

Editorial

Preface to ISBC XIII Proceedings Special Issue

The thirteenth conference of the International Society for Biological Calorimetry took place in the village of Veitshöchheim, close to Würzburg in the Lower Franconian region of Germany on 27 September to 1 October 2003. In preparing this conference, the Organising Committee made some decisions that moved ISBC into new territory. First, it was decided to place the emphasis of the conference in a precise direction by giving it a challenging, specific title. This was not to exclude anyone from our meeting, but to make clear what type of calorimetry will be primarily (although not exclusively) the subject. Moreover, whereas static measurement of resting energy turnover might seem a trifle old-fashioned, studying the energetics of adaptational or developmental processes remains a continuous challenge for our field. As a result, we were able to welcome a number of participants who (possibly prompted by this main heading) join our meetings for the first time, and who gave a fresh impetus to our common field of interest.

The second departure was the decision to accept a certain widening in the meaning of calorimetry in as much as it does not only include “calori-metry”, which means “heat measurement”, in its strict sense, but also determination of gas exchange by “indirect calorimetry”. I think this will not question the legacy of Lavoisier because he did not only construct his well-known ice calorimeter, but also performed experiments on oxygen consumption in a variety of species including humans.

The third new direction was to have not only one, but two publications arising from this meeting. As usual, this Proceedings Volume with peer-reviewed papers reflects the “state of the art” of biological calorimetry. In addition, a special issue of journal *Respiratory Physiology and Neurobiology* has been published as volume 141 to cover 11 peer-reviewed papers on the phenomenon of “hypoxic hypometabolism”, thereby reflecting the “Energetics of Adaptation” focus of this meeting. Since Elsevier publishes both journals, I am sure that this is not a competitive, but a complementary enterprise, reflecting the wide scale of subjects discussed within this meeting. At any rate, there were a total of 45 lectures, 13 posters and six workshop contributions at the conference, covering all aspects of biological calorimetry. To increase the significance of the posters, we decided to offer their

authors an opportunity to summarize their work in a short plenary presentation (with the subsequent discussion taking place at the posters). Professor Erich Gnaiger from Innsbruck University was awarded the Lavoisier Medal, in recognition of his exceptional direct and indirect bio-calorimetric studies.

When the founding father of biological calorimetry, Antoine Laurent Lavoisier, was born in 1743, the University of Würzburg was already more than 300 years old, making it one of the oldest universities of the German speaking area. The Workshop on the final day was held in the University Clinics. Earlier in the conference and, as part of the social programme, participants went by boat up the River Main to Würzburg for a guided tour to some of the most important sights, namely, the imposing Fortress Marienberg which now houses a unique collection of the works of the Gothic master sculptor, Tilman Riemenschneider; the pilgrimage church called “Käppele”, by the baroque architect Balthasar Neumann; the romanesque cathedral with the nearby tomb of the minnesinger Walter von der Vogelweide; and the splendid Residence of the Prince-Bishops, again by Balthasar Neumann, with its monumental staircase and the delightful ceiling frescos by the Italian painter Giovanni Battista Tiepolo. The excellent conference dinner in the ancient cellars was preceded by, and indeed accompanied with, wine tasting orchestrated by a highly theatrical Cellar Master – he was quite the star turn of the outing!

Most participants took the opportunity to witness the fact that Veitshöchheim itself is one of the most famous villages in the Frankonian wine country. In conference breaks, people visited the unique Rokoko garden with its beautiful summer residence and the historical synagogue with the associated Jewish Museum; and of course ate in some of the many superb restaurants in the village, followed by a stroll along the banks of the Main in the early autumn air.

The dean of the medical faculty, Professor Stefan Silbernagl, welcomed the participants on behalf of Würzburg University. He is head of the local department of physiology and a well-known kidney physiologist and textbook author. Professor Peter Scheid gave the stimulating opening lecture on the extreme hypoxia tolerance exhibited by birds when flying over Everest. He was the head of the German Physiological

Society and has just retired from the chair of physiology at Bochum University.

I would like to express my gratitude to a number of advisers and collaborators for their help in planning and organizing the conference, namely to: Professor Johannes Piiper (Göttingen) for his willingness to support this meeting as a honorary member of the organizing committee; two of the founding fathers of our Society, Richard Kemp and Ingolf Lamprecht, for their never-ending patience with the local organizer and their invaluable practical and mental support; the Head of the Department of Pediatrics, Professor Christian Speer, who gave me any liberty I needed in organizing this meeting; my co-organizers; Dr. Ulrike Kammerer and Dr. Helge Hebestreit, for their uncomplicated help on the many problems that daily occur when preparing a conference; my technical assistant, Mrs. Elke Maurer, for her participation in the distribution of circulars and the planning of the tourist programme; the head of the Tourist Office, Mrs. Kleym, and to her colleagues for their help with hotel reservations and guided tours; the members of our lab and our clinical department for the technical assistance they offered us throughout the meeting.

In 1999, Lee Hansen started the first web site for ISBC. Thanks principally to Vladimir Mukhanov (Sevastopol), who also designed the ISBC logo displayed here, and Lars Wadsö (Lund), a new one is now in existence. Please visit it – <http://www.biocalorimetry.org/> – in it, the reader will discover that the venue for the Fourteenth ISBC meeting in May/June 2005 is a conference centre in one of the three cities in the Bay of Gdansk, Poland. Interested persons should contact the local Chairperson, Dr. Monica Normant of the Institute of Marine Biology in the University of Gdansk (monika@sat.ocean.univ.gda.pl).

Dominique Singer
Würzburg

Professor Erich Gnaiger – Lavoisier Medallist

Juvenal wrote on Hannibal, *...I, demens, et saevas curre per Alps*. With poetic licence, I like to think that he met Erich's ancestor there when he chanced upon Vorarlberg (which was not on the invasion route), Erich's homeland. So wedded is he to this part of Austria (is it wise to mention the "A" word?) that the temporal Gnaiger roots in this mountainous region must be Hannibal-deep! In Psalm 114 (v. 1) is written "The mountains skipped like rams: and the little hills like young sheep". With such a natural spring in his step imbued by the "activity" of the terrain, Erich arrived at Vienna University in 1970 to make his undergraduate studies before the magnetism of the Alps drew him to postgraduate studies in the Kalbelessee, "the" lake in the Tannberg area of Vorarlberg, near the mountain village of Schrocken. His academic base was the Zoology Institute in the University of Innsbruck and the mentor for his PhD studies and beyond during his almost 20-year association with the Institute was the Director, Professor Wolfgang Weiser. Erich was researching at his natural home in the mountains – Ingolf relates that his wife, Natasha, bap-

tised him "Alpengott" during a conference in Tbilisi, Georgia and it remains their nickname for him to this day. To quote From Byron's *Childe Harold's Pilgrimage* (canto 3, st 13):

Where rose the mountains, there to him were friends,

...Where a blue sky, and glowing clime, extends,

He had the passion and the power to roam.

Erich worked on the lake fauna in relation to their environment under all conditions and extremes of weather, even diving under the ice – and popping up through it to shock visitors! After gaining his PhD, he became a roving ambassador for calorimetry from his home base and, besides a postdoc period with John Widdows in Plymouth (UK), he spent considerable time in the USA working with many different individuals and groups, a feature of his life that continues to this day with the recent respirometric measurements of muscle biopsies from Greenland Inuit people.

Such is Erich's powerful intellect that one discipline was not sufficient for his active mind and he had enough material from his postgraduate studies for parallel dissertations on the physiology of the invertebrates in the lake under alpine conditions and the ecology of the lake environment. Such a twin approach has characterised his scientific life since that time and, while his paid job was and is in physiology, firstly of animals when based in the Zoology Institute and then of human cells and their mitochondria in the Department of Transplant Surgery, Innsbruck University Hospital, he has retained a fervent, almost messianic, commitment to alpine ecology and stopping the human-induced destruction of it. He still chairs the Innsbruck Ecological Forum, a branch of the Forum of Austrian Scientists for Environmental Protection, and follows the strictures of the musician Ernst Rudorff 100 years ago: *Eine wahre Manie hat die Welt ergriffen, die Natur in ihrem Wesen zu zerstören unter dem Vorgeben, daß man sie dem Genuß zugänglich mache* "Today, Erich's beliefs in this direction find their greatest expression in the interdisciplinary Alpmuseum in Tannberg that involves his wife, Andrea, among others from all walks of life. One can even have milk and its products from an alpine dairy farm there!"

Did I say "twin approach"? I should have added that he was never satisfied with the commercial equipment available to him, especially for respirometry. This can be seen in his classical book on oxygen electrodes in 1983. In the 1980s he formed a non-profit company with some Zoology colleagues called Cyclobios, after the Alchemist's symbol, to design and develop a twin respirometer for animal measurements that subsequently was manufactured and marketed by Anton Paar KG in Graz. It was also the basis for a calorimeter to study catabolic processes in small aquatic animals. The company had the motto "Feedback and Co-operation in Science". In the early 1990s, it metamorphosed into the equally alchemic Oroboros Instruments and became independent of Paar. The latest high-resolution instrument, Oxygraph 2k, is made entirely from local sources, even to the electrodes – the commercially available ones were not good enough! He has

ascended “the brightest heaven of invention” as spoken by Shakespeare’s Henry V.

Many of Erich’s experiments are brilliantly conceived, excellently executed and sharply focussed in razor analysis, where appropriate incorporating in it difficult and controversial concepts in non-equilibrium thermodynamics grounded in a thorough knowledge of classical thermodynamics – just read his PNAS paper with Steve Hand in 2000 (Gnaiger et al. 97, 11080-5) to see a work of genius in combining calorimetry with respirometry in the context of NET to mitochondria! And then he puts it all over at conferences with two concurrent sets of images and rare clarity of expression. Mind, it did take a while to emerge – the painter Gainsborough said that “genius and regularity are utter enemies” and certainly this one took some years from an idea on a Brazilian beach to the light of day. The PNAS paper is not alone in its outstanding quality and Erich has a string of seminal investigative papers in high-impact journals as well as many chapters and articles on the thermodynamic meaning and interpretation of concepts in physiology and ecology.

Following his striving for the co-operative development of concepts, over the years Erich has initiated several focus groups in ecology and physiology – they have always held incredibly intensive meetings with 18-h days and furious discussion – volcanic in style and larval in production! One such was the Bioenergetics Research Group (BERG) with him as its natural flagstone, that arose from the ISBC meeting or-

ganised by Erich in Schröcken in 1988. As befits its name, the Group met mainly in remote, idyllic hostelrys high in the Alps and, after many meetings, produced a seminal paper in BBA in 1993.

As one with such a sharp, clear-thinking mind, Erich sometimes loses patience with another, and engages in furious scientific discussion. But, for the most part, he has a charming personality and is extremely courteous to company. He has strong moral principles:

Dieser Imperativ mag der der Sittlichten heissen.

Kant, 1785.

And lives by them with respect to third world deprivation, the treatment of refugees, the destruction of our natural world and so much more. Nevertheless, it is as a superb, practicing scientist who has embraced and enriched the “Heat of Life” that ISBC presented Professor Erich Gnaiger with the Lavoisier Medal in 2003.

The author had prompting thoughts by Ingolf Lamprecht (Berlin).

Richard Kemp
University of Wales, Institute of Biological Sciences
Edward Llwyd Building, Aberystwyth
Wales SY23 3DA, UK
E-mail address: rbk@aber.ac.uk