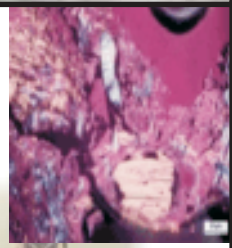


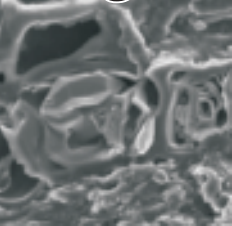
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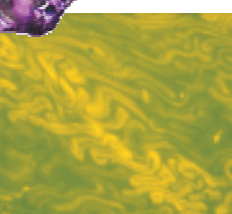
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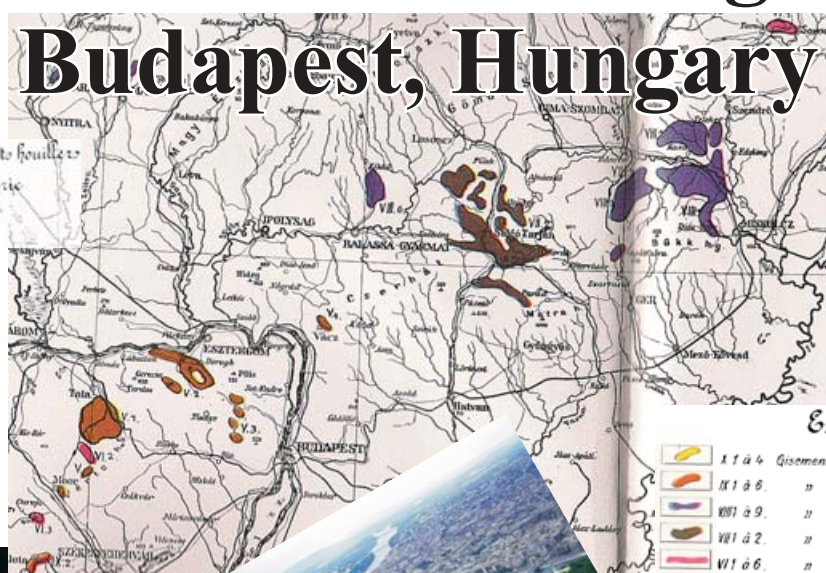


## 56<sup>th</sup> ICCP Meeting

## Budapest, Hungary

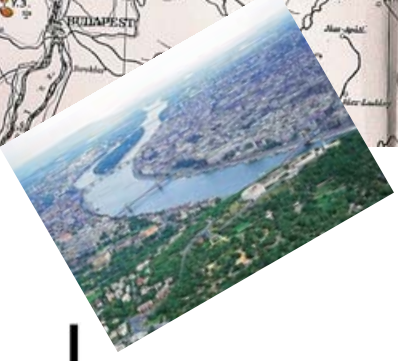
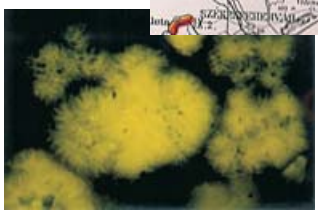


Carte des gisements houillers de la Hongrie



Explication :

	I 1 à 4	Gisements de lignite levantins (pliocène sup.)
	II 1 à 6	" " " pontvén
	III 1 à 9	" " " houille brune vadoibanens.
	IV 1 à 2	" " " " burdigaliens.
	V 1 à 6	" " " " oligocènes.
	V 1 à 5	" " " " éocènes.
	VI 1 à 4	" " " " crétaciques.
	VI 1 à 5	" " " " liasiques.
	II 1 à	" " " " permien
	I 1 à 7	" " " " carbonifériens.



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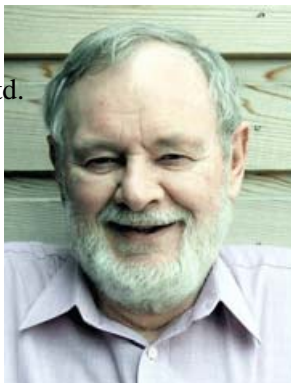
- 3,4 ed./pres./v.pres.
- 5 what Duncan saw
- 14 blends
- 22 56<sup>th</sup> meeting agenda

- 22 organic facies symp.
- 25 posters
- 26, 28 new / old books
- 27 woca call for papers

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## From the Editor

It has been mentioned many times in this column the importance of publishing our results and widely dissemination information in order to keep ICCP at the forefront of our science. Therefore, it is with real pleasure to be able to include reprints of the new **Graphite Sheets** with this edition (I am also posting copies to members who normally only make internet downloads of the newsletter). Congratulations to Barbara and Henrik on getting these sheets to press, and a special thanks to Henrik who has been especially diligent in getting good quality reprints for distribution.

**Light relief** from the usually hard-science articles can be found in this issue. Many thanks to Duncan Murchison for providing us with some more three dimensional views of the founding years of ICCP. I would note that other potential titles for his article, taking up an *M.C. Stopes* theme, which Duncan also deemed to be less than satisfactory included 'Sleep' (Stopes, 1956) and 'A Road to Fairyland' (Erica Fay [pseud. Stopes], 1926). I regret not having given Duncan the opportunity to also reject 'We Burn' (Stopes, 1949). At least we could agree that the 'history', while not necessarily being impartial, is certainly unreliable.

Good science is again to be found in Isabel's summary of the **Coal Blends Working Group**. Congratulations to Isabel and members of this working group who have now provided us with a clear way of tackling coal blends and assessing the errors involved in the analysis.

The **Budapest Meeting** agendas indicate that another well planned and successful meeting is assured. An impressive breadth of papers is being presented at the **Symposium on Environmental management implications of organic facies studies**, ensuring a very interesting day. I was pleased to see that sufficient time has been allowed during the field trip for extensive investigations of the rhyolites - a rock type not normally of interest to coal petrologists.

cheers and happy reading,

*Peter (ICCP Ed.)*

## From the President

I see from various files the ever-diligent Editor has sent that our Vice President now has the matter of the statutes "well in hand" and that text has been extracted from Duncan Murchison. As I wrote to Lopo, revision of the statutes is indeed a formidable task, but it is also a most important one. Peter Crosdale has already done a huge amount of work in preparing a critique of them and Angeles, Barbara and I submitted comments and proposals. A revision needs input from those tasked with the revision but it is nearly pointless if the majority of members do not consider these matters and contribute too. So I heartily endorse Lopo's proposal to establish a group to work on revisions and his request for input.

Duncan's talk in Utrecht was excellent and I hope that this will stimulate others with similar sorts of contributions to make them in print. We need more of our history recorded. As you might expect, I do have some observations. Although the article includes two references to England and six to English, I note a tendency for some matters that occur south of the border with Scotland to be referred to as "British" and those north of the same border to be termed "Scottish" (no, "scotch" is something else again, see under Mackowsky in his article). I am also amazed that Duncan expresses surprise that Seyler while "partially sighted and virtually deaf" won a decision in a meeting. As the most skilled Chairperson I have seen (and partially heard), Duncan surely recognises that one so afflicted is bound to win almost any committee decision. However, I can personally vouch for a number of the "Recollections". If anything, some of these understate the colourful nature of the occurrences.

While I would agree that Duncan probably has a natural affinity for some of the more interesting moments of life, I am sure there are many other stories out there that bear repeating and should be preserved. With electronic media, preservation of the records and the formal archives is much easier than it was when ICCP was started, in an era that was still free even of photocopiers.

Mercifully, Duncan did not tell you about the time in 1970 that he was thinking of buying my car. We were driving down in it to Sheffield, and he was going to try driving it after the next roundabout on the then A1. As I slowed for the roundabout, a piston ring "let go" as they say in Formula One parlance, and we pulled off to the side of the road with the engine sounding as if it was populated by a bag of hammers (probably the same ones that are

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Cover images : M. Hámor-Vidó

Cover map : Scan P. Crosdale from: de Papp, C. (1913) *Les Ressources Houillères de la Hongrie*. Map No. 36. In: McInnes, W., Dowling, D.B and Leach, W.W. (eds) *The Coal Resources of the World*. Atlas. Morang & Co. Toronto. 48pp.

on the ICCP logo). Oddly enough, he decided against buying the car. Then again, I think he then bought a car not unrelated to a Ferrari and found he was conducting experiments on how rapidly iron can oxidize under paint. I don't know how the body of my car survived, but the old Austin truck engine is probably still going strong somewhere!

Preparations are now being finalised for the Budapest meeting and I am pleased to say that I am constantly being requested for material by various Conveners of Working Groups (WGs) and Secretaries of the Commissions. I take this as indicating that the WGs will have material to present, that the Agendas are being prepared and that these will be available with either this or the following newsletter. Again, I invite written (or E-mail!) contributions to the various parts of the meeting in advance of the actual meeting. For those unable to attend in person, written contributions will ensure that your views are considered and that we receive input from a wider range of members. If you will attend, but have some ideas, please set them out in writing and send them to the WG conveners or the secretaries as appropriate. For matters relating to the Plenary Sessions, contributions should be sent to the General Secretary.

In his contribution Duncan Murchison makes reference to the formidable skills of Marie-Therese as a translator. Perhaps another Mack will arise, but in the meantime, the existence of formal agendas provides (I hope) a better opportunity for contributions in languages other than English. If you wish to send contributions in languages other than English, these are more than welcome and we will do our best to arrange to have material translated, and the translations cleared with the original authors. Suggestions relating to our procedures are also welcome.

Please contact me at <mailto:acc@ozemail.com.au>  
Alan Cook Wednesday, 30 June 2004

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**From the Vice-President**

Dear All,

I hope everything is alright with all of you, and hope to see you soon in Budapest. I believe Maria Hamor-Vidó and her colleagues are doing a good job in order to make our stay in her country the most comfortable possible.

Well, if you remember my last message (Newsletter 31) I raised some questions concerning

some lack in the statutes of ICCP, especially in the definition of the duties of the several positions within the Council. I also mentioned that we should discuss this within the Council and, if agreed, changes should be introduced in the statutes.

I immediately received a message from our President, Alan Cook, who very diplomatically put over my shoulders the task of carrying out this olympic job of discussing the statutes changes/modifications. Who am I to deny?

I had some inputs from Alan Cook and Peter Crosdale who sent me some documentation on former discussions that, for several reasons, didn't go further. It is time now to proceed.

Honestly I didn't do much except reading the material. And I had the clear idea that it will not be an easy thing and that we must work together. So please, guys, read the Statutes, see what you think it is wrong, e-mail to me and volunteer to create a discussion group that will conduct the process. I'd like to leave Budapest with this group ready to work.

See you all in Budapest.

*Lopo Vasconcelos*

Note that Lopo has a new email address: <a href="mailto:lopo@uninet.co.mz">mailto:lopo@uninet.co.mz</a>
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**Know Your Coal Petrologist #9**



Name the candidate for ICCP 'safety officer' (see also KYCP #10) who, in about 1983, was attempting to look professional while wearing a "Midgett's Seafood" T-shirt emblazoned with a lobster. Answer page 31.

# AN UNRELIABLE PARTIAL HISTORY OF THE ICCP - WITH SOME RECOLLECTIONS AS WELL!

by

**Duncan Murchison**



## History

Those of you who were able to leave your beds on the morning after partying on the previous evening on the canals around Utrecht, may have heard me speak on "The History of the

ICCP" - the consequence of a persuasive invitation proffered by Petra David. The current title of this article for this illustrious but restricted broadsheet (?tabloid), is a compromise after discussion with Peter Crosdale who even agreed with me that "The History of the ICCP" was much too specific a title and could leave me unable to defend myself against careless words. Even a title "An History of the ICCP" would have been safer since that at least suggests there could be more than one "History". Peter's suggestion of "The Old ICCP: New Walks in an Old Field" failed, as did the proposal that "Sex and the Macerals", would be appropriate, despite the fact that there is much about macerals in the ICCP, just as there is sex!

Shortly I will do as I did in my talk in Utrecht - use "bullet points" - since many parts of this text will not immediately connect. Also, I will give no attention to the present, or even the recent past, since you all know what is happening or has happened over the past few years in the Committee. What is more relevant here (I think and that is all that matters!), is to show how the ICCP moved into the format it now has. And so this history begins long before the formal initiation of the ICCP; indeed long before many of you were "twinkles in your fathers' eyes" and even before your fathers were "twinkles in their fathers' eyes"! That I should write this partial history is probably because I have lived sufficiently long to have known many of the founders of the ICCP. Equally important, I have also so far avoided many of the possible mental derangements which can afflict those of advancing

years: or so I think! But I am sure I can hear the question, "Why write it at all, surely we have sufficient history about the ICCP, particularly when you consider the contents of Lemos de Sousa's inestimable commemorative volume of 1998?". I have no answer to the question, except that the ICCP seems to have a high proportion of frustrated would-be historians, of which I am one. I shall blame others for metaphorically twisting my arm to write! And, in any case, look at the title again!

- The British, mainly from the north of England, played an early part in what was to become the ICCP! In the 1830s Hutton (William not James), Lindley and Witham defined the true nature of coal through the microscopical study of thin sections which Hutton described in the first Proceedings of the Geological Society of London. The then President of the Society, Roderick Impey Murchison, waxed enthusiastically (1833), "It has been reserved to Mr Hutton.....to complete the solution of demonstrating the vegetable structure in coal itself". The thin sections were illustrated by a London artist called Prior in a series of water colours which are now held in the Hancock Museum, Newcastle upon Tyne. Much later, they were photographed and described in modern terms by Hickling (1936), by then the Professor of Geology in the University of Durham (Newcastle Division).
- Apart from a stormy Scottish legal episode, centred on the nature of 'Boghead coals' in the mid-eighteen fifties (money was concerned!), the British pretty well neglected the botanical nature of coal until the start of the 20<sup>th</sup> century. There then burst upon the scene an English tri-partite deity - Hickling, Seyler and Stopes - which was to influence coal petrology for evermore. Like Gaul in its three parts, the members of the deity were not all equal. Nor was their impact on the future ICCP to be so.
- Hickling was a broad-based geologist with many interests, including coal petrology. But having married for a second time and died six weeks later (two unrelated events!), that terminal episode removed him from any further influence on the development of coal petrology within the ICCP or anything else for that matter.
- Clarence Seyler was a different matter. He was a water chemist who, for reasons best known to

himself, but fortunately for those interested in coal science, turned to coal petrology, particularly to trying to develop examination of coals in reflected light and the use of reflectance as a quantitative microscopical parameter to estimate rank. His entry to reflected-light studies of coals was not immediately auspicious - to some degree because he relied on others! First, he was using air objectives which, of course, have limited applicability and usefulness in the microscopical study of coals. Second, once he possessed incident-light, oil-immersion objectives and used them for reflectance measurements, problems arose due to equipment and, apparently, within the group, some lack of understanding of reflected-light optics applied to coal constituents

- The Berek visual microphotometer used by Seyler and his colleagues for reflectance measurement was a 'clever' instrument which unfortunately could give highly subjective results. Statistically, results using the instrument were often 'too good to be true'. Seyler's nine stages of reflectance in rank progression may well have only been a consequence of the proportion of coals of differing rank available at the time. And the frequently occurring negative values of the square of the absorptive index, derived when air and oil reflectances of vitrinite were fed into the Fresnel-Beer relationship, led to the rash conclusion by Seyler's colleagues that classical electromagnetic theory probably did not apply within the optics of coal constituents! This was not the case. The 'negative' squares of the absorptive indices were merely due to a lack of realisation that with the instruments available at the time, the errors on reflectance measurements were substantial. When transformed within the Fresnel-Beer relationship, the errors on the derived parameters of refractive and absorptive index,

particularly the latter in low-absorbing vitrinites with ranks below anthracitic, could be large: 'negative' values for the square of the absorptive index were inevitable.

- These comments are not in any way to damn Seyler and his colleagues for their work: far from it. Seyler was a potent force in the early history of the ICCP and a regular attendee at early meetings of the Committee. His work in coal petrology was regarded as sufficiently important under war-time conditions to prevent publication of a lecture he gave after he was awarded the Institute of Fuel's Melchett Medal in 1941 (Fig.1). Something of a *bon viveur*, my first meeting with him, when I was a postgraduate student, was at the British Coal Utilisation

**THE MELCHETT LECTURE**

**Recent Progress in the Petrology  
of Coal**

By Clarence A. Seyler, D.Sc., F.I.C., F.Inst.F.

*Melchett Medallist for 1941*

The Melchett Lecture under the above title was prepared by Dr. Seyler and received by the Institute with a view to its being published in this Journal and presented at the meeting held on Wednesday, October 15, last. It dealt very fully with the subject-matter mentioned in the title, but it is regretted that owing to war conditions it cannot be published nor delivered verbally. It is, however, hoped that the text of the Lecture will be published at a later date.

We feel sure that all Members will fully appreciate the work done by Dr. Seyler, especially when the Lecture can be published, and meantime understand the reason for its being withheld.

Figure 1. Notice of the cancellation of Clarence Seyler's lecture to be given after he was awarded the Institute of Fuel's Melchett Medal.

Research Association, the morning after he had indulged (unwisely according to him) in a lobster supper the evening before, after watching a 'first-night' performance by his younger sister Athenie Seyler who was a well-known actress on the London stage. He also won wagers frequently that a wine bottle, claimed to be empty, would deliver sixteen further drops after standing undisturbed for ten minutes. Of such men are coal petrologists made, but the results of the experiment would never have been confirmed in Scotland where no bottle stood for such time even if apparently empty.

- Marie Stopes (Fig.2), to my knowledge, only attended one meeting of the ICCP. Despite that, of the tri-partite British deity, her influence was by far the greatest upon coal petrology. "Safe-sex" had reared its competitive head in Stopes' life several years before she published her views on the "maceral concept". Figs 3 and 4 (published as full pages in Lemos de Sousa's volume), show how coal petrology, sex and family planning closely co-habited: how appropriate for the London Windmill theatre also to be involved! From this paper on macerals, sadly rejected by the Royal Society, but later published in *Fuel*, came the basis for the Stopes-Heerlen classification, along with Stopes' classical original paper in the Royal Society Proceedings on the 'four visible ingredients in banded bituminous coal'.



Figure 2. Marie Stopes (1913)

- These days, particularly these days, there is an unfortunate tendency to minimise or even to forget important events of the past. The formation of the ICCP was not a coal petrological 'big bang'. At a 'round table' conference which took place during the 2<sup>nd</sup> Carboniferous Congress at Heerlen in 1935, it was accepted that the need for international agreement in coal petrographic nomenclature had "become acute". Progress would have no doubt been faster had it not been for the second-world war. But again, on the occasion at

the 3<sup>rd</sup> Carboniferous Congress in Heerlen in 1951, there was a meeting of interested coal scientists, presided over by the influential D W van Krevelen, which made a number of recommendations, one of which was that a "committee on petrographic nomenclature should meet every two years". And so, two years later, the International Committee for Coal Petrology ( now the International Committee for Coal and Organic Petrology, keeping up with modern developments, but still 'ICCP'!) was formed and held its first meeting in Geleen (not far from Heerlen!) in June, 1953.

- The photograph (Fig. 5) is significant in that it shows many of the founder members of the ICCP at the first formal meeting of the Committee at Geleen. All are not identified, and indeed all full members were not able to attend the meeting, but in the front row the distinguished Potonié, the ICCP President, stands on the right, with Clarence Seyler third from the right, the only person present who had attended the 'round table conference' in 1935. On the left of the front row is van Krevelen, one of the most able coal scientists of the second-world war period, and beside him, Erich Stach, a foremost coal petrologist for many years before, and soon to become Secretary of the Committee. In the back row, fourth from the left, is Fenton from the British National Coal Board who, along with Harold Smith, was most helpful in persuading the heavily blinkered, chemist-dominated Coal Board that coal petrology did have a benefit to coal science. Harold Smith, on Fenton's right, was only a 'guest member' of the Committee at this time, as was Noel, standing second on the right of the back row, but who later became General Secretary of the ICCP. Beside him, at the end of the row, is Alpern, a full member of the Committee. The 'young' Mackowsky, again a full member, is slightly to the right of centre in the second-back row with the also 'young' Teichmüller (another 'guest member'!) on Mackowsky's left, but in the row in front. All of

these individuals were to make valuable contributions to the ICCP in future years.

- And now a personal digression and to my fortuitous involvement (to a degree) with the ICCP. In the early nineteen fifties, Erich Stach visited George Hickling who was my professor in coal and petroleum geology. Two years later I found myself in Krefeld being trained in coal petrology in the Amt für Bodenforschung by Stach and Teichmüller, wondering why it never stopped raining in that city and discovering (disappointedly) that my favourite 'cowboy' films, in Krefeld at least, had in them Indian chiefs with names such as '*Hauptling Donner und Blitzen*' instead of 'Big Chief Thunder and Lightning'. Translated then to the more riotous Essen, to the tender care of Marie-Theresa Mackowsky at the Bergbau Forschung, to learn more about the differentiation and properties of the 'Steinkohlengefügeb Bestandteile', I certainly did so. But I formed a view that Marie-Theresa could be savagely addicted to the *idée fixe* and in the future would have to carefully watched if we were ever to develop an harmonious professional relationship! But I joined Shell; and coal petrology and the formidable Marie-Theresa seemed lost to me for ever. And they would have been, had it not been for a deficient lumbar region which ultimately forced me to leave the oil industry and return to the UK. And to what? To coal petrology in the University of Durham!
- Arguably, the 1950's were probably the most formative years of the Committee. The first formal meeting was held in Geleen in 1953, followed by a second meeting in Liège in 1955 and then by an International Congress of Coal Petrology in 1958. Papers were read at all these

**CBC**  
The Society and Clinic for  
**Constructive Birth Control and Racial Progress**  
108, Whitfield Street, Tottenham Court Road, London, W.1.

**ANNUAL MEETING**

The Combined Annual Meeting and Social Evening which had been arranged for the 22<sup>nd</sup> October, had to be postponed owing to the disturbed political situation.

The Annual Meeting will take a novel form, and will be held on the afternoon of

**SUNDAY, 8<sup>th</sup> NOVEMBER, 1931**  
in the  
**WINDMILL THEATRE**  
SHAFTESBURY AVENUE, LONDON

which has been most kindly lent to us by the Directors, at the generous suggestion of Mrs Laura Henderson.

Elections and Society business at 2.45 p.m. sharp.

This beautiful little theatre will make an ideal place for a friendly meeting. After the brief statutory business has been transacted the all-British film, *Maisie's Marriage*, by Dr. Marie Stopes and Captain Summers will be shown. As it is a silent film members will be able to converse with each other. During the whole afternoon tea will be obtainable in the charming foyer, so that we hope members will both enjoy the meeting and have opportunities of seeing each other.

Special tickets will be required and each Member whose subscription is not in arrear is entitled to one personal ticket gratis if applied for on the accompanying form.

Members may purchase tickets for friends to accompany them.

Figure 3. Poster advertising an Annual Meeting of the Society and Clinic for Constructive Birth Control and Racial Progress in which Stopes was highly active.

meetings and published as sets of Proceedings (1954, 1956 and 1960). At the time, these collections were most valuable in setting up a concentration of knowledge, accessible to all, within the developing field, rather than relying on the publication of single works in journals dispersed worldwide. Indeed, so few current members of the ICCP hold these 'Proceedings' or have access to them, that there would be merit in re-publishing the three sets or at least selected key papers from them.

- A number of points, among many in these three texts, are important. The first resolution passed by the membership at the first meeting in 1953 was 'to make an International Glossary': here was the beginning of the Nomenclature Commission. The second resolution was 'to organise an exchange of experience in the field coal petrographical analysis': here the Analysis Commission was foretold. And at this time also,



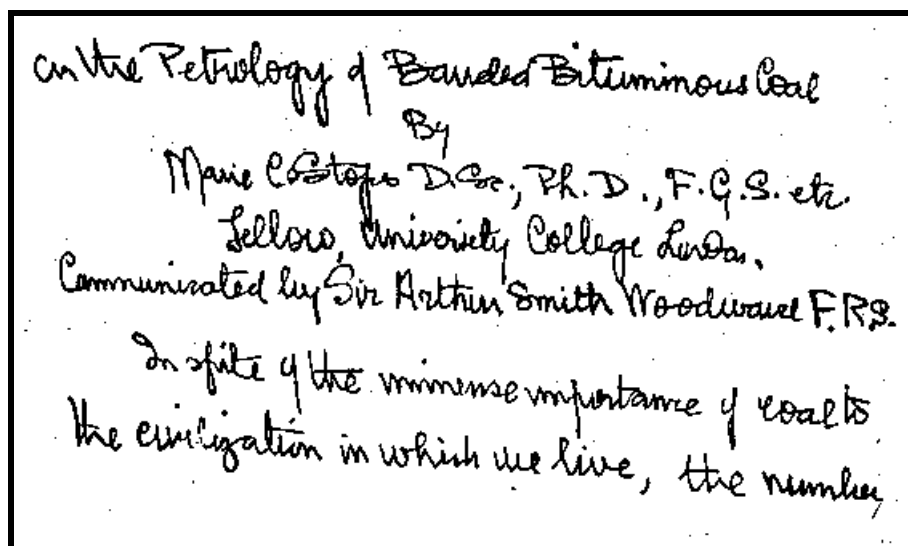


Figure 4. The beginning of Stopes' 1935 paper on the petrology of banded coals in which the term 'maceral' was introduced, the entire paper handwritten on the backs of the posters described in Figure 3

the 'ring analyses', which still continue today, began as a result of this second resolution. The dichotomy of opinion on which was the more satisfactory method for the microscopical study of coals was a 'hot' topic at the time. There was an immediate attempt to resolve the problem by analysing polished thin sections of coals by transmitted and reflected light.

- In retrospect, the resolutions taken at the Geleen meeting resulted in rapid outcomes which were followed by further constructive resolutions at the meeting in Liège two years later. Although at the time, there were frustrations caused by linguistic inabilities on the part of many, there must have been a wholehearted, serious determination by the entire Committee to set in place both an internationally agreed nomenclature and appropriate analytical procedures as soon as possible. The Nomenclature Commission met for the first time in Paris in 1954 and then continued to do so at approximately six-monthly intervals in different European cities at least until 1960. But it was clear, even in Liège, that rapid progress was being made on the definition of certain terms central to the classification and in listing the large number of terms which would have to be considered in the future. There were 'warm' arguments and discussions. This was a time of almost jealously guarded 'national' classifications, but at the Liège meeting there was great satisfaction at the agreement of the Russian delegates to the proposed 'glossary' and

the way its development was proceeding. The Americans who, like the British, had had a 'transmitted-light culture' in earlier years were less content, but later came into agreement with the way the Committee was moving. An internationally agreed Editorial Group was set up - Alpern (France), Ammosov (USSR), Fenton (UK), Mackowsky (Germany), Noel (Belgium), Schopf (USA), with Stach as Secretary of the Group - and others were given the responsibility of caring for the language of the glossary volumes which would be prepared in English, French and German and eventually Russian. Also, at the Liège meeting Clarence Seyler became Honorary President of the ICCP.

- There was (rightly) great emphasis placed on gaining an internationally agreed nomenclature. Without that nomenclature there was no real possibility of obtaining satisfactory agreement of petrographic analyses of coals worldwide. So what was at this time termed the 'International Working Group for Coal Petrographic Analysis', later to become the Analysis Commission, understandably lagged behind work on nomenclature and this Working Group did not meet so frequently as those committed to 'nomenclature'. But work on petrographic analysis of coals within the Committee, once it began, went on apace. Perhaps the most suitable place to find out how rapidly the Analysis Working Group moved and what it quickly achieved is the paper on the Group's activities by Marie-Theresa Mackowsky, published in 1960, in the third set of Proceedings, these relating to the 1<sup>st</sup> (and regrettably only!) International Congress on Coal Petrology, again held in Heerlen. Comparative data were already being presented on maceral, microlithotype and reflectance analyses from different laboratories: ring analyses had really begun!
- There was also in the 1960 Congress proceedings a complementary paper by Alpern which showed how far the Nomenclature Commission had progressed in a few short years,

particularly illustrating the different classifications which were then in existence and the probable correlations between them. Also, pointing to the future, was a section of the paper devoted to the classification of fossil organic matter - naphthabitumens, kerabitumens and caustobioliths, which included the sapropels - and in the public session of the Nomenclature Commission there was a long discussion on this particular matter. Although a great deal had been achieved, Alpern's paper also indicated how much still needed to be done, even in the classification of 'hard coals' which then were the pre-occupation of many countries world-wide. In particular, but unsurprisingly, the paper dodged the question of the classification of brown coals, an important component of fossil fuels, but acknowledged by all as likely to be an intellectually challenging topic when tackled.



Figure 5. The first formal meeting of the International Committee for Coal Petrology held at Geleen in the Netherlands in 1953

- By the time the 1958 Congress was held, publication of the first terms in the Glossary had begun. The first edition, tri-lingual in English, French and German, was published in 1957. These were slim, compact volumes compared

with what was to follow. Only six years elapsed before the 2<sup>nd</sup> edition went to press, with a Russian volume added to the English, French and German volumes. And in addition to the further developments taking place in the nomenclature and analysis of 'hard coals', there was continuous pressure to produce an equivalent compatible system for brown coals. By this time, in the nineteen sixties, I had, almost unwittingly, become Secretary of the Nomenclature Commission which, as the task evolved, made it seem that I was locked in a 'Glossary gulag'. Supplements to the Glossary were published in 1971, 1975 and 1993, the 1971 publication being by far the largest. There have been 'second' printings as well. Although financial assistance was available to help with the publication, the largesse of earlier years no longer existed because of the decline in coal industries world-wide. So the preparation of the text of the 1971 Supplement had to be undertaken 'in-house', the 'house' being the Department of Geology, University of Newcastle! My eventual release from being Secretary of the Nomenclature Commission to become General Secretary of the ICCP was relief indeed - and indeed to my Vice Chancellor who, on occasion, asked if I still worked for him or had I given myself over to ICCP publishing activity entirely?

- The 1958 Congress virtually saw the format of the ICCP firmly in place. Of course there have been structural changes since then as aspects of the Committee's work altered - the Nomenclature Commission is no more, for example. Looking at the format of the 1960 Proceedings you will find the papers divided under three headings - General Coal Petrology, Applied Coal Petrology and Carboniferous Sporology. The latter went to the separate field of Palynology, leaving the ICCP with the first two titles. And at this point, apart from some irreverent (and perhaps irrelevant) concluding remarks, which may give a further taste of the years beyond 1960, I propose to end this 'history' because you all will have had enough, but at least you now can relate some of the past to the present! These following disconnected recollections are not necessarily even in time order! I cited many of these 'snapshots' in Utrecht.

## Recollections

- Harold Smith describing to me, years after the event, the only occasion on which he saw Marie-Theresa Mackowsky weep, when van Krevelen supported to the hilt that macerals were all-important in the coking process while Marie-Theresa held that microlithotype behaviour was dominant.
- Told to me by Chandra, who worked at BCURA, how Seyler in his eighties defended a minority view at a meeting in Belgium which he won through misfortune - he left London without spectacles, which should have been made ready by the opticians, fell downstairs in his Belgian hotel, fortunately without harm but with resulting bad temper, and before speaking at the meeting, followed royal advice and visited the lavatory, whereupon his hearing aid dropped from his ear and disappeared into the bowl: this bad-tempered, partially sighted and virtually deaf man defeated the Chairman and the meeting.
- The way in which in the early years of the ICCP, the German petrologists gradually became dominant (fortunately), handling and driving forward petrological issues and how fortunate it was that Marie-Theresa Mackowsky 'came into her pomp' during the sixties and seventies, and beyond.
- Of Marie-Theresa's constant help to the ICCP through her capacity for translation, never mind her scientific competence. As President she chaired the Committee (without interference!), speaking in German of course, but translating into and from English and French with a little Russian as well.
- My joy when a student at leaving the rain-swept city of Krefeld - because of the rain, nothing else - and on changing trains at Mönchengladbach, which one had to do to reach Essen, being accosted, nay befriended, by the attractive daughter of a German doctor who took me to her family home where day by day I consumed volumes of excellent Mosel provided by her father. Marie-Theresa was not persuaded that this liaison would improve the breadth and quality of my spoken German when matched against the deep focus of knowledge of maceral properties she could provide. She certainly proved to be a formidable and persistent obstruction to my wider interests!
- On becoming General Secretary of the ICCP, when Marie-Theresa was President, waiting in abject fear every morning of the Annual Meeting for her summons to discuss the day's agenda with her, which took place in her up-market BMW on the journey from our hotel to Wegimont where the meetings were being held. The car was driven every day like a fast *Sturmpanzerwagen*, but at the end of this terrifying week, I was able to give Marie-Theresa some good news: namely, that when she sold the car on the second-hand market, she could truly claim it was for sale without the fourth and fifth gears having ever being used!
- Of my amazement - perhaps at the same meeting - when having placed my breakfast on a tray on the serving counter, and gone to pour some coffee, Stach came and took my breakfast and, to my further amazement, having gone through the same procedure to obtain breakfast, Stach came and took the second tray as well!
- Certainly again in Belgium, and in Marie-Theresa's bedroom (now, now!), which was crammed with ICCP members partying, watching one of my past research students, Bob Marshall who was, on Stach's admission, elected as a Full Member of the Committee by an administrative mistake over initials, when he was thought to be the more eminent C.E.Marshall. Bob, having lit a cigarette, flicked the top from his match which was still alight. The red-hot match landed on one leg of our current Treasurer's trousers, was not immediately noticed and then, because of the material of which the trousers were made, the match head caused the material to burn like a fast-moving explosive fuse towards vital parts of Rudi Schwab's anatomy: the conflagration was fortunately extinguished and reproductive potential preserved!
- And of another of my research students, Ganji Khavari Khorasani, infinitely more beautiful than Bob Marshall, being publicly presented - in Essen, I think - with a bouquet of flowers by

Lopatin and me wondering what would happen next!

- When sharing a bedroom many years ago with our current President in Liège and both of us had caught a 'Belgian bug', Barbara Kwiecinska, acting as Florence Nightingale, came in the morning to our bedroom. She gave us each a pill of the size normally given to race horses in the UK to cure their ills, but which for humans required the jaw articulation of a snake to let them enter the alimentary tract: she stayed until they were swallowed and we got better.
- Of my cowardice at an Executive Meeting in Essen in Marie-Theresa's flat when the bottle of whisky I had taken to Marie-Theresa to comfort her over the coming days was rapidly finished (by Marie-Theresa!) and noticing that soon after that, the flat was rapidly emptying, leaving Hevia and me as the dual presence. My excuse to leave was first and quick but, like porcupines making love, made with difficulty, but I still left Hevia to cope.
- There were above all two massively abiding memories when Timofeev came to speak in Newcastle: first the competence of Russian photographic technicians and how they were able to prepare a single slide which contained the entire genetic classification of Timofeev and Bogoliubova and second, when Timofeev was leaving Newcastle Central Railway Station, the amazement and uproar on a departing 'football' train when Timofeev seized me and kissed me avidly on both cheeks - the north-east of England at that time was not entirely ready for such exuberant continental mannerisms, however justified they might have been!
- When TSOP formed and its formation was announced at an ICCP meeting, the astonishment and great worry, particularly among the senior German petrologists, of the serious impact they felt the development would have upon ICCP activities. In fact, initially there was a lack of understanding of what TSOP was about, but if there was a dichotomy, it has surely disappeared over the years with joint meetings and the realisation that the two organisations are essentially complementary and should be supportive of one another.

- How frustrating at times I found the ICCP could be, particularly when I was President, and I could not ever be a 'committee of one': or if a group decision were needed, do as Warren Buffet recommended, 'look in the mirror'!
- Of Boris Alpern, when President of the Committee and in the foothills of the Rockies, when at the Calgary meeting, his reluctance to be 'arrested' on the 'party evening' by robust Canadian cowboys: and through a deft combination of political skill and a claim of 'no spikka da English', leaving his erstwhile Treasurer (me!) to be strapped to a wooden sled and towed over a rough track by a Clydesdale-sized horse - it seemed for many miles - into a saw-dust covered arena where I climbed on to another large beast, had a rope placed round my neck to be 'hanged' (Fig. 6).



Figure 6. The Calgary 'hanging'

- And there this 'history' definitely ends! But not without all good wishes to the ICCP for its future.

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## Know Your Coal Petrologist # 10



Whose 1983 safety motto was 'jump first, ask questions later'? Answer page 31. (Hint: see also KYCP #9)

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### MEMOIR 57

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## Summary of the activities developed by the Coal Blends Working Group

### Petrographic determination of the composition of binary and ternary coal blends: Effectiveness of the method



by I. Suárez-Ruiz

#### 1. Introduction

For many years coal laboratories have used microscopic methods to estimate the composition of coal blends. However, there is no established procedure for this type of analysis and what is more the real effectiveness of petrographic methods has not been exhaustively tested before.

In the light of these considerations the coal-blends working group was created at the Krakow ICCP Meeting in 1995. Its main objective was to investigate the efficiency of microscopic methods for estimating the composition of coal blends. A. Davis proposed this group to the ICCP and he was the first convener (1996-1997). Since 1998 I. Suárez-Ruiz has managed the continuing activities of the group.

In order to accomplish the general objective of this working group the information required from the analysis of coal blend samples through successive ring analyses was to obtain the proportions in which coals participated in a specific coal blend and the mean random vitrinite reflectance of each component coal of the blend. The work was carried out on theoretical and commercial blends made up of two and three component coals.

#### 2. Methodology and analytical procedures

To develop petrographic methods for the analysis of coal blends, it was proposed that conventional microscopic analyses be used including vitrinite reflectance measurements and

point-counting determinations (following the ISO 7404/5 and ISO 7404/3 standards respectively) and/or automatic microscopic analysis.

Since 1996, several ring analyses on different binary and ternary coal blends with variable degrees of complexity were performed using different approaches. With the exception of the 1998 exercise, maceral and reflectance determinations were performed separately. 1996 and 1997 ring analyses were developed on two binary coal blends. The results and main conclusions for these two first ring analyses were reported by Davis (2000). The main problem detected from the 1997 ring analysis was the presence of a significant amount of non-assignable inertinite because the blend contained inertinite-rich coals that decreased the accuracy of results. In 1998 a combined point-counting and reflectance determinations was the approach followed in order to correctly assign the maximum quantity of non-assignable inertinite to the different component coals. This analytical approach provided relatively good results. However the procedure was very time consuming.

For the following ring analysis and to increase the degree of accuracy of the results the number of points to be counted in reflectance determinations was increased. Moreover, in the majority of the ring analyses the blend composition was obtained on two bases: on a non-assignable component-free basis and with the corresponding non-assignable components pro-rated.

In all cases 2 pellets from each coal blend were analysed by the participants using conventional microscopic procedures. Those using an automated system also received 2 pellets and the corresponding individual component coals. Specific instructions were also distributed among the participants.

#### 3. Type of Coal blends. Main characteristics of component coals

Since 1998, 7 different coal blends were prepared (Table 1). Of these coal blends, those analysed in 1998, 1999 and 2000 were binary blends, while those analysed in 2001, 2002 and 2003 were made up of three coals. Moreover, for blends analysed in 1999, 2001 and 2002 the component coals were not strictly single coals. The component coals were also blends of coals of very similar coal rank and this factor increased the complexity of the blends.

Table 1. Type of coal blends. General characteristics of the component coals and composition of the coal blends

Coal Blend	Number of coals	Name of coals	Provenance	Rr (%)	Vitrinite (%)	Inertinite (%)	Liptinite (%)	Mineral Matter (%)	Ash (% db)	Blend Composition by weight, (%)	Blend Composition in volume % basis
CB-1998	2	DECS-23 Line Creek	US Canada	0.69 1.16	83.5 57.2	13.0 42.6	3.5 0.2	0.0 0.0	9.04 8.26	DECS-23/Line Creek No available data	DECS-23/Line Creek 35.2 / 64.8
CBs-1999	2	Norfolk Welch	US US	0.97 1.54	78.1 84.3	11.7 11.6	5.3 0.1	4.9 4.0	6.16 5.13	Norfolk / Welch 50 / 50	Norfolk / Welch 50.85 / 49.15
		A	Spain								
	2	B	Spain								
CB-2000	2	New Zealand Lupeni	New Zealand Romania	1.11 0.70	97.0 83.8	1.0 0.4	2.0 8.5	7.3	0.57 7.27	New Zealand/Lupeni 60 / 40	New Zealand/Lupeni 59.99 / 40.01
CB-2001	3	Elk Run Poruba Indiana Ridge	US Czech Republic US	0.88 1.07 1.56	58.3 53.1 70.5	25.8 37.3 27.3	12.6 5.2 0.0	3.3 4.4 2.2	4.41 11.13 5.22	Elk Run/Poruba/Indiana R. 20 / 50 / 30	Elk Run/Poruba/Indiana R. 21 / 49 / 30
CB-2002	3	Tahmoor M1 16560 M2 16565	Australia Australia Australia	0.92 0.11 1.44	42.3 48.2 63.0	49.6 42.8 28.9	2.0 0.6 0.0	6.1 8.4 8.1	9.77 11.42 11.65	Tahmoor/M1/M2 15 / 35 / 50	Tahmoor/M1/M2 15 / 34 / 51
CB-2003	3	Pumarabule Poruba QBB-42148	Spain Czech Republic Australia	0.82 1.08 1.49	43.9 49.4 65.4	22.9 37.1 27.6	27.6 4.4 0.0	5.6 9.1 7.0	4.15 9.57 11.32	Pum./Poruba/QBB-42148 35 / 40 / 25	Pum./Poruba/QBB-42148 36.6 / 39.0 / 24.4

\* Commercial coal blend from a coal washing plant. No available data for single component coals. db: dry basis

The coals selected for blending were bituminous, of different coal rank, from different countries and they represented three main ages: Carboniferous, Permian and Tertiary. The petrographic characteristics of the component coals and the ash yields are shown in Table 1.

The coals have a vitrinite content, higher than 42 % vol. and a variable inertinite content, although those coals forming part of the ternary blends and one of the 1998 binary blend were inertinite-rich coals (Table 1). This is an important point because these types of coals provide, during the analysis of the corresponding coal blends, a significant amount of non-assignable inertinite which justifies the need for pro-rating these types of particles between the coals participating in the blend. The liptinite maceral group was in general, scarce.

#### 4. Composition of the Coal Blends

The coal blends were prepared by blending the individual coals by weight in the proportions indicated in the Table 1 and following the standard procedure. As the composition of the blends through microscopical analysis is obtained on a volume percent basis and the blends were composite by weight, in order to determine the actual composition of the blends on a volume percent basis it was necessary to make the corresponding corrections for densities. The composition of the different proposed blends on a volume % basis is also shown in the Table 1. These values related to the blend compositions are the values that are compared with the results provided by the participants from the ring analysis.

#### 5. Results

##### 5.1. Identification of the Component Coals from random reflectance determinations

The corresponding results are shown in Table 2. The different component coals or major groups of component coals in both the binary and ternary blends, are clearly identified by using both conventional and automated microscopic analysis. The mean random reflectances of the component coals in the different blends were in generally, close to the actual reflectance values of the coals measured before blending. For binary blends of a lower degree of complexity and for conventional measurements, the best results, provided by the lowest differences (0.01% / 0.00%) between the

mean estimated reflectances and the actual values were obtained in the 1997 and 2000 exercises. The standard deviation was also the lowest (0.03/0.04). In the case of the more complex coal blends (ternary blends), the best and most accurate results were obtained in the 2003 exercise with differences

of about 0.01 - 0.02% between the estimated mean reflectance and the actual reflectance of the component coals, the standard deviation being between 0.02 and 0.07. As regarding the automated analysis, the most accurate reflectance results were obtained for coals from the binary blends (Table 2).

Table 2. Identification of component coals in the different coal blends. Mean reflectance data

		Mean Random Reflectance (%)						
		Low – Rank Coal		Medium – Rank Coal		High – Rank Coal		
		Obtained results	Actual values	Obtained results	Actual values	Obtained results	Actual values	
CB-1996 (Davis, 2000)	Mean	0.76	0.78			1.34	1.36	
	S	0.03				0.02		
	Mean*	0.82				1.37		
CB-1997 (Davis, 2000)	Mean	0.77	0.78			1.16	1.16	
	S	0.03				0.04		
	Mean*	0.80				1.15		
CB-1998	Mean	0.63	0.69			1.07	1.16	
	S	0.05				0.08		
	Mean*	0.71				1.17		
CBs-1999	Norwel	Mean	0.94	0.97			1.48	1.54
	S	0.04				0.05		
Turon	Mean	1.03	1.04			1.79	1.85	
	S	0.04				0.06		
CB-2000	Mean	0.69	0.70			1.10	1.11	
	S	0.03				0.05		
	Mean*	0.69				1.14		
CB-2001	Mean	0.85	0.88	1.10	1.07	1.50	1.56	
	S	0.04		0.05		0.05		
	Mean*	0.84		1.09		1.49		
CB-2002	Mean	0.92	0.92	1.13	1.11	1.47	1.44	
	S	0.08		0.11		0.25		
	Mean*	x		x		x		
CB-2003	Mean	0.80	0.82	1.09	1.08	1.47	1.49	
	S	0.02		0.07		0.06		
	Mean*	0.87		1.12		1.48		

\* Automated analysis.      x No data

### 5.2. Blend composition. Reflectance measurements

Results from the estimation of the blend compositions in terms of % of low, medium and high rank vitrinites by means of reflectance measurements are shown in (Table 3). As can be seen the estimation of the blend compositions by means of reflectance measurements was performed with different levels of accuracy. For the conventional microscopic analysis and in the case of binary coal blends, the best results were those

obtained for the Norwel blend analysed in 1999 as shown by the lowest differences (2.28%) found between the estimated blend composition and the actual values. The spread of results was also small as reflected by the lowest standard deviation (2.52) found. In general, this is a very good result for binary blends, taking into account the fact that the component coals of this blend were not single coals. For ternary coal blends, the best blend composition results from reflectance measurements were those obtained in the 2003 ring analysis these



having the lowest differences (< 2.4%) and also the lowest standard deviations (<4.5).

On the other hand, more accurate results for blend composition with lower differences between the estimated and the actual values were obtained in the case of ternary coal blends, although their standard deviations are high. Nevertheless, these are good results, taking into account the greater

complexity of the ternary blends in relation to the number of coals present in this type of blend, the close rank of the component coals and the specific characteristics of coals.

The blend compositions obtained from automated procedures were less accurate than the results obtained from conventional microscopic analysis (Table 3).

Table 3. Blend compositions obtained from vitrinite reflectance measurements

		Blend Composition from Reflectance Data (%)		
		% Vol. Vitrinite Populations <i>Total data</i>	Actual Blend Compositions (Coals, % vol.)	Differences (+,-) between the actual composition of the coal blends and the mean estimated values
CB-1996 (Davis 2000)	Mean	65.4 / 34.6	63.1 / 36.9	2.3 / 2.3
	S	4.91		
	Mean*	66.0 / 34.0		
CB-1997 (Davis 2000)	Mean	54.9 / 45.1	44.8 / 55.2	10.1 / 10.1
	S	4.01		
	Mean*	50 / 50		
CB-1998	Mean	39.24 / 60.76	35.2 / 64.8	4.04 / 4.04
	S	3.88		
	Mean*	30 / 70		
CBs-1999	Norwel	Mean S	48.57 / 51.43 2.52	50.85 / 49.15 2.28 / 2.28
	Turon	Mean S	75.2 / 24.8 2.52	Not available
CB-2000	Mean	42.96 / 57.04	40.01 / 59.99	2.95 / 2.95
	S	4.95		
	Mean*	32.9 / 67.2		
CB-2001	Mean	19.2 / 52.4 / 28.4	21 / 49 / 30	1.8 / 3.4 / 1.6
	S	7.27 / 8.40 / 5.81		
	Mean*	22.0 / 43.5 / 34.5		
CB-2002	Mean	20.1 / 32.0 / 47.9	15 / 34 / 51	5.1 / 2.0 / 3.1
	S	10.11 / 4.76 / 9.62		
	Mean*	x		
CB-2003	Mean	34.2 / 40.0 / 25.7	36.6 / 39.0 / 24.4	2.3 / 1.0 / 1.3
	S	3.15 / 3.61 / 4.18		
	Mean*	29.7 / 41.2 / 29.1		

\* Automated analysis    x No data available    Differences = actual coal blend composition – estimated coal blend composition.

### 5.3. Blend Composition from Point-Counting analysis (non-assignable component-free basis)

The blend compositions obtained by using point-counting analysis from conventional microscopic procedures, in terms of % of low, medium and high- rank coals in the blends and on a non-assignable component free-basis are shown in the Table 4.

The mean values obtained on the blend composition show in all cases significant differences with respect to the actual compositions of the blends. In the case of the binary blends, the most accurate results with lowest differences (of about 1.13%) between the estimated blend compositions and the actual values were obtained in the case of the Norwel blend although the spread of results is significant as shown by the high

standard deviation (4.67). Lower standard deviations were also obtained in the case of the binary blend analysed in 1996 although differences between the estimated blend composition and the actual were greater.

Regarding the ternary coal blends, the best results for blend composition from the point-counting analysis were obtained in the 2003 ring

analysis. The estimated blend composition showed differences lower than 6.0% with respect to the actual values although the standard deviations were high (around 4.31).

The results for blend composition obtained from the point-counting analysis were more accurate in the case of binary coal blends.

Table 4. Blend composition from point-counting analysis

		Blend Composition from Point-Counting Analysis, (%)		
		% Vol. Coals NACp free-basis <i>Total data</i>	Actual Blend Composition (Coals, % vol.)	Differences (+,-) between the actual composition of the coal blends and the mean estimated values
CB-1996 (Davis 2000)	Mean S	65.4 / 34.6 2.80	63.1 / 36.9	2.3 / 2.3
CB-1997 (Davis 2000)	Mean S	50.6 / 49.4 4.24	44.8 / 55.2	5.8 / 5.8
CB-1998	Mean S			
CBs-1999	Norwel Mean S	51.98 / 48.02 4.67	50.85 / 49.15	1.13 / 1.13
	Turon Mean S	73.9 / 26.1 4.69	Not available	
CB-2000	Mean S	43.67 / 56.33 4.26	40.01 / 59.99	3.66 / 3.66
CB-2001	Mean S	23.4 / 54.7 / 21.9 6.83 / 11.44 / 5.61	21 / 49 / 30	2.4 / 5.7 / 8.1
CB-2002	Mean S	19.4 / 34.9 / 45.7 8.61 / 3.15 / 8.99	15 / 34 / 51	4.4 / 0.9 / 5.3
CB-2003	Mean S	38.1 / 43.0 / 18.9 3.25 / 4.31 / 3.41	36.6 / 39.0 / 24.4	1.5 / 4.0 / 5.5

NACp: non-assignable components. Differences = actual coal blend composition – estimated coal blend composition.

5.4. Blend Composition from Point-Counting analysis (pro-rated non-assignable components)

The corresponding results are shown in Table 5. The mean values obtained show in all cases, significant differences with respect to the actual compositions. These results are similar to those shown in the previous Table 4 when the blend composition was estimated on a non-assignable component - free basis, which can be interpreted as due to the similar high inertinite content of the component coals.

The best results were obtained in the 2003 ring analysis. As can be seen the estimated blend composition shows mean differences lower than 6.0% with respect to the actual values (Table 5), although the standard deviations were high (around

4.40) and similar to those found when the blend composition was calculated on a non-assignable component-free basis.

In the case of binary blends, as can be seen for the blend analysed in 1998, the estimated composition was clearly better and more accurate when the non-assignable inertinite was prorated. Differences between the estimated composition and the actual were clearly reduced. This procedure for pro-rating non-assignable inertinite gives good results when the inertinite contents of the component coals were very different.

5.5. Composition from Point-Counting Analysis. Comparison

A comparative analysis of the composition of

Table 5. Blend composition from point-counting analysis

		Blend Composition from Point-Counting Analysis, (%)		
		% Vol. Coals NACp pro-rated basis <i>Total data</i>	Actual Blend Composition (Coals, % vol.)	Differences (+,-) between the actual composition of the coal blends and the mean estimated values
CB-1996 (Davis 2000)	Mean S	No available data	63.1 / 36.9	
CB-1997 (Davis 2000)	Mean S	48.1 / 51.9 No available data	44.8 / 55.2	3.3 / 3.3
CB-1998	Mean S	38.03 / 61.97 3.15 / 3.15	35.2 / 64.8	2.83 / 2.83
CBs-1999	Norwel Mean S	No available data	50.95 / 49.15	
	Turon Mean S	No available data	Not available	
CB-2000	Mean S	No available data	40.01 / 59.99	
CB-2001	Mean S	23.4 / 55.0 / 21.6 7.01 / 11.53 / 5.52	21 / 49 / 30	2.4 / 6.0 / 8.4
CB-2002	Mean S	20.0 / 34.9 / 45.0 8.49 / 2.98 / 8.77	15 / 34 / 51	5.0 / 0.9 / 6.0
CB-2003	Mean S	38.0 / 43.4 / 18.6 3.39 / 4.39 / 3.48	36.6 / 39.0 / 24.4	1.4 / 4.4 / 5.8

NACp: non-assignable components. Differences = actual coal blend composition – estimated coal blend composition

coal blends obtained from point-counting analysis on a non-assignable component free basis and a non-assignable component pro-rated basis shows that for ternary coal blends the differences between the estimated blend composition and the actual composition are very similar in both cases: on a non-assignable component free-basis and once it has been prorated (Tables 4 and 5). For ternary blends the best results were obtained in the 2002 and 2003 ring analysis for which the estimated blend compositions are relatively close to the actual compositions of the blends.

More accurate results were obtained for the binary blend analysed in 1997 (Tables 4 and 5). In this case the differences between the estimated blend composition and the actual composition are clearly lower when the mean value for blend composition is calculated after pro-rating the non-assignable components (in this specific case, the non-assignable inertinite).

5.6. Blend Composition. Comparison of data obtained from vitrinite reflectance and point counting analysis

The accuracy of the two procedures (reflectance

measurements and point-counting analyses) used to determine the blend compositions of the blends since 1996, is included in Table 6. In the case of conventional microscopic analysis and for binary blends, it is difficult to establish which is the best method for estimating the blend composition because the results obtained are highly variable. The differences found between the estimated blend composition and the actual composition using both analytical procedures are erratic. Relatively more accurate results for blend composition seem to be obtained by using point-counting analysis.

Regarding the ternary coal blends, the best and most accurate results for blend composition provided by the smallest differences between the estimated blend composition and the actual composition, were obtained by using vitrinite reflectance determinations, which is especially true in the case of the 2003 coal blend. However, the spread of results, as shown by the values of the standard deviations, is relatively high (Table 6).

Results for the blend composition obtained from the automated analysis, are less accurate than those obtained from the conventional reflectance measurements (Table 6).

Table 6. Differences between the estimated blend composition and the actual values for the coal blends analysed

		Total data			Actual Blend Composition (Coals, % vol.)	
		Vitrinite populations from Reflectance Measurements	Point-Counting Analysis Coals, (NACp free-basis)	Point-Counting Analysis Coals, (NACp pro-rated basis)		
CB-1996 (Davis 2000)	Differences S	2.3 / 2.3 4.91	2.3 / 2.3 2.80	No data	63.1 / 36.9	
	Differences*	2.9 / 2.9				
CB-1997 (Davis 2000)	Differences S	10.1 / 10.1 4.01	5.8 / 5.8 4.24	3.3 / 3.3 No data	44.8 / 55.2	
	Differences*	5.2 / 5.2				
CB-1998	Differences S	4.04 / 4.04 3.88		2.83 / 2.83 3.15	35.2 / 64.8	
	Differences*	5.2 / 5.2				
CBs-1999	Norwel	Differences S	2.28 / 2.28 2.52	1.13 / 1.13 4.67	No data	50.85 / 49.15
	Turon	Differences S				
CB-2000	Differences S	2.95 / 2.95 4.95	3.66 / 3.66 4.26	No data	40.01 / 59.99	
	Differences*	7.11 / 7.11				
CB-2001	Differences S	1.8 / 3.4 / 1.6 7.27 / 8.40 / 5.81	2.4 / 5.7 / 8.1 6.83 / 11.44 / 5.61	2.4 / 6.0 / 8.4 7.01 / 11.53 / 5.52	21 / 49 / 30	
	Differences*	1.0 / 5.5 / 4.5				
CB-2002	Differences S	5.10 / 2.0 / 3.1 10.11 / 4.76 / 9.62	4.4 / 0.9 / 5.3 8.61 / 3.15 / 8.99	5.0 / 0.9 / 6.0 8.49 / 2.98 / 8.70	15 / 34 / 51	
	Differences*					
CB-2003	Differences S	2.3 / 1.0 / 1.3 3.15 / 3.61 / 4.18	1.5 / 4.0 / 5.5 3.25 / 4.31 / 3.41	1.4 / 4.4 / 5.8 3.39 / 4.39 / 3.48	36.6 / 39.0 / 24.4	
	Differences*	6.9 / 2.2 / 4.7				

NACp: non-assignable components. \* Automated analysis. Differences between estimated composition and the actual values.

Differences = actual coal blend composition – estimated coal blend composition .

## 6. Conclusions

The objective initially proposed by this working group was accomplished after 8 years of ring analyses. The efficiency of microscopic methods for estimating the composition of coal blends was investigated and good results were obtained. For achieving this, 9 coal blends (6 binary blends and 3 ternary blends) of different degrees of complexity were analysed by using conventional and automated microscopic analysis.

Regarding the identification of the component coals, microscopic analysis allows the number of component coals present in a blend to be clearly established, even when the coal blends are extremely complex as was the case of some ternary

coal blends.

Microscopic methods established the vitrinite random reflectance (and so the coal rank) of different coals present in a blend with high degree of accuracy by using conventional microscopic procedures.

Regarding the composition of the blends in terms of % of different coals, this can be obtained by using both conventional petrographic analysis: vitrinite reflectance measurements and point counting analysis. However, the degree of accuracy obtained in both cases is different, especially in the case of ternary complex coal blends. As was demonstrated from the analysis of ternary coal blends, the conventional vitrinite reflectance determinations by which the % of different vitrinite

populations of coals present in a blend are obtained, is the best and most accurate microscopic procedure for obtaining the composition of coal blends.

For coal blends in which one or more of the component coals have high and very different inertinite contents the amount of non-assignable inertinite (or NACp components) present in the blend could be significant and so these non-assignable inertinites should be pro-rated between the component coals (when the blend composition is determined) by using a point-counting analysis.

In the light of the results obtained it is also recommended that the vitrinite reflectance measurements and point counting analysis be carried out separately, because no especially significant improvements were observed when both types of determinations were used in combination.

## 7. Acknowledgements

Thanks are given to all the participants in this working group (G. Bieg; J. Burgess, A.G. Borrego; D. Clift; A.C. Cook; P. Crosdale; H. Drien; D. Flores; M.J. Garcia Alonso; R.Javier; W. Kalkreuth; K. Kruszevska; B. Kwiecinska; E. Lester; G. Lis; M. Marques; M. Mastalerz; L.B. Méndez Forero; K. Milenkova; G. Mitchel; M. Misz; J. R. Montes; A. Nelles; G. O'Brien; C. Panaitescu; D. Pearson; W. Pickel; S. Pusz; G. Predeanu; S.P. Ranasinghe; H. Read; L. Rog; T. Seggers; M. Silva; M. Spennemann, N. Wagner and others) which made possible to develop the proposed objectives. I am also gratefully to those who provided the coal samples as well as to those who have contributed to the development of the objectives of this working group. Finally, I specially thank A.C. Cook for his constructive comments to this report.

## 8. References

- Davis, A. (2000). Petrographic determination of the composition of binary blends. *International Journal of Coal Geology*, **44**, 325-338.
- International Organization for Standardization, 1994. ISO 7404-3. Methods for the petrographic analysis of bituminous coal and anthracite. Part 3: Method of determining maceral group composition. Switzerland. 6 pp.
- International Organization for Standardization, 1994. ISO 7404-5. Methods for the petrographic analysis of bituminous coal and anthracite. Part 5: Method of determining microscopically the reflectance vitrinite. Switzerland. 12 pp.

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## Thesis Summary

### The composition and structure of energy coal of Romanian major coalfields and their usage

*Dr. Elena Evelina Marinescu*

Coordinating Professor: Prof. Dr. Cornelia Panaitescu

The purpose of this study was to establish the composition and structure of 21 lignite and sub-bituminous coals samples from 7 coalfields from Romania. The work includes also a complex study of coal ashes.

For coal samples and using classical methods physico-chemical, petrographical and technological characteristics were pointed out. The composition of coal ashes was determined using modern methods such as spectroscopy.

The most important part of the work consists in petrographical analyses, the results being associated with 102 photomicrographs, which present some very interesting structures, found in the coal samples.

Another important section of the study dealt with geochemical characteristics for another 80 coal specimens that allowed mapping out two interesting diagrams about coalification processes. In this way, for the first time was pointed out the existence in Romania of some coals which are different from the others by their high hydrogen and carbon content.

The results of the thesis were necessary in order to find new ways for coals utilization, besides burning processes and their ashes study.

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## ICCP Services

- ★ **ICCP Reflectance Standard**
- ★ **Accreditation Programme**

For more information contact the Commission I chair:

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**PRELIMINARY AGENDA FOR THE 56<sup>TH</sup> MEETING OF THE INTERNATIONAL  
COMMITTEE FOR COAL AND ORGANIC PETROLOGY - ICCP**

**Sunday 12 September**

- 13.30 - 18.00 Council Meeting  
13.30 - 15.30 Council meeting  
15.30 - 16.00 *Coffee Break*  
16.00 - 18.00 Council meeting  
18.00 - 21.00 Registration & Ice-breaker party

**Monday 13 September**

- 09:00 - 14:00 **Registration**  
10:00 - 11:00 **Welcome of the Organising Committee**  
10:00 - 10:10 Welcome by the Chairman of the Organising Committee, Dr. Kárpoly Brezsnayánszky (Institute director, Chairman of the Hungarian Geological Society)  
10:10 - 10:35 Welcome by the Honorary Chairman of the Organising Committee Dr. László Kapolyi: 'Advanced coal technologies will meet the challenges of the 21<sup>st</sup> century'  
10:35 - 11:00 Non-Executive Director of MOL Rt. (Hungarian Oil Company) Dr. István Bérczi "A Short History of the Oil and Gas E&P in Hungary"  
11:00 - 11:30 *Coffee Break*  
11:30 - 13:00 **Opening plenary session of the General Assembly**  
1. Apologies for non-attendance  
2. Minutes of Previous Meeting  
3. Arrangements for the Budapest meeting  
4. Future meetings  
5. Membership

13:00 - 14:30 *Lunch Break*

- 14:30 - 16:00 **Meeting of Commission I**  
Chair: Walter Pickel, Secretary: Deolinda Flores  
14:30 - 15:00 Opening Address - Walter Pickel, Deolinda Flores  
15:00 - 16:00 Accreditation Programme -  
Convenor: Aivars Depers  
16:00 - 16:30 *Coffee Break*  
16:30 - 17:30 Standardization Working Group -  
Convenor: Harold W. Read  
17:30 - 18:00 Presentation of the new 'Hilgers' instrument to measure reflectance with a monochrome digital camera - Carl Hilgers

**Tuesday 14 September**

- 09:00 - 11:00 **Meeting of Commission I**  
09:00 - 09:30 Review of New Methodologies and Techniques in Organic Petrology -  
Convenors: Lila W. Gurba, Regina Schäfer  
09:30 - 09:45 Temporal variations of coals -  
Convenor: Lopo Vasconcelos  
09:45 - 10:45 Peat Petrography Working Group -  
Convenor: Kimon Christanis  
10:45 - 11:00 Proposal of New Working Groups, inter alia Peter Crosdale on the difficulties to apply the vitrinite classification on coals younger than Permo-Carboniferous  
11:00 - 11:30 *Coffee Break*  
11:30 - 13:00 **Meeting of Commission I**  
11:30 - 13:00 New Handbook Editorial Groups -  
Convenors: Petra David, Walter Pickel

13:00 - 14:30 *Lunch Break*

- 14:30 - 17:15 **Microscope Session**  
Bituminite  
Introduction into the Standardization Working Group round robin  
Peat  
Miscellaneous

18:00 - 20:00 **Budapest Tour with tourist guide**

**Wednesday 15 September**

**Symposium**  
***"Environmental management implications of organic facies studies"***

- 09:30 - 11:00 **Oral Presentations**  
09:00 - 09:30 Mastalerz, M., Drobniak, A., Filippelli, G. *Influence of coal petrography on mercury distribution in coal seams; examples from Pennsylvanian coals in Indiana, U.S.A.*  
09:30 - 10:00 Kalkreuth, W., Cardozo Alves, T., Ciocari, G., Holz, M., Kern, M., Silva, M., Willet, J., Finkelman, R. *Coal Petrology and Chemistry of Permian coals from the Paraná Basin: 1. Santa Terezinha, Leão-Butiá and Candiota Coalfields, Rio Grande do Sul, Brazil*  
10:00 - 10:30 Cook, A. *Organic facies in the Late Cretaceous to Tertiary of the Gippsland and*

*Bass Basins, South Eastern Australia*

**11:00 - 11:30 Coffee Break**

**11:30 - 13:00 Oral Presentations**

**11:30 - 12:00** Gmur, D. *Lithofacies analysis of coal seams from upper part of coal-bearing succession of the Upper Silesia Coal Basin (Westphalian, Poland)*

**12:00 - 12:30** Ercegovic, M., Kostic, A. *Organic facies and palynofacies: nomenclature, classification and application in evaluation of petroleum source rocks*

**12:30 - 13:00** Sajgó, Cs., Galicz, Zs., Brukner-Wein, A. *Comparisons of organic geochemical data to organic petrological observations and classification of organic matter*

**13:00 - 14:30 Lunch Break and Poster Session**

**14:30 - 16:00 Oral Presentations**

**14:30 - 15:00** Ercegovic, M. Zivotic, D., Kostic, A. *Genetic-industrial Classification of brown coals in Serbia*

**15:30 - 16:00** Predeanu, G. *How petrography can establish the relationship between xylite and activated carbon*

**16:30 - 17:00** Nowak, G.J., Speczik, S., Oszczepalski, S., Grotek, I. *Petrological recognition of secondary altered organic matter in the Zechstein Kupferschiefer from Poland*

**16:00 - 16:30 Coffee Break**

**16:30 - 17:30 Oral Presentations**

**16:30 - 17:00** David, P. Bergen, F. van, Nepveu, M & Wees, J.D. van *Uncertainties of maturity calculations in basin modelling: a multiple 1D probabilistic approach*

Manuscripts are welcome for the special issue of the Journal of Coal Geology in the topic "Environmental management implications of organic facies studies". Submission deadline of manuscripts is Nov. 30. 2004

**18:00 - 20:00 Council Meeting**

**Thursday 16 September**

**09:00 - 11:00 Meeting of Commission II**

Chair: Angeles Gomez Borrego, Secretary: Mária Hámor-Vidó

**09:00 - 09:30** Dispersed Organic Matter (DOM) in Sedimentary Rocks - Classification, Identification and Thermal Maturity- Convenor: Wolfgang Kalkreuth

**09:30 - 10:30** Classification of Dispersed Organic Matter, DOM Working Group - Convenor: Lavern Stasiuk

**10:30 - 11:00** Thermal Indices Working Group - Convenor: Carla Araujo

**10:30 - 11:30 Coffee Break**

**11:30 - 13:00 Meeting of Commission II**

**11:30 - 12:10** Working Group on Environmental Applications of Organic Petrology Convenor: Maria Mastalerz

**12:10 - 12:45** Coal Seam Methane and CO<sub>2</sub> Sequestration Working Group - Convenor: Lila Gurba

**12:45 - 14:15 Lunch Break**

**14:15 - 16:00 Meeting of Commission II**

**14:15 - 15:15** Qualifying System for reflectance Analysis Working Group - Convenor: Angeles Gómez Borrego

**15:15 - 16:00** Isolation of Organic Matter Working Group - Convenor: Werner Hiltmann

**16:00 - 16:30 Coffee Break**

**19:00 - 23:30 Conference Dinner in Stefania Palace**

**Friday 17 September**

**10:00 - 11:00 Meeting of Commission III**

Chair: Rosa Menendez, Secretary: Henrik Ingermann Petersen

**10:00 - 10:10** Introduction

**10:10 - 10:20** Automation WG - Oral presentation: 'Rapid qualitative assessment of coking coals and blends by automated reflectance profiling - New information developed in the last year' Convenor: Dave Pearson

**10:20 - 11:00** Coal blends WG; Coal blends accreditation programme - State-of-the-art of the accreditation programme - Convenors: Isabel Suárez-Ruiz and S.Paddy Ranasinghe

**11:00 - 11:30 Coffee Break**

**11:30 - 12:30 Meeting of Commission III**

**11:30 - 11:50** Improved image analysis WG - Evolution of the work - Convenor: Cristina Rodrigues

**11:50 - 12:05** Coke petrography WG - Short Summary of the activities - Convenor: Heike Eickhoff

12:05 - 12:30 Combustion WG - Results of an exercise - Convenor: Ed Lester

12.30 - 14.30 *Lunch Break*

14.30 - 16.00 **Closing Plenary Session of the General Assembly**

6. Awards
7. Financial matters
8. Editor
9. Website
10. New Handbook
11. Elections
12. UN Relations
13. Status of ICCP
14. Administration of Accreditation Program
15. Revision of the Statutes
16. Relations with TSOP - including a short item from the TSOP representative
17. Feedback from members

16.00-16.30 *Coffee Break*

16.30 - 17.00 **Closing Plenary Session of the General Assembly**

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**Saturday 18 September**

**07.30 - 21.00 Field Trip**

The field trip will visit the Visonta open pit mine and power station at the foot of the Mátra Mountains (ca. 100 km from Budapest), which also contain Hungary's highest peak, the Kékekestető at 1015 m. At the mine we will receive information about the Upper Miocene lignites which provide ca. 15 - 20% of Hungary's energy supply. After the mine visit, we will see rehabilitation work at the nearby old quarries. After lunch, the tour will continue to Eger, a small baroque town adjacent to the Bükk Mountains. The Castle of Eger was a strategic point defending Hungary and Christian Europe against the 16<sup>th</sup> and 17<sup>th</sup> century Ottoman - Turkish invaders. Later, the town was occupied by the Turks and some buildings (e.g. minaret) still remind us of past ages. Eger is also famous for its red wine. Many cellars occur in rhyolitic tuffs and are famous for the excellent 'Bull Blood'. After sampling some of the 'Bull Blood' we will return directly to Budapest.

Meeting registration forms, hotel summaries and further information can be found in ICCP News No. 31

## **Agenda for the Council Meeting - 56<sup>th</sup> ICCP Meeting Budapest 2004**

- 1. Apologies for non-attendance**
- 2. Minutes of Previous Meeting**
  - 2.1 Minutes of the Council Meetings from the Utrecht meeting
  - 2.2 The minutes of the Plenary Sessions were published in the ICCP Newsletter #30.
  - 2.3 Results of elections
  - 2.4 Arrangement of the Agenda
  - 2.5. Business arising from the minutes.
- 3. Arrangements for the Budapest meeting**
- 4. Future meetings**
  - 4.1 Arrangements for meeting in Greece in 2005.
  - 4.2 Arrangements for meeting in Bandung in 2006.
  - 4.3 2007 meeting.
- 5. Membership**
  - 5.1 Applications for Associate membership
  - 5.2 Applications for Full membership
  - 5.3 Admissions made between meetings.
  - 5.4 Resignations
  - 5.5 Membership Directory
  - 5.6 Honorary Membership
- 6. Awards**
  - 6.1 Production of Organic Petrology Award Medal
- 7. Financial matters**
  - 7.1 Treasurers Report
  - 7.2 Financial procedures
  - 7.3 Budget 2002/2003
  - 7.4 Standards for acquittal of funds.
- 8. Editor**
  - 8.1 Activities for 2002-2003
  - 8.2 Proposals for 2003-2004
- 9. Website**
- 10. New Handbook**
- 11. Elections**
- 12. UN Relations**
- 13. Status of ICCP**
- 14. Administration of Accreditation Program**
- 15. Revision of the Statutes**
- 16. Relations with TSOP**
- 17. Feedback from members**
- 18\*. Other business**



**Poster Presentations:  
Symposium  
Environmental management  
implications of organic facies  
studies**

- Alekseev V.P., Pronina N.V., Zuravleva D.D. *Coals of the Oil-bearing Basin of West Siberia*
- Antoniadis, P., Mavridou, E. *Characteristic macerals coming from lignite deposits of Ptolemais tectonic graben (GR)*
- Fadeeva N.P., Bazhenova O.K. *Organomaceral Composition of Organic Matter in Maikoo rocks and their oil potential*
- Fedor, F. *The origin of gases explored within the Inert Gas Zone, Hungarian Great Plain, Hungary*
- Gmur, D. *Facies analysis of Tertiary coals from Skilvika Formation, Bellsund (Spitsbergen)*
- Gurba, L.W., Weber, C.R. *Coal petrology and coal seam methane generation in the Gloucester Basin, NSW, Australia*
- Hanak, B., Kokowska-Pawlowska, M. *Characteristics of variability of trace elements in coal ash from the 610 and 620 coal seams (the Poruba beds) of the Upper Silesian Coal Basin*
- Ivanova, A., Syabryaj, S., Zaitseva, L., Hámor-Vidó, M. *Reconstruction of peat accumulation conditions in the Trans-Carpathian and Pannonian Basin by coal petrography and palynology*
- Iordanidis, A., Schwarzbauer, J., Charalampides, G. *Aliphatic and aromatic biomarkers in Amynteo lignites, northern Greece*
- Kalaitzidis, S., Bouzinos, A., Christanis, K., Iliopoulou, E., Karapanagioti, H. *Impacts of Lignite and Peat Inertinite Content on Phenanthrene Sorption*
- Kovács, S., Rálisch-Felgenhauer, E., Hámor-Vidó, M., Siegl-Farkas, Á., Bóna, J. *Conodont colour alteration related to a half-graben structure and its contradiction to vitrinite reflectance data in the Mesozoic of the Mecsek and Villány mountains, S-Hungary*
- Kus, J., Cramer, P., Gerling, P., Kockel, F. *Post Mortem 2D-Simulation Study of the Hydrocarbon Generation and Migration of a N<sub>2</sub>-rich Gas Field on the inverted South-western rim of the Lower Saxony Basin*
- Lemos de Sousa, M.J. *CO<sub>2</sub> capture and storage in abandoned coal mines: presenting the "COSEQ" European Union S&T research proposal*
- Ligouis, B., Kleineidam, S., Karapanagioti, H.K., Kiem, R., Grathwohl, P., Niemz, C. *Applications of Organic Petrology in Sediment and Soil Contamination Studies*

- Mastalerz, M., Drobniak, A., Hower, J.C., Eble, C. *The environmental impact of trace element contents of Indiana and Western Kentucky coals*
- Matchoulina S. *Organic-rich sediments of the Dnieper-Donets basin and Fold Donbass*
- Misiak, J. *Petrography and depositional environment of the No. 308 coal seam (Upper Carboniferous) from the Upper Silesian Coal Basin, Poland*
- Ósorio, E., Kalkreuth, W., Gomes, M., Vilela, A. *Evaluation of Petrology and Reactivity of Coal Blends for Use in Pulverized Coal Injection (PCI)*
- Petter Filho, E. A. , Pacheco, E. T., Sampaio, C. H., Almeida, M. A. A., Lagreca, I. H. and Kalkreuth, W. *Density fractionation of a high-ash Brazilian sub-bituminous coal - implications for chemical and petrological properties*
- Rodrigues, P.R., Oliveira, J.T., Flores, D. *Organic maturation of shales from Toca da Moura Volcano-Sedimentary Complex (Ossa Morena Zone, Portugal)*
- Sajgó, Cs. *Studies on the matrix effect in pyrolysates of pretreated organic rich sediments*
- Siegl-Farkas, A. *Organic microfacies and palynology of the Ajka Coal Formation*
- Stukalova, I.E., Alysheva, E.I., Rasulov, A.T. *Lower Carboniferous Dombarovsk anthracite deposits, South Urals, Russia*
- Tomás, C., Flores, D., Machadinho, A., Gama Pereira, L.C. *Organic Petrology Characterization of Shales from Buçaco Basin, Central Portugal: Preliminary Study*
- Valentim, B., Boavida, D., Garcia, C., Gonçalves, R., Lemos de Sousa, M.J., Gulyurtlu, I. *Chemical characterization of Fly Ash from a Portuguese Power Plant*

**Know Your Coal Petrologist #1 I**



In 1994, which future TSOP president and vice-president plot to gain these high positions? Answer page 31.

## Book In Press

### Metal Contaminants in New Zealand From Sources and Transport to Effects on Ecology and Human Health

Published by resolutionz press

Editors:

Tim A. Moore, Amanda Black, Jose A. Centeno,  
Jon S. Harding, Dave A. Trumm

PREFACE

CONTENTS

ACKNOWLEDGEMENTS

BACKGROUND AND PERSPECTIVE

1. J. Cavanagh and J. Coakley: Environmental Policy: NZ Perspective
2. R.B. Finkelman: Sources of metals and trace elements in our environment: A brief overview
3. Candace Martin: Sources and impacts of metals associated with fertilizers.
4. Mauricio Taulis: Metal contaminants in leachate from sanitary landfills
5. C.R. Ward, Z. Li and D. French: Geological sources of metals in coal and coal products

GEOLOGICAL SOURCES

6. Dave Craw, Kevin Brown, Jenny Webster-Brown: Metal mine and geothermal contributions to metals in New Zealand
7. James Pope: Geochemistry of Waiotapu Stream: A small stream in receipt of geothermal discharge
8. T.A. Moore, C.M. Nelson, Z. Li, and R.B. Finkelman: Concentration and source of metals and trace elements in New Zealand coal beds
9. Andrew de Joux, Tim A. Moore: Geological controls on source of Ni in West Coast streams
10. D. Falconer and D. Craw: Fluvial quartz pebble conglomerates as a source of acid rock drainage and metals: A case study from Belle-Brook, Southland

TRANSPORT OF METALS

11. Jenny Webster-Brown Transport and attenuation of metals in surface waters affected by mining
12. Jenny Webster-Brown and Dave Craw: Examples of trace metal mobility around historic and modern mines in New Zealand

## Metal Contaminants in New Zealand



**22 papers covering aspects of metal contaminants including Sources, Transport, Effects on Ecology and on Human Health**

Edited by: Tim Moore, Amanda Black, Jose Centeno, Jon Harding, Dave Trumm

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13. Amanda Black, Dave Trumm and Phil Lindsay: Past and present coal mining contributions
14. Dave Trumm, Amanda Black, and Kerry Gordon: Acid mine drainage remediation at an abandoned West Coast coal mine

EFFECTS ON ECOLOGY

15. Jon Harding: Impacts of metals and mining on stream communities

16. Ian Boothroyd: Protection of aquatic ecological values at Golden Cross Mine, North Island, New Zealand

EFFECTS ON HUMAN HEALTH

17. Jose Centeno, Marion Gray and Jeff Fowles Pathology of metal exposure
18. A. Luckman and David Slaney: Occupational Exposure to Metals and Associated Health Effects
19. Marion Gray: Prostate cancer Cadmium, Zinc and Selenium.
20. Jose Centeno: Arsenic Poisoning and Cancer.
21. David Phillips, Jeff Fowles, and Philip Weinstein: The Surveillance of Heavy Metals and Human Health Outcomes in New Zealand
22. Philip Weinstein and Angus Cook: Volcanic emissions and health risks of metal contaminants in New Zealand

GLOSSARY  
INDEX

high-strength pozzolans, wallboard, polymeric filler, cinder blocks, tile, and variety of other construction products. The re-use of these materials also contributes to improved environmental quality and sustainable development. The World of Coal Ash is intended to provide a forum to meet and discuss the science and applications for coal ash, and to transfer knowledge and ideas that will benefit their innovative utilization, handling, storage and disposal.

The World of Coal Ash will be the major ash conference in 2005. It incorporates the annual/biennial meetings/workshops of the following groups:

- \* University of Kentucky Center for Applied Energy Research's 2005 International Ash Utilization Symposium
- \* American Coal Ash Association's 16th International Symposium on Management and Use of Coal Combustion Products (CCPs)
- \* U. S. Department of Energy National Energy Technology Laboratory
- \* U. S. Office of Surface Mining

Applications for unsolicited oral and poster presentations for the 2005 World of Coal Ash are now being accepted. The abstract deadline is September 1, 2004. Application instructions are at <http://www.worldofcoalash.org/presenters/callforpapers.html>

Approximately 90 oral presentations, divided among 2 1/2 to 3 days of four concurrent sessions, and 20 poster presentations, with a dedicated poster session, are anticipated. The technical sessions, both oral and poster, will be held on April 12, 13, and 14.

Suggested topics include, but are not limited to:

- ★ Mercury and other emission control impacts on CCP quality
- ★ Gasification products
- ★ Research and emerging technologies
- ★ Project-specific case studies
- ★ Hydrology and leaching
- ★ Manufactured aggregates
- ★ CCP storage and management
- ★ Fillers and ceramics
- ★ FGD and synthetic gypsum
- ★ International perspectives
- ★ Environmental implications of ammoniated fly ash
- ★ Sustainable construction
- ★ Regulatory issues
- ★ Mining use of CCPs

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## World of Coal Ash Call for Papers

The inaugural World of Coal Ash (<http://www.worldofcoalash.org>) is the world's premier conference concerning the science, applications and sustainability of coal ash utilization. The conference will be held in Lexington, Kentucky, USA, on April 11-15, 2005. It is planned to encompass all aspects of coal combustion products/byproducts as well as gasification products. In addition, there will be a full-day session on regulatory issues related to the use of coal ash in mining activities sponsored by the U.S. Department of Interior's Office of Surface Mining's (OSM). There will be an additional series of sessions devoted to FGD material, synthetic gypsum, and the management and many uses of this product.

Coal ash utilization represents an important and growing industry in the United States and around the world. Coal combustion products (CCPs) include fly ash, flue gas desulfurization materials, boiler slag and other materials that are finding increased application in the construction, road paving, and building trades. Today, this use represents a multi-billion dollar industry in the U.S., including markets for lightweight aggregate,

- ★ Concrete, cement, and grouts
- ★ Clean coal technology
- ★ Beneficiation and processing
- ★ Soil amendments and agricultural uses
- ★ Carbon for re-burn and adsorbents
- ★ CCPs in construction applications
- ★ Barriers to CCP use

To publish a paper in the World of Coal Ash Proceedings Volume, an oral or poster presentation **must be made**. If a presentation (oral or poster) is not made, the paper **will not appear** in the Proceedings Volume.

All presentations, provided they are made, are expected to be represented by a paper in the Proceedings Volume. Papers may be supplemented by Power Point slides.

The Proceedings Volume will be in CD-ROM format only. It will be available in **July 2005**, following the World of Coal Ash.

It is anticipated that the Elsevier Science journal *Fuel* will devote an issue to selected manuscripts from the 2005 World of Coal Ash. *Fuel* is an international academic refereed journal published by Elsevier Science in the United Kingdom. Submission of a manuscript for *Fuel* is optional. The manuscript submitted for inclusion in *Fuel* **MUST BE DIFFERENT** from the manuscript submitted for the Proceedings Volume.

The Barton A. Thomas Memorial Award is presented to the person whose presentation (oral or poster) is chosen by a panel of judges to be the most outstanding of the World of Coal Ash.

The language of the World of Coal Ash is English. If a translator on the podium is requested by the presenter, an attempt will be made to provide this service. All associated costs will be the responsibility of the presenter. Advance notice of at least one month is required.

To apply, see Application Directions [<http://www.worldofcoalash.org/presenters/callforpapers.html>]. If you have questions, please contact

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<mailto:gtremoulet@caer.uky.edu>

## Lost and Found Publications:

### *Interdisciplinary Studies of Peat and Coal Origins*

(Geological Society of America Microform  
Publication No. 7, 1977)

<http://www.caer.uky.edu/publications/gsapub7/gsapub7.shtml>

In the mid-1970's, the Geological Society of America experimented with publication on microfiche cards, with no accompanying paper version. One such publication was *Interdisciplinary Studies of Peat and Coal Origins* (Microform Publication No. 7), edited by Peter Given and Art Cohen. The GSA abandoned the format by the early-1980's, in effect orphaning the existing microfiche publications. In addition, the format does not appear to have the permanence of paper, with every microfiche copy encountered having numerous scratches and other imperfections of the cards.

Geology being a historical science, we recognize that there can be value in older publications. For this reason, we considered it to be worthwhile to reproduce the publication in a modern format, making the long out-of-print book available to a new generation of coal geologists. The reproduction is, for most pages, from the original unpaginated copy borrowed from Art Cohen. No microfiche copy examined was satisfactory for the reproduction of the text, tables, and line drawings (as an example, compare the title page, copied from the microfiche, with any of the chapters). Photographs could not be satisfactorily reproduced in any case.

Thanks go to the Geological Society of America and to Art Cohen for granting permission to reprint the book on the internet. The pdf files of the individual chapters are available at :

<http://www.caer.uky.edu/publications/gsapub7/gsapub7.shtml>  
The contents of the book are as follows:

Title Page

Preface

Francis T.C. Ting, Petrography and paleobotany of petrified Paleocene peat and its bearing on the coalification of lignite (Abstract)

M.J. Robinson and R.A. Melton, The Beckley seam - An example of a back-barrier coal in southern West Virginia (Abstract)

- F.T. Caruccio and J.C. Ferm, Paleoenvironmental reconstructions - An aid in predicting acid mine drainage problems
- T.L. Phillips, A.B. Kunz, and D.J. Mickish, Paleobotany of permineralized peat (coal balls) from the Herrin (No. 6) coal member of the Illinois Basin
- C.C. Cameron and N.A. Wright, Some peat bogs in Washington County, Maine: Their formation and trace-element content
- D.J. Casagrande and L.D. Erchull, Organic geochemistry of Okefenokee peats: Metal constituents
- P.J. Gleason, R.H. Hofstetter, A.D. Cohen, and P.A. Stone, Characteristics and peat stratigraphy of tree islands in certain wetland environments
- K.J. Niklas and T.L. Phillips, Morphological and microchemical correlations of living and fossil *Botryococcus* (Abstract)
- R. Sassen, Early diagenesis of fatty acids in mangrove peats, St. Croix, U.S. Virgin Islands
- J.W. Fell, Microbial activities in the decay of *Rhizophora* mangle leaves (Abstract)
- C. Exarchos and P.H. Given, Cell wall polymers of higher plants in peat formation: The role of microorganisms
- F.M. Swain, B.D. Johnson and J.J. Pittman, Environmental aspects of marsh gases
- J.H. Reuter and K.C. Beck, Geochemical effects of organic-rich swamp effluents from the Okefenokee swamp-marsh complex of southern Georgia
- J.A. Calder and F. Kearsley, Particle size distribution and  $^{13}\text{C}$  content of dissolved organic matter in a salt marsh (Abstract)

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## News from TSOP

### 21<sup>st</sup> Annual Meeting, Sydney, Australia

The 21<sup>st</sup> Annual Meeting of the Society for Organic Petrology will be held in Sydney, Australia, between Sunday September 26 and Friday, October 1, 2004. Technical sessions and social events will be held at the Crowne Plaza Hotel, Coogee Beach, an integrated meeting and accommodation facility conveniently located with respect to both Sydney Airport and the city centre.

The meeting has been warmly embraced by the international research community, and following a

number of requests the deadline for submission of abstracts was extended to May 31<sup>st</sup> to allow additional papers to be completed. More than 70 technical papers have now been submitted for oral or poster presentation, with authors drawn from all continents of the world (except Antarctica).

Oral and poster papers will be presented at the Crowne Plaza between Tuesday, September 28 and Thursday, September 30. The papers that have been submitted cover a diverse range of topics, including organic petrology and geochemistry in relation to petroleum generation, developments in coal characterisation, utilisation and environmental impact, advances in coal-bed methane geology, fundamental research in organic petrology, and the application of new organic petrology techniques.

Keynote papers on the main meeting themes will be given by Romeo Flores, US Geological Survey (coal-bed methane), Andrew Scott, Royal Holloway, University of London (organic petrology), and Bob Davis, Woodside Energy Limited (petroleum geology). By arrangement with the Coalfield Geology Council of New South Wales, Claus Diessel will also present the 5<sup>th</sup> Kenneth Mosher Memorial Lecture at the meeting, with a discussion on the role of coal petrology in on-shore sequence stratigraphy. Alan Cook, as President of ICCP, will also address the meeting.

Field trips associated with the meeting will include a visit to the oil shale (torbanite) deposits at Joadja, in the Southern Highlands of New South Wales (Sunday, September 26), led by Adrian Hutton, and another to examine the fluvio-deltaic, alluvial fan and volcanic-influenced sedimentary deposits of the Newcastle Coal Measures in the northern Sydney Basin (September 30 - October 1), led by Claus Diessel. A short course on the analysis and significance of mineral matter in coal, led by Colin Ward and David French, will be held on Monday, September 27. Family members accompanying meeting participants are also invited to join the special Partners' Program, with visits to places of interest in Sydney on the main days of the technical sessions.

Additional information in the meeting is available from the TSOP web site at: <http://www.tsop.org/mtgsyd.htm>. This includes the guide to authors for technical papers and posters, information on the short course, field trips and partners' program, as well as registration forms and advice on accommodation arrangements. It also includes useful information on Sydney for local and international travellers, and web links to other sites

of interest in the Sydney region.

Students wishing to attend the meeting may also apply for financial assistance from TSOP, and additional information on this scheme is provided on the meeting web site (closing date extended to June 30<sup>th</sup>). Authors of papers presented at the meeting are further invited to submit full-length contributions based on their material to a follow-up special issue of the International Journal of Coal Geology.

ICCP members are cordially invited to join the meeting, and we look forward to welcoming you in Sydney. Colin Ward (mailto:c.ward@unsw.edu.au) or Neil Sherwood (mailto:Neil.Sherwood@csiro.au), as conveners of the Organising Committee, can provide further information on the meeting if required.

## 55<sup>th</sup> ICCP Meeting Poster Papers

In addition to the posters reported in ICCP News 31, the following poster paper was also presented at the 55<sup>th</sup> ICCP Meeting.

### Coal Grain Texture Analysis Using the MACE300™ System

B M Jenkins<sup>†</sup>, G O'Brien<sup>‡</sup> and Beath<sup>‡</sup>

<sup>†</sup> Jenkins-Kwan Technology Pty. Ltd., P.O. Box 883, Kenmore, Qld 4069, Australia

<sup>‡</sup> CSIRO Division of Exploration and Mining, P.O. Box 883, Kenmore, Qld 4069, Australia

Abstract A new coal texture analysis method has been developed under the Australian Coal Research Program to classify the microstructure of crushed coal. The application areas include coal washability studies, flotation performance modelling, fine coal sink float analysis, and coal utilisation research. Microscope images were captured using the MACE300™ system for coal petrography. This system produced reflectance-calibrated images of each grain, together with bulk petrographic information, including maceral abundance and vitrinite reflectance data (determined from reflectograms). The generation of individual grain

images provided an opportunity to develop new analyses on a grain-by-grain basis. The area and shape parameters of each grain, and texture parameters for each constituent within a grain, were determined. A five-class system based on the vitrinite content of each grain was found to be the most convenient primary sorting method. These grain classes were termed Brt (>90% vitrinite), BB (60-90% vitrinite), BD (40-60% vitrinite), DB (10-40% vitrinite), and DM (<10% vitrinite). The raw texture data for each class was exported to a spreadsheet environment for the development of application models (e.g. Figure 1). To validate the method, the bulk density was calculated for each sample (from the total abundances of organic and inorganic constituents shown in the grain images) and compared with laboratory results.

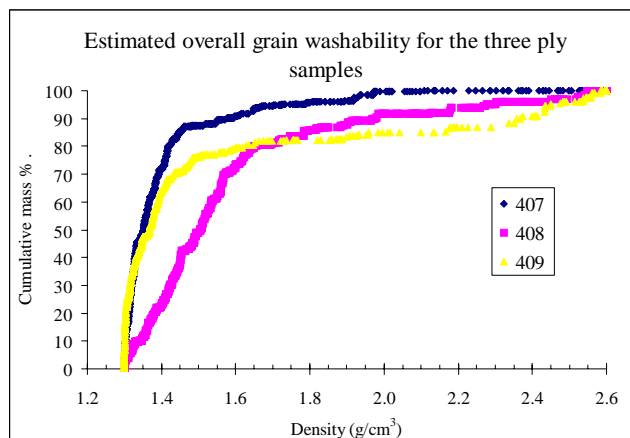


Figure 1. Example of estimated grain washability for samples taken at different locations in a coal mine. Similar analyses can be obtained for any defined textural class

Table 1. Compositional breakdown of each class type for ply sample 409. This sample had a laboratory determined density of 1.48 g/cm<sup>3</sup>

Grain Class	Vitrinite	Inertinite	Mineral	Bright Mineral	Grain Abundance	Grain density
Brt	97.21	2.07	0.72	0.00	34.07	1.31
BB	77.41	19.00	3.59	0.01	20.82	1.35
BD	50.27	40.35	9.38	0.02	10.49	1.42
DB	24.19	55.97	19.84	0.01	18.05	1.56
DM	4.42	55.76	39.82	0.02	16.58	1.87
Total	59.60	28.24	12.16	0.01	100.00	1.47

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## ICCP Classifieds

A free service to ICCP members. Send your 'For Sale', 'Wanted to Buy', 'To Give Away' etc. to the editor.

### WANTED TO BUY

- Objective: Leitz 50/0.85 P oil , Infinity/0  
*Dave Pearson*  
*mailto:dpearson@coalpetrography.com*
- Point counter  
*Peter Crosdale*  
*mailto:peter.crosdale@energyrc.com.au*

### DONATION NEEDED

- an old working photomultiplier microscope for vitrinite reflection measurements;
  - a point counter;
  - the last edition of COAL - Van Krevelen's.
- for the Carbochemistry Laboratory's benefit (Industrial Chemistry Faculty -University Politehnica Bucharest) which is deeply involved in petrological activities (graduation diplomas and Ph.D. students of Prof. Cornelia Panaitescu).

*Contact: Dr. Georgeta Predeanu:*  
*mailto:gpredeanu@metal.icem.ro or*  
*mailto:gpredeanu@yahoo.com*

---

## ICCP Awards

ICCP offers a number of awards to recognise outstanding achievements in coal and organic petrology at various stages of career development. Full details of each award, its terms and conditions and how to apply can be found on the ICCP home page at <http://www.iccop.org> or by contacting the chair of the award committee (see inside front cover).

### Young Scientist Award Call for Nominations

For recent higher degree graduates under 35 years of age who have potential to make outstanding contributions in the field of coal and organic petrology during their career. The award consists of:

- \$500US cash
- 3 years of ICCP Membership
- a certificate

In addition, the ICCP Council may invite candidates of exceptional merit to attend the next ICCP meeting to present their results. In this case, up to an additional \$1500US will be provided to cover expenses. Meeting costs will be included. Applications close on **December 31** of each year.

### Organic Petrology Award

The Organic Petrology Award recognises outstanding contributions by coal and organic petrologists at an intermediate stage of their career. It is limited to applicants under 50 years of age. The award consists of a bronze medal. Applications for the award are called for every second year. Nominations for the 2004 award are now closed.

### Thiessen Medal

This is the highest award offered by ICCP. It recognises a lifetime of achievement and outstanding contributions in the fields of coal and organic petrology. The award consists of a bronze medal. Awards are made sporadically but applications are called for every 2 years.

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## Answers to Know Your Coal Petrologist #9, 10 and 11

KYCP #9 is Joan Esterle at a mine in Bell County, eastern Kentucky, her MS field area. While Joan's dress sense has changed over the years, it is relevant to observe that not too many people can get away with wearing a lobster T-shirt under any circumstances. Members with very sharp eyes may even notice that the map Joan is holding was hand coloured by John Ferm's daughter Carol!

KYCP #10 is also Joan Esterle but in Clay County, eastern Kentucky. Illustrating the use of graduate students as scale in pictures of rocks, Joan was trying to pose on the outcrop, next to the tree, but reportedly lost her balance. In reality, Joan simply decided it would be more fun to jump while yelling "WOOH! WOOH! WOOH! WOOH!"

In KYCP #11, the incognito, 'Easy Rider' look is being sported by Jingle Ruppert (current TSOP vice-President) and Tim Moore (past TSOP president). The picture was taken on the 1994 TSOP field trip in Wyoming.

## WHAT'S HAPPENING

**20 -28 August 2004**

**32<sup>nd</sup> International Geological Congress**, Florence, Italy.

mailto:secretariat@32igc.org  
http://www.32igc.org/home.htm

**12 - 18 September 2004**

**56<sup>th</sup> Annual Meeting of ICCP**, Budapest, Hungary

Contact : Dr Mária Hámor-Vidó  
mailto:vidom@mafi.hu  
http://www.iccop.org

**13 - 17 September 2004**

**21<sup>st</sup> Annual International Pittsburgh Coal Conference**, Osaka, Japan

http://www.engrng.pitt.edu/~pccwww/  
For topic areas 12 (Coal Chemistry) and 13 (Coal Geosciences and Resources)  
Contact : Jim Hower or Toshimasa Takanohashi  
mailto:hower@caer.uky.edu  
mailto:toshi-takanohashi@aist.go.jp  
http://www.engrng.pitt.edu/~pccwww/

**27 September - 1 October 2004**

**21<sup>st</sup> Annual TSOP Meeting**, Sydney, Australia

Contact : Neil Sherwood or Colin Ward  
mailto:Neil.Sherwood@csiro.au  
mailto:C.Ward@unsw.edu.au  
http://www.tsop.org/mtgsyd.htm

**11 - 15 April 2005**

**The World of Coal Ash**, Lexington, Kentucky, USA

Contact : Dr Jim Hower  
mailto:hower@caer.uky.edu  
http://www.worldofcoalash.org/

**11 - 14 September 2005**

**22<sup>nd</sup> Annual TSOP Meeting**, Louisville, Kentucky, USA

http://www.tsop.org

**18 - 23 September 2005**

**57<sup>th</sup> Annual Meeting of ICCP**, Patras, Greece

Contact : Assoc. Prof. Dr. Kimon Christanis  
mailto:christan@upatras.gr  
http://www.iccop.org

## ICCP Publications

### ICCP Handbook

- ★ *International Handbook of Coal Petrography 2<sup>nd</sup> Edition (1963)* (in English) as CD ROM  
PC and Mac Compatible  
Requires Adobe Acrobat Reader Ver. 4 or above  
ICCP / TSOP member - \$25US (including postage)  
ICCP non-member - \$50US (including postage)
- ★ *International Handbook of Coal Petrography, supplement to the 2<sup>nd</sup> edition*, second print (in English) 1985 US\$30
- ★ *International Handbook of Coal Petrography, 2<sup>nd</sup> supplement to the 2<sup>nd</sup> edition* (in English) 1986 US\$10
- ★ *International Handbook of Coal Petrography, 3<sup>rd</sup> supplement to the 2<sup>nd</sup> edition* (in English) 1993 US\$20

Prices do not include shipping unless stated (approx US\$15 in Europe and outside Europe US\$23 per item) or cost of money transfer.

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