provisions for calculating reserves for open cut mining and standardisation of codes for the use of computers in lithological logging. The Sydney Basin “core book” was published by the Earth Resources Foundation of Sydney University at the end of 1986.

December 1986 was the 25th anniversary of the SCCG and this was celebrated by a lunch in the dining room of the Royal Commonwealth Society (cnr Bent and Bligh Streets). Egalitarianism is a distinguishing feature of geological social events but on this occasion it did have one slightly embarrassing consequence — the seating capacity of the “top table” was not large and one geologist, keen to engage a “distinguished guest” in conversation, occupied a seat to the exclusion of another “distinguished guest”. The supplanted one remarked afterwards that he found the conversation of the *hoi polloi* quite invigorating.

By the start of 1987 the SCCG was commencing one of its periodic soul searching episodes. The statutory role (or more correctly, the lack thereof) of geologists in the coal mining industry was raised, and it was suggested that an effort be made to have the role of the mine geologist codified in the Coal Mines Regulation Act. This was an entirely worthy proposition but the probability of it ever coming to pass was then (as it is now) small. Other examples of the SCCG looking to expand its horizons were suggestions that a study of geology in longwall operations be undertaken, and that an application be made for a NERDCC grant (to complete the Hunter Coalfield study). A more down-to-earth suggestion was that the SCCG should conduct a survey of member’s opinions on the operations of the SCCG.

The results of the survey of member’s opinions were:

- only 15 out of over 50 members responded,
- all thought that there was a continuing role for the SCCG,
- most were happy with the existing constitution,
- most thought that the long-established areas of work (eg stratigraphy and reserves codes) should be continued,

- new areas of work suggested were structural mapping and computer applications,
- all thought that the SCCG's role was different to that of the Coal Geology Group of the GSA,
- most thought that there was no need for the SCCG to change the way it operated,
- all thought that the link with the DMR should be retained,
- most thought that the frequency of meetings (every 3 months) was satisfactory,
- a majority thought that some meetings should be held outside Sydney,
- most thought that there was no need to change the format of meetings,
- most thought that the basis for membership should not be changed, and
- most did not want the SCCG to engage in any financial activities.

With the benefit of hindsight it can be seen that the SCCG's somewhat introspective approach to its operations reflected an actual change of the environment in which the SCCG operated.

The changes included:

- long-time members died (Dick Britten in 1989; Ken Mosher in 1990),
- the JCB wasted away between 1989 and 1991,
- the hoped-for standardisation of computer data sets was always imminent but never quite achieved at the industry-wide scale,
- medium scale coalfield mapping was reduced in priority, and
- the attempt to contribute geologically to the increasing installation of longwall units went nowhere.

This last project was a particularly frustrating aspect of the SCCG's operations from 1988 to 1995 and is discussed in more detail later. On the brighter side, work on the guide to the evaluation of open cut reserves continued productively, as did revisions of the stratigraphies of the Hunter, Newcastle and Southern Coalfields. New areas of interest were environmental matters and the rise to importance of the Gunnedah Basin.

The demise of the JCB's technical functions made it necessary for the SCCG to change its constitution — it contained references to named positions that no longer existed in the JCB. This process began in December 1993 and the changes were approved at the meeting in December 1994. Not only did the SCCG change its constitution it also re-invented itself with a new name, the **Coalfield Geology Council of New South Wales**. This rebirth also saw the advent of a wonderful new logo produced by Harry Bowman and representing, New South Wales in the form of a lump of coal, together with a blue boomerang not only recognizing our State's heritage, but also representing our coal products going 'overseas'.

CAINOZOIC (DECEMBER 1994 TO PRESENT)

The SCCG's longwall project between 1988 and 1995 is an interesting example of how a good idea can lead to a long and frustrating experience in a case where the project group does not have control of the supply of the information on which the project is to be based. The idea was first raised in 1987 and was based on the sound premise that geological input to the design of longwall operations would be required. Such geological input was standard procedure overseas, and today, is commonplace in the Australian industry. The first phase, in late 1988, had identified a wide variation in the amount of geological work done before longwall extraction, and significantly, that it was uncommon for geologists to have control of the pre-extraction exploration phase. A questionnaire was distributed to 35 longwall operators (by Frans Bos), seeking information on what actually happened with regard to geological input to the longwall mining process but the response was disappointing — only 11 were returned by March 1989. By June 1990, when no further returns had been received, there were doubts as to whether the quantity of information was sufficient for a meaningful study and whether the data was reliable. A synopsis of the data was prepared by June 1991 but no further activity occurred until June 1993, when the sub-committee was reactivated. Again, due to doubts about the reliability of the "old" data, nothing happened until December 1995, when it was decided to hold a symposium on the role of geology in longwall mining.

The symposium was held at the University of New South Wales in November 1996 and was a success — demonstrating that the CGC was most effective when it had control of the inputs to its activities. The success of the 1996 symposium emboldened the CGC and another successful symposium was held in Newcastle in November 1997 (*Safety in mines ¾ the role of geology*). In order to retain control of the financial surpluses from these symposiums, the CGC briefly considered incorporating in 1998 but the clear general view was that such a move would have far more disadvantages than benefits.

Holding meetings alternatively in Sydney and country venues was well established during this period and the procedure is now seen as a valuable exercise in bringing members into contact with the work environments of colleagues. A major innovation was the establishment of the CGC's **Award for excellence in coal geology** in 1993. This award, conferred in December each year, recognises outstanding work by coal geologists (not necessarily members of the CGC) and includes the presentation of a handsome trophy carved from torbanite from the Greta Coal Measures at Muswellbrook Colliery.

The end of the 20th century saw two major publication events — the first Bulletin of the CGC, and a revision of the Australian resources and reserves code, referenced in the Joint Ore Reserves Committee of the AusIMM (JORC) Code. The Bulletin marked a radical departure from previous SCCG publications by

identifying the authors of the material ratified by the CGC. *Coalfield Geology Council of New South Wales, Bulletin 1*, 1999 is subtitled “Collected papers by committees and working parties of the Council” and contains papers on:

- computer-based resource/reserve estimates,
- guide to systematic evaluation of open cut coal reserves,
- environmental considerations for coal geologists,
- Permian stratigraphy of the Gunnedah Basin,
- stratigraphy of the Greta Coal Measures, Muswellbrook Anticline area, Hunter Coalfield,
- coal seam nomenclature application in the Hunter Coalfield,
- revision of the stratigraphy of the Newcastle Coal Measures, and
- stratigraphy and terminology for the Southern Coalfield the Bargo Claystone and Darkes Forest Sandstone have formation status!

Work on revisions to the Australian resources and reserves code began in 1994, with a significant addition to the scope of the code — the introduction of the requirement that public statements of coal resources and reserves be made by a *competent person* (later to be called an *estimator*). A great deal of time was spent on the criteria for defining a *competent person*. By June 1998 a significant number of people in both NSW and Queensland had come to the conclusion that the proposed revision of the JORC code made the Australian coal code redundant with respect to stock exchange reporting. The CGC agreed and, at the June 1998 meeting, endorsed the use of the JORC code for stock exchange reporting and decided to develop guidelines on calculating coal resources and reserves compliant with the JORC Code. At its September 1999 meeting the CGC endorsed “Guidelines for the estimation and reporting of Australian black coal resources and reserves”, the JORC code having come into force. The detail of these guidelines contained a significant scientific change — for the first time, the estimated Indicated and Measured Resources categories included a reference to an expected % error range. In another first, publication of the guidelines was, metaphorically, instantaneous – the material was posted on the DMR web site in December 1999. The speed of this publication took some coal geologists by surprise and there followed a period of further discussion, culminating in the publication (on the DMR web site) of revised guidelines in December 2000. These revised guidelines make no reference to % error, and contain a provision for periodic review.

The other major issues that occupied the CGC’s time in this period were the matters of coal seam methane, and education. The CGC grappled with the education issue for some years before coming to the conclusion that it had no real influence in this area, either at the level of teaching geology or in the wider field of “educating” the general public in the benefits of geology to modern society. The sub-committee was disbanded in 2001. The coal seam methane work is

ongoing and to date has covered methods of determining the gas content of coal seams and the reproducibility of the fast desorption and quick crush methods.

As a further example of the CGC’s more out-going approach to its role, the matter of a memorial lecture in honour of Ken Mosher was raised in March 1988. Ken was one of the founding fathers of the CGC and to date two lectures have been given – by Brian Vitnell (1999) and Colin Ward (2000), both as part of the Newcastle Symposium. (A presentation of this paper in the ‘Geological Hazards’ conference will mark the 3rd in the series. Eds.)

To finish this story, we can note a similarity between the Standing Committee on Coalfield Geology of NSW/Coalfield Geology Council of NSW and the now venerable Geological Society of London. That august body was formed in November 1807, “for the purpose of making geologists acquainted with each other, of stimulating their zeal, of inducing them to adopt one nomenclature, of facilitating the communication of new facts, and of contributing to the advancement of geological sciences” (Winchester, 2001). Almost 200 years later this is a pretty good description of the CGC. When we consider that the London society first met in a tavern and described itself as “a little talking geological Dinner Club” the comparison is even more apt. Whether discussing the merits of chocolate ice-cream cake at lunch in a Sydney restaurant or arguing about the Denman Formation over a decent red in the Hunter Valley, we have acted with zeal and companionship. “Adopt one nomenclature”? That may take a little more time but we will all be privileged to be part of the process.

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Records of the Geological Survey of NSW, 16(1), 1975, pp. 5-105 ¾ Code for calculating and reporting coal reserves (2nd edition), and Report of subcommittee for the Northern Coalfield – stratigraphic nomenclature.

Records of the Geological Survey of NSW, 17(2), 1975, pp. 85-86 ¾ Definition of coalfields, Sydney and Gunnedah basins.

Records of the Geological Survey of NSW, 18(2), 1978, pp. 139-152 ¾ Stratigraphy of the Coorabin Coal Measures, Coal bore titles – suggested procedures, and Code for calculating and reporting coal reserves (3rd edition).

Records of the Geological Survey of NSW, 19(2), 1980, pp. 273-278 ¾ Code for calculating and reporting coal reserves (4th edition).

Records of the Geological Survey of NSW, 21(2), 1983, pp. 443-447 ¾ Report of subcommittee for Southern Coalfield.

Records of the Geological Survey of NSW, 22(1), 1986, pp. 99-161 ¾ A guide to the calculation of confidence limits for an estimation of coal reserves, Terminology for classification and description of coalfield rocks, Code for calculating and reporting coal reserves (5th edition), Stratigraphy of the Jerrys Plains Subgroup of the Wittingham Coal Measures in the Singleton-Muswellbrook Coal District of the Hunter Valley, Stratigraphic subdivision of the Illawarra Coal Measures in the Western Coalfield, and Redefinition of

coalfields in the Sydney and Gunnedah basins.

Minfo, 12, 1986, pp. 33-36 ¾ New resources/reserves code for Australia.

Bulletin of the Coalfield Geology Council of NSW, 1, 1999, 52 p. ¾ Computer-based resource/reserve estimates, Guide to systematic evaluation of open cut coal reserves, Environmental considerations for coal geologists, Permian stratigraphy of the Gunnedah Basin, Stratigraphy of the Greta Coal Measures, Muswellbrook Anticline area, Hunter Coalfield, Coal seam nomenclature application in the Hunter Coalfield, Revision of the stratigraphy of the Newcastle Coal Measures, and Stratigraphy and terminology for the Southern Coalfield.

OFFICE BEARERS

Chairperson

Joe Whiting	Oct 1961 – Mar 1963 Geological Survey of NSW
Ken Mosher	Mar 1963 – Mar 1965 Joint Coal Board
Cliff McElroy	Mar 1965 – Mar 1967 University of NSW
Ron Wilson	Mar 1967 – Mar 1969 AIS, Wollongong
Owen Shiels	Mar 1969 – Jun 1971 Joint Coal Board
Ken Mosher	Jun 1971 – Mar 1973 Conzinc Rio Tinto
Bill Parkhill	Mar 1973 – Mar 1975 BHP, Newcastle
Michelle Smyth	Mar 1975 – Mar 1977 CSIRO
Brian Robinson	Mar 1977 – Mar 1979 Joint Coal Board
Peter Goodwin	Mar 1979 – Jun 1981 BP Clutha
Brian Vitnell	Jun 1981 – Jun 1983 Coal & Allied
Anton Crouch	Jun 1983 – Jun 1985 Anton Crouch and partners
Colin Ward	Jun 1985 – Jun 1987 University of NSW
Frank Stoddart	Jun 1987 – Jun 1989 BHP, Newcastle
Rod Davis	Jun 1989 – Jun 1991 MEGS
Carl Weber	Jun 1991 – Jun 1993 Pacific Power
Beau Preston	Jun 1993 – Jun 1995 Coal & Allied
Harry Bowman	Jun 1995 – Jun 1997 Coal Compensation Board
Rod Doyle	Jun 1997 – Jun 1999 Shell
Andrew Newland	Jun 1999 – Jun 2001 Newtuk
Michael Creech	Jun 2001

Powercoal

Secretary

Cliff McElroy	Oct 1961 – Jun 1962
Rowley Brunker	Jun 1962 – Sep 1962
Ken Wood	Sep 1962 – Sep 1969
Mal Bunny	Sep 1969 – Jun 1970
Ian Menzies	Jun 1970 – Mar 1977
Jenny Thomson	Mar 1977 – Jun 1981
Carl Weber	Jun 1981 – Sep 1984
Vic Tadros	Sep 1984 – Jun 1985
Chris Baker	Jun 1985 – Jun 1991
Mike Armstrong	Jun 1991

Assistant Secretary

Jeannette Adrian	Oct 1961 – Jun 1968
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Executive

Anton Crouch	Ron Wilson Dec 1979 – Jun 1981
Ken Mosher	Ron Wilson Jun 1981 – Jun 1983
Brian Vitnell	Colin Ward Jun 1983 – Jun 1985
Anton Crouch	Frank Stoddart Jun 1985 – Jun 1987
Ken Brown	Colin Ward Jun 1987 – Jun 1989
Ken Brown	Bill Knox Jun 1989 – Jun 1991
Beau Preston	Andy Williams Jun 1991 – Jun 1993
Harry Bowman	John Rogis Jun 1993 – Jun 1995
Ron Boyd	Tony Osman Jun 1995 – Jun 1997
Adrian Hutton	Andrew Newland Jun 1997 – Jun 1999
Michael Creech	Ted Houston Jun 1999 – Jun 2001
John Edwards	John Lea Jun 2001

Recipients of award for excellence in coal geology

John Anderson	Kembla Coal & Coke December 1993
Claus Diessel	University of Newcastle December 1994
Barry Lay	Mining & Exploration Geology Services December 1995
Konrad Moelle	University of Newcastle December 1996
Winton Gale	Strata Control Technology December 1997
Colin Ward	University of NSW December 1998
Vic Tadros	NSW Dep't of Mineral Resources December 1999
Ray Williams	GeoGAS December 2000



Cliff McElroy (December 1962).



Ken Mosher (circa 1960).

Andrew Newland (Chair), Mike Armstrong (Secretary) and Ted Houston share a light-hearted moment during an Executive Meeting held at COAL's Tuggerah office (3/03/00).





Geological Survey of NSW (December 1958)

Seated (l to r): Phil Lavers; Ted Rayner; Miss Matters; Carmel Fitzgerald; Joe Whiting

Standing (l to r): Warwick Jones; Paul Coss; Don Nicholson; Col Adamson; Len Hall; Russ Griffin; Don Pinkestone; Jack Harrison; Graham Wallis; Des Wynn; Dick Relph (*back*); Jim Lloyd (*front*); Milton Coleman; Cliff McElroy; Norm Trueman; Ken Wood; Rowley Bruncker; Anton Crouch (*back*); Dave Flack (*front*); Danny ? (*Visiting Indonesian geologist*). Many of the people involved in the establishment and maintenance of the SCCG in its early years are present in this photo.