THE COMBUSTION INSTITUTE

(British Section)

NEWSLETTER

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Details from the Hon. Secretary, Professor Simone Hochgreb.
E-mail: sh372@cam.ac.uk

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EDITORIAL

It is the time of year at which Section business comes to the fore and so, as usual, it is the main content of this Newsletter. Perhaps to be added is the reminder that Section membership fees will rise in January 2011, to £30 for regular membership and £15 for student/retired members. The intention is that these fees will remain for a reasonable period. Other than these brief comments I feel rather at a loss for preamble on this occasion. Perhaps the Newsletter can speak for itself. Best wishes.

John Griffiths

COMBUSTION PEOPLE

Emeritus Professor Graham Dixon-Lewis, FRS, MA, DPhil, FInstE, 1922–2010

Graham Dixon-Lewis died on 5 August 2010.

Born in 1922 and a pupil at Newport High School, Graham went up to Jesus College, Oxford, in 1940, as a State Scholar and Welsh Foundation Scholar, to read Chemistry. Having graduated in 1944, he remained at Oxford to undertake research for a DPhil (awarded in 1948) on the oxidation of carbon monoxide and hydrogen, under the supervision of Professor J. W. Linnett. During the course of his doctoral studies, Graham Dixon-Lewis became interested in flame propagation.

However, in 1946, he was offered a post by Courtauld Ltd. to work on polymers, based in the company's fundamental research laboratory in Maidenhead. After three years' work on the kinetics of vinyl polymerization, the pull of his first research activity proved stronger and he took a less lucrative position as research officer with the (then) Gas Research Board, to study flames and combustion. In 1950 Graham married Patricia Best. Pat has befriended very many "combustion people" from within the UK and throughout the world over subsequent decades.

Four years later, in 1953, Graham took up a post as Research Chemist in the then Department of Coal Gas and Fuel Industries, in the "Houldsworth School" at Leeds University. This was under the auspices of the Joint Research Committee of the Gas Council and the University. Subsequently he became Senior Research Chemist, then Principal Research Chemist and, eventually, Gas Council Senior Research Fellow when the Joint Research Committee was replaced by the British Gas Fellowship Scheme, in the mid-1960s.

After a key pioneering paper, on the structure of a slow burning hydrogen flame, with Alan Williams, presented at the Ninth International Symposium on Combustion in 1962, Graham established a reputation as an international leader on the computation of the structure of the hydrogen laminar flame, including detailed chemical kinetics – a topic which remained dear to his heart to the very end. Having been satisfied sufficiently with its quantitative understanding, Graham then began investigating flames fuelled by mixtures of carbon monoxide + hydrogen and, despite the British Gas interest already having shifted to natural gas flames, with his typical thoroughness it was only when he had confidence in this system did Graham turn his attention to methane + air flames.

The outstanding work by Graham and his group, on laminar flame structure, ranked him as one of the world's foremost authorities in the field. His research involved collaboration on all aspects of flame. It drew upon expertise from Peter Gray's group in the Department of Physical Chemistry on gaseous diffusion and chemical kinetics, and Graham's computed, stretched laminar flame structures became essential input to the models of turbulent combustion developed by Derek Bradley and the research group in Mechanical Engineering. His interdisciplinary approach also extended to collaboration with Professor Goldsworthy in the Department of Applied Mathematics. Due in no small measure to the achievements of Graham Dixon-Lewis, Leeds University continued to flourish as a world centre of combustion excellence.

In a series of "classical" papers published in the *Proceedings of the Royal Society,* Graham deployed exceptional experimental skill and versatility, combined with a profound understanding of the theoretical

aspects of the subject, to unravel the complexities of laminar flames. This was achieved as a result of precise and accurate attention to detail. Graham set rigorous and exacting standards in both the quality and integrity of his research. His work was highly influential, not just in relation to flame *per se*, but also in the wider fields of chemical kinetics and fuel technology.

As will be familiar to anyone with any interest in flame structure and kinetics, many of Graham's papers appeared in *Combustion and Flame* and the *International Combustion Symposia.* More than twenty papers were presented at Symposia alone, the first of which was at the 4th Symposium in1952, held at MIT, and of which he was the sole author when employed at the Gas Research Board. Much of his work involved some difficult applied mathematics and it is worth noting what a near-contemporary at Oxford, P.V. Danckwerts, F.R.S., wrote, "Chemistry was an essentially literary subject at Oxford at that time. I was taught no physics and no mathematics. It was said that if an Oxford chemist encountered a differential coefficient in a book, he turned the page; if he saw an integral sign, he shut the book". Here then is a measure of Graham's development and achievement as a scientist, keen to use the first computers, along with numerical techniques.

Graham also took a full part in undergraduate teaching and in the supervision of postgraduate students in the "Fuel" department, at Leeds. (It had a series of different names during Graham's half century associated with it). Also, for many years, he was an associate lecturer in the Department of Physical Chemistry, and he played an important role, with colleagues in the Departments of Fuel and Energy, Physical Chemistry, and Mechanical Engineering, in establishing and sustaining the internationally renowned Centre for Studies in Combustion and Energy, in 1967. Graham was supported externally by British Gas for some 25 years, and with supplementary funding for research fellows, students and provision of equipment. Consequently, his promotion to a Readership in Fuel and Combustion Science in 1971 was made on an honorary basis. However, he transferred to the academic staff as Reader in 1977 and was awarded a Personal Chair in the following year, in recognition of his significant research contributions to combustion.

Graham retired from his Chair in 1987, with the title of Emeritus Professor. There followed a lengthy Indian summer of further research. Graham's scientific achievement was marked by distinguished awards in this latter period. He was the first person to receive both Gold and Silver Medals from the Combustion Institute in the same year (1990). In 1993, he was the recipient of the Royal Society of Chemistry's Award for Combustion and Hydrocarbon Oxidation Chemistry. Two years later, he was awarded the Dionizy Smolenski Medal of the Combustion Section of the Polish Academy of Sciences. Also in 1995, he was elected a Fellow of the Royal Society, an honour which thrilled him at the time and of which he remained tremendously proud. In 1997 he received the Sugden Award of the British Section of the Combustion Institute and in 2008 he was awarded the Huw Edwards Prize of the Institute of Physics for Services to Combustion Physics.

Graham's national and international reputation ensured that his services were widely sought by professional bodies and journals. He served as a member of the Combustion Institute's Programme Committee for International Symposia, the Flame Chemistry Board of the International Flame Research Foundation and of the Editorial Board of *Combustion and Flame*. In 1965, he was Visiting Professor at the Johns Hopkins University USA, a Visiting Scientist at the Sandia National Laboratories, Livermore in 1987, and at the Max Planck Institute, Gőttingen in 1994.

He was a founding member of the British Section of the Combustion Institute, in 1954, and served as a committee member and the Section's Honorary Treasurer (1969 -75). A group of 20 or so Section members will also remember with great fondness Graham's rôle as "Obergruppenführer" of the British contingent who attended the Seventeenth Combustion Symposium in Tokyo, in1974, and the highly enjoyable tour of Japan that followed it. This was a responsibility that one might not have naturally delegated to Graham since he never seemed to carry a watch – and Graham did share a confidence, at the time, with our Chairman that his family did not trust him to get them as far as Bridlington!

As a Research Professor, he continued to research and publish assiduously, and it was a regular (and always pleasurable) occasion for Leeds colleagues to have a chance meeting, well into 2010, either as he walked to the University from the bus that dropped him in the city centre, or otherwise in Mechanical Engineering, where he eventually had his desk and computer access.

This year, at the Sixth Fire and Explosion Hazards Seminar, on the 14th April Graham presented what proved to be his last scientific paper. The following evening, at the Seminar Banquet at the Royal Armouries, the delegates were on their feet toasting Graham and Pat on the occasion of their Diamond Wedding Anniversary. His last social gathering was on 16th July, in Leeds, at an informal party thrown by Elaine and Danny Oran to celebrate an Honorary DSc having been conferred on Elaine, by Leeds University.

Graham was a gentle and warm person, and universally admired for his friendliness, his generosity and his willingness to help anyone who sought advice. Because he had a sense of fun, he was good at making

friendships and maintaining them. His quiet humour was so enhanced by the twinkle in his eye and the delightful Welsh lilt that he never lost.

Amongst those present at Graham's funeral, held in Leeds on 13th August, were many friends and combustion colleagues from Leeds University. At the reception which followed, Derek Bradley gave a witty and very moving appreciation of Graham's life and work. Allan Hayhurst represented the British Section. Graham Dixon-Lewis is survived by his wife, Pat, son Andrew, and daughters Stephanie and Melanie.

Immediately on his return from the 33rd Symposium on Combustion, Charlie Westbrook, President of the Combustion Institute, wrote this tribute

With the passing of Graham Dixon-Lewis, the combustion community has lost one of its finest scientists and one of its most beloved colleagues. We all deeply admired him for his cheerful personality, his love for his work, and his willingness to help anyone who asked for his thoughts.

His astonishing technical productivity covered more than half a century, and he was a pioneer at the leading edge of computational fuel science for his entire career. But even more than his professional accomplishments, which included both the Gold and Silver Medals from the Combustion Institute (the first person ever to receive both awards), it was his lively and happy personality that charmed us all.

On the occasion of Graham's 80th birthday, the entire worldwide combustion community banded together to present him with a book of congratulatory letters, noting his many professional contributions and his impact on our lives. The most heartfelt of these letters recalled many times Graham contributed to all of our personal as well as professional lives, with many of those moments that we treasure as examples of how beautiful a man he has been. I am so glad that we all had that opportunity to tell Graham just how much we cared for him, before rather than after he left us. We will have many ways to remember Graham, but they will always be fond memories. We are so fortunate to have known him.

Sincerely,
Charles K. Westbrook
President, The Combustion Institute
10 August, 2010

An obituary can also be found in *Combustion and Flame* 157 (2010) 2013–2014.

As a supplement, I have reproduced the abstract of the seminal study of 1962. I have also reproduced part of the published discussion of that paper which illustrates how Graham's work has moulded our understanding of chemical kinetics and flame structure and, for that matter, how properly to set about the investigation of the quantitative structure of flames.

John Griffiths

Some observations on the structure of a slow burning flame supported by the reaction between hydrogen and oxygen at atmospheric pressure
G. Dixon-Lewis and A. Williams

The complete analysis of a flame structure consists of studying the variation of the temperature and all the composition parameters with distance *y* perpendicular to the flame front. By means of such analyses it is possible to investigate the mechanism and kinetics of the processes controlling the flame. However, for such investigations to have maximum effectiveness it is necessary to use the simplest flames consistent with the type of reaction mechanism. For this reason hydrogen-oxygen flames have for some time been studied in this laboratory as comparatively simple flames supported by a branched chain reaction system. The flame studied in this paper has an initial composition of 4.604 per cent oxygen, 18.830 per cent hydrogen and 76.560 per cent nitrogen. This flame is within the range of hydrogen-oxygen-nitrogen flames which can be stabilized at atmospheric pressure on an Egerton-Powling type of flat flame burner. For a matrix temperature of 336 K the theoretical flame temperature is 1078 K, and the burning velocity, measured by means of particle track techniques, is 9.2 cm/sec. The flame burns as a flat disc with the reacting gases flowing in a direction normal to the plane of the reaction zone. This produces an approximately one-dimensional flow system, and thus simplifies the analysis. In this paper the results of both an experimental and a theoretical investigation of the flame are described. These are combined in an attempt to give information about the flame mechanism. In the theoretical investigation the effects of alterations in some of the reaction and transport parameters on the flame have also been studied."

Written comment
"The central problem posed in this paper is the lack of agreement between the rate of heat release obtained by differentiating the measured temperature profile and the same quantity deduced from the measured H

atom concentration and the rate constant for H atom recombination. The maximum heat release is derived from the temperature profile at a point where its gradient is extremely steep, making the differentiation difficult; and the hydrogen atom concentration must be determined from the rate of the deuterium exchange reaction at a point where this method is losing its validity. The exchange rate constant is not without error and the atom concentration obtained must be squared and multiplied by the recombination rate constant which is also somewhat uncertain. In view of this, a discrepancy of a factor of ten in the two heat release rates is not at all surprising.

What is more serious is that the heat release and H atom profiles do not agree in shape as well as absolute magnitude. When the latter is squared as required by the proposed heat release mechanism and compared with the profile determined from the temperature, the temperature profile is more sharply peaked…."

Written response
"It seems to us that perhaps too much emphasis has been placed on the preliminary kinetic analysis outlined as the starting point for the theoretical section of the paper. This preliminary analysis indicates the non-applicability of the assumption that the major heat releasing process is the recombination reaction. The subsequent numerical solutions support this, and show that near the maximum heat release rate the less exothermic but much faster chain branching cycle provides the principal heat releasing step, when reasonable values are employed for the rate constants…..

The picture that emerges from this work is that of a flame in which H atoms are produced very rapidly in the region of the maximum heat release rate. The majority of these diffuse out towards the hot and cold boundaries of the flame before recombining, so that in the region of the maxima in the profiles most of the heat release is associated with the branching cycle of reactions."

Simple and elegant!

5th European Combustion Meeting 2011

Cardiff University

28th June - 1st July 2011 http://www.ecm2011.org

The British Section of the Combustion Institute under the auspices of the Federation of the European Sections of the Combustion Institute invite you to contribute to and join us at ECM2011 which takes place at Cardiff University, the largest in Wales. The Cardiff University School of Engineering has an extremely strong track record in undertaking quality research across a broad range of disciplines. The School recently celebrated 125 years of activity and is one of the oldest engineering schools in the UK. Cardiff is the Welsh capital city and is one of the youngest in Europe. It is cosmopolitan in outlook and caters for a very wide range of tastes in terms of culture, history and music. Away from the city, the magnificent Brecon Beacons National Park is only thirty miles north.

Chaired by Tony Griffiths, with supported from Prof Bill Jones, Imperial College, a small committee has been set up to organise the European combustion meeting in June 2011 at Cardiff. About 400 abstracts have been submitted from throughout Europe, and from 15 other countries. 74 abstracts have been submitted by UK researchers.

The British Section and Cardiff University are very proud to host this prestigious event.

As part of the European Cooperation in Science and Technology (COST) programme, the

First Topical Workshop "Methods for Model Simplification, Evaluation and Improvement"

will be held in the School of Engineering building on Tuesday 28th June 2011

MINUTES OF THE ANNUAL GENERAL MEETING

13.20 pm, 15th September 2010, University of Cambridge.

Professor A.N. Hayhurst chaired the Annual General Meeting.

Members present

Alan Bayley
Ghenadie Bulat
Davide Cavaliere
Stewart Cant
Cheng Tung Chong
Chris Coats
Jose Cullen
Alan Bayley
Ghenadie Bulat
Davide Cavaliere
Stewart Cant
Cheng Tung Chong
Jose Cullen
Oliver Darbyshire
Mike Davies
James Dawson
David Dennis
Thomas Dunstan
Yannis Hardalupas
Simone Hochgreb
Arvind Jasuja
Bryn Jones
Karthik Kashinath
Johannes Kerl
Isil Kilinc
Camille Letty
Kian Min Lim
Kexin Liu
Stephen Marshall
Salvador Navarro-Martinez
Oluwatoyin Omojola
Christopher Priddin
Guillermo Rein
David Smith
Thomas Sponfeldner
Peter Stephenson
S. Swaminathan
Jamie Turner
Konstantina Vogiatzaki
Mohd Yasin

1. Apologies for Absence

Apologies for absence were received from K J Hughes and J.F. Griffiths

2. Minutes of the AGM, 16th September 2009 at Shell, Thornton

The Minutes were signed as a correct record.

3. Matters arising

There were no matters arising.

4. Presentations of Prizes

The Chairman, Professor Allan Hayhurst, presented certificates and cheques to the winners of the Hinshelwood and Sugden Prizes for 2009, as follows.

The Sugden Prize 2009 was awarded to Derek Bradley and Gautam Kalghatgi for their paper "Influence of autoignition delay time characteristics of different fuels on pressure waves and knock in reciprocating engines", published in *Combustion and Flame*, 156 (2009) 2307–2318.

The Hinshelwood Prize 2009 was awarded to Dr Guillermo Rein, of the University of Edinburgh.

5. Chairman's Report

The Chairman highlighted the meetings that took place in 2009-2010 (see Secretaries' report), and the upcoming meetings in 2011. In particular, the 2011 ECM will be in Cardiff, and all members are encouraged to submit papers (deadline September 30) and attend the meeting. Sponsors are actively being sought for the meeting, and industrial members are encouraged to participate.

6 Honorary Secretary's Report

6.1. Membership

Membership numbers are stable, currently with 3 more than the corresponding date last year, although the balance has shifted slightly with 16 more student and retired members and 13 fewer full academic and non-academic members. 93 members pay by standing order, the others pay by cheque or direct internet banking payment. Assuming all outstanding standing orders are received, current membership stands at 244, with 138 full
members, 72 students and 34 retired members, a detailed breakdown is as follows:

Category	Number	%	Category	Number	%
Academics	93	38.1	Non-Academics	45	18.4
Academics (rtd)	25	10.2	Non-Academics (rtd)	9	3.7
Students	72	29.5			
Subtotal	190	77.9	Subtotal	54	22.1
	Total Membership		**244**		

Currently there are 27 new members and 24 non-renewals of 2009 members who have been sent a reminder. A detailed breakdown since 2000 is given in the following Table.

Date	Others (rtd)	Academics (rtd)	Students	Others	Academics	**Total**
2000	20	7	30	75	87	**219**
2001	21	9	15	81	68	**194**
2002	19	10	23	60	73	**185**
2003	16	13	30	54	81	**194**
2004	9	18	34	52	80	**193**
2005	9	18	47	46	94	**214**
2006	8	22	57	45	98	**230**
2007	6	23	65	47	95	**236**
2008	6	21	72	53	97	**249**
2009	8	23	59	50	101	**241**
2010*	9	25	72	45	93	**244**

* as of 9/9/10

6.2. Meetings and Travel Grants

Winter Meeting 2010
The Autumn meeting was held at Selwyn College on the occasion of Ken Bray's 80th birthday, on the subject of "Turbulent Combustion Today and Tomorrow". The long and short talks attracted a select audience from the UK and Europe, followed by a dinner attended by 27 people.

Spring Meeting 2010
The Spring Meeting was held in Edinburgh, on "Combustion Phenomena in Fire Science", and was attended by 39 people (including 18 students). The Poster Award Committee, formed by Prof Merci, Dr Vianna and Dr Harrison, selected two winning posters: Modelling of Sprays for Flame Suppression, by Alexander Snegirev, and "Experimental Review of the Homogeneous Temperature Assumption in Post-Fla

International Symposium
The British Section of The Combustion Institute sponsored 22 members to attend the International Symposium in Beijing to present an accepted paper.

John Blamey	Imperial College
Iain Burns	Strathclyde University
Cheng Tung Chong	Cambridge University
Maryam Gharebaghi	Leeds University
Sreenivasa Rao Gubba	Leeds University
Andreas M. Kempf	Imperial College
Dr Malcolm Lawes	Leeds University
Sgouria Lyra	Imperial College
Sean P. Malkeson	University of Liverpool
Morkous S. Mansour	Leeds University
Dr Sebastian Mosbach	Cambridge University
Alexandre Neophytou	Cambridge University
Michael Pettit	Imperial College
Vinayaka Nakul Prasad	Imperial College
Markus Sander	Cambridge University
Raphael Shirley	Cambridge University
Oliver Stein	Imperial College
Mark Sweeney	Cambridge University
Konstantina Vogiatzaki	Imperial College
Chris Wilson	Sheffield University
Jun Xia	Southampton University
Maria Regina Gomes Zoby	Imperial College

7. Honorary Treasurer's report

Detailed balance sheets are attached.

7.1. 2009 Overview

The 2009 accounts were once again audited by Mike Davies and Chris Morley, to whom many thanks are due. During 2009, the accumulated funds remained nearly constant to stand at year-end at approximately £67.5K. Normal expenses (committee secretarial, newsletter, prizes) accounted for £4320.85, which is higher than 2008 but in line with the historical trend. Travel grants, totalling £1800 were paid in 2009 to allow travel to the European Sections Meeting in Vienna. Membership subscriptions accounted for £ 3856 of

income (5% down from 2008). However investmentincome of £775 was much lower than 2008 due to a sharp fall in interest rates. Proceeds from meetings at Imperial College and Shell Technology Centre Thornton yielded just over £1300. The trend over recent years has been for the funds of the section to show an oscillatory behaviour because a much higher level of travel awards are paid out in symposium years than non-symposium years. The normal pattern therefore would have been for accumulated funds to have increased during 2009. The fact that this did not happen is mainly attributable to the fall in investment income.

7.2. 2010 Status and Outlook

The continuing overall financial health of the British Section at the start of 2010 has permitted us to pay 22 travel grants for attendance at the Combustion Symposium in Beijing (each of £475). Interest rates have worsened since 2009 and a further fall in investment income is expected. However the increase in membership subscriptions to £30/£15 for regular/(student/retired) members will bring in some additional income. It is hoped that the ECM 2011 meeting in Cardiff will further serve as a means of boosting our finances.

8 Combustion Symposium Bid for 2016

The Chairman related the process of selection of a venue for the International Symposium bid for 2016. Markus Kraft originally approached the committee regarding the possibility of holding it at Cambridge. Although there was significant enthusiasm, it was judged to be risky given the limited availability of hotel rooms and joined venues. London was offered as a possibility, and Prof Bill Jones kindly organized a bid for presentation in Beijing. We have not yet heard from the selection committee, but there is significant competition from Seoul, particularly since there is an intention of alternating meetings between Europe, North America and Asia, given the success of Beijing.

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9. Any Other Business

9.1. Combustion public image

At the last AGM an issue had been raised regarding the possibility of reaching public opinion more broadly, to counteract the image as combustion as the problem to combustion as part of the solution. A committee chaired by Doug Greenhalgh was created, but it did not meet actively since then. After a discussion, a consensus emerged that we should coordinate with the IMechE and other organizations with greater clout. The issue will be taken up at the next CIBS committee meeting on 14 October 2010.
Likewise the issue of The British Section making its voice heard on Government cuts for research and Energy Policy were referred to the committee.

21st September 2010

Prof. Simone Hochgreb
Honorary Secretary

STATEMENT OF ACCOUNTS
COMBUSTION INSTITUTE (BRITISH SECTION)
Statement of Income and Expenditure for the year ending 31 December 2009

INCOME

	2009 £	2008 £
Membership subs	3856.00	4084.00
Colloquium fees	1314.45	1540.00
Investment income		
COIF Account	774.97	3458.74
Lloyds (2)	75.00	
	6020.42	9082.74

EXPENDITURE

	2009 £	2008 £
Colloquium expenses	0.00	1380.73
Secretarial expenses	66.80	173.94
Committee expenses	1975.26	1280.57
Newsletter	1178.19	393.30
Travel grants	1800	8880.50
Prizes	1100	600.00
Surplus (Deficit)	(99.83)	(3626.30)
	6020.42	9082.74

Subject to year to year variation because of the timing of receipts and payments at the year end.

Balance Sheet for the year ending 31 December 2009

	ASSETS			LIABILITIES	
	2009 £	**2008 £**		**2009 £**	**2008 £**
Lloyds Bank 0082488	4168.61	2984.76	Uncashed cheques(3)	0	241.50
COIF 938290001C	63566.86	64791.89			
Overpayments(1)		58.65	Accumulated funds	67735.47	67593.80
	=======	=======		======	=======
	67735.47	67835.30		67735.47	67835.30

(1) Erroneous payments, repaid in 2009: bank error £15.90; double expenses claim £42.75
(2) Goodwill payment in respect of problems with the current account
(3) Cheque 599 for travel grant uncashed. At year end cheque was more than 6 months old – assumed not to be a liability.

BRITISH SECTION PRIZES: NOMINATIONS FOR 2010 AWARDS

Rules for the "Sugden Prize"

An award shall be made annually for the paper with at least one British Section member as author which makes the most significant contribution to combustion research. The prize will be called the Sugden Award, in honour of Sir Morris Sugden.

The aims of the award are threefold:

a) to recognise good work in combustion
b) to encourage membership of the Combustion Institute
c) to encourage combustion research and publication, especially by British institutions.

Any member can submit or propose a paper published anywhere, for consideration. Furthermore, all members are encouraged to propose meritorious papers to the judges and the committee. The judges will automatically consider all eligible papers in the following journals: Combustion and Flame, Combustion Science and Technology, the Proceedings and Philosophical Transactions of the Royal Society, and Combustion Theory and Modelling. Papers published in the Proceedings of the International Combustion Symposia will not be considered for this award.

Rules for the "Hinshelwood Prize"

The Hinshelwood Prize for Combustion recognises meritorious work, in any branch of combustion, by a younger member of The British Section of The Combustion Institute. One aim of this annual prize is to encourage young people, not as yet well established researchers, but who work in any area or aspect of combustion. In addition, the prize commemorates Sir Cyril Hinshelwood, who shared the Nobel Prize for Chemistry in 1956 for his work on the combustion of hydrogen. Preference will be given to candidates under the age of 35 years on the deadline for nominations.

Written nominations, which may be submitted by anyone who knows the work of the nominee, must be received by the Secretary of The British Section no later than 31 December in each year. Nominations should include the *curriculum vitae* and list of publications of the nominee and also a brief account (no more than two pages of A4) of that person's achievements including description of accomplishments in industry if it is appropriate.

The award shall be of a certificate and a sum of £300. Normally one award shall be made each year; however, no award will be made, if, in the opinion of the panel of judges, a candidate of sufficient merit has not been proposed.

Each year the Committee of The British Section will nominate a panel, normally of three judges, who will be experts in different aspects of combustion. The chairman of the panel will be a member of the Section's Committee. The panel of judges shall co-opt extra members if they deem it necessary to select the winner of the prize. The Award shall be presented at the next Annual General Meeting of The British Section.

Rules for the "Gaydon Prize"

An award shall be made for the paper, with at least one British Section member as author and published in the Proceedings of the International Symposium, which makes the most significant contribution to combustion research. The prize will be called the Gaydon Award, in honour of Prof. A.G.Gaydon, FRS.

The aims of the award are twofold:
a)to recognise good work in combustion
b)to encourage submission of papers to the International Combustion Symposium

The prize shall consist of a certificate and cash award of £300**,** and shall normally be awarded at the Autumn meeting of the Section. The citation will be made out to all authors. However the cash award will be shared amongst those authors who were members of the Combustion Institute at the time of the Symposium. Co-authors who are non-members of the Combustion Institute will be offered free membership of the Combustion Institute (British Section) for a period of three years starting retrospectively from the beginning of the year of the Symposium.

Report on the 33rd International Combustion Symposium Beijing, 2 – 6 August, 2010

Reports were received from Iain Burns, Maryam Gharebaghi, Sree Gubba, Sean Malkeson, Sebastian Mosbach, Markus Sander, Raphael Shirley and Jun Xia.

My thanks go to them. The value of the Section's financial contribution to enable younger research workers to attend the international meeting, and to present their work, is very clear from what has been written, and each of these people have expressed his or her gratitude. The benefit is not readily measurable, but a number of us will recall what the generosity of the Section meant to us in our formative years as research workers. (Maybe there is one measure, which is the incentive to progress towards a submission for the 34th Symposium in Warsaw, two years hence!) Here is a distillation of their impressions.

Once again Beijing proved that it is a remarkable host/organizer for any event regardless of the number of attendees, be it Olympics 2008 or the 33rd International Symposium on Combustion, 2010. The format was as usual, with a succession of interesting plenary talks, over the five days, followed with technical sessions led by well-known Chairmen/women and with each day ended with fascinating social events. The plenary lectures were of a high quality and the contributed talks were generally good, stimulating lively discussion. With the exception of the lecture on soot formation, the plenary topics concentrated on modern approaches to the study of combustion, as follows.

Hottel Lecture: *Applications of Quantitative Laser Sensors to Kinetics, Propulsion and Practical Combustion Systems*, Ronald K. Hanson, Stanford University, USA
Micro and Mesoscale Combustion, Kaoru Maruta, Tohoku University, Japan
Formation of Nascent Soot and other Condensed-Phase Materials in Flames, Hai Wang, University of Southern California, USA
Petascale Direct Numerical Simulations of Turbulent Combustion: Opportunities and Challenges, Jacqueline H. Chen, Combustion Research Facility, Sandia National Laboratories, Livermore, USA
Visualization and Understanding of Combustion Processes using Spatially and Temporally Resolved Laser Diagnostic Techniques, Marcus Aldén, Joakim Bood, Zhongshan Li, Mattias Richter, Lund University, Sweden

The complete spectrum of combustion activity lay within the main body of the programme, with strong interest in the sessions on coal combustion and turbulent combustion. The plenary lecture on soot formation seems to have been held in particularly high regard and the subsequent sessions on that topic were of particular interest amongst our delegates.

Clearly the networking opportunities with international researchers were greatly appreciated. The conference was thought to be well-organised but, on balance it was felt that the posters did not enjoy the best exposure and were somewhat marginalised, being poorly located and with no individual periods being allocated to their presentation. The volunteers from Tsinghua University deserve special praise for their time and efforts, and for the welcome given.

In an overall tribute to the organisers, I quote one of our more seasoned delegates. "Having attended three previous Combustion Symposia in Chicago, Heidelberg, and Montreal, I have come to expect a highly stimulating technical programme as well as very enjoyable social events. Even with such high expectations, I was delighted to find that this year's Symposium in Beijing exceeded them all."

John Griffiths

COMBUSTION-RELATED PAPERS PUBLISHED BY SECTION MEMBERS IN 2009

Members were invited to send their list of publications for 2009. Those received are reproduced here. The list is in alphabetical order of the surname of the first-mentioned author.

Chris Morley

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Baeza-Romero, M.T., J. Wilson, E. Fitzpatrick, J.M. Jones and A. Williams, "Is biomass soot different from hydrocarbon soot? An in situ study using ATOFMS (Aerosol Time of Flight Mass Spectrometry)", Tenth international conference on energy for a clean environment , 7-9 July 2009 Instituto Superior Técnico, Lisboa – Portugal

Baeza-Romero, M.T., J. Wilson, E. Fitzpatrick, J.M. Jones and A. Williams, "The mechanism of biomass soot formation: An in-situ study using ATOFMS (Aerosol Time-Of-Flight Mass Spectrometer)", 42nd IUPAC Conference, Royal Society of Chemistry, Glasgow, August 2009. Poster Presentation

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http://www.afm.asso.fr; http://ukelg.ps.ic.ac.uk/;
http://www.iop.org/activity/groups/subject/comb/index.html http://www.see.ed.ac.uk/fire/links.html

2010

8 December
Edinburgh
Tam Dalyell prize 2010 Christmas lecture, University of Edinburgh
"Fire: A story of fascination, fear and familiarity", Professor Jose Torero
Details: http://www.ed.ac.uk/news/all-news/dalyell-171110

2011

26–29 April
Estoril – Palacio Estoril Hotel, Portugal
9th European Conference on Industrial Furnaces and Boilers
Details: http://www.cenertec.pt/infub

25-26 May
Rouen, France
ERCOFTAC: Highly Resolved Experimental and Numerical Diagnostics for Turbulent Combustion.
Abstracts due, March 15th, 2011
Details: http://les.coria.fr
.
28 June - 1 July
University of Cardiff, Cardiff, UK
ECM 2011: 5th European Combustion Meeting
Details: http://www.ecm2011.org/

24-29 July
Irvine, California, USA
23rd International Colloquium on the Dynamics of Explosions and Reactive Systems
Details: http://icders2011.eng.uci.edu/node/1
The deadline for initial submissions is December 15, 2010

12-15 September
Warsaw, Poland
13th European Turbulence Conference (ETC13)
Details: http://etc13.fuw.edu.pl/papers/call-papers.

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