Science Group of the Anthroposophical Society in Great Britain
Newsletter – March 2006

News

Nature Institute Goethean science course is 'on'

We are happy to inform you that the Goethean Science Studies Course from April 2 to June 16 will be taking place as planned. To date seven people have signed up for the course, which was our minimum number of participants. We view this course as a milestone in the development of The Nature Institute and look forward to this intensive training in the Goethean approach and to working with the course participants, who bring with them a variety and wealth of backgrounds and life experience.

The official deadline for applying has passed, but just in case any of you were waiting to apply until you heard the course is 'on', then now is the time to do so! Information about the Goethean Science Studies and an application form you will find on our website www.natureinstitute.org.

Craig Holdrege, The Nature Institute, 20 May Hill Road, Ghent, NY 12075, Tel: 518-672-0116, Fax: 518-672-4270, www.natureinstitute.org Email: craig (at) natureinstitute.org

Correspondence

Coloured Shadows

Having carefully read Malin Starrett's reply in the September issue of the Newsletter to my letters in earlier issues, I do not wish to write further counter arguments to his critical analysis of my views. Let us agree to differ, although I appreciate what he has put forward and fully agree that anyone wishing to really understand coloured phenomena should do the (many kinds of) experiments again and again. The danger of using the words 'objective' and 'subjective' in describing coloured shadows is that different people attribute different meanings to these terms. To me 'objective' implies true and real, 'subjective' implies being perceived by a human being, again a real phenomenon despite modern materialists' continual distrust of anything recorded by human beings instead of by lifeless machinery, including cameras. So Steiner's original indication that the coloured shadow is objective was correct but not technically (materialistically) correct. So, too, was Goethe in using the word 'subjective', for human subjects have real inner perception mediated by the real complementary colour fashioned by retina, brain and living body. I am sorry that Starrett considers the report given in the 1964 German edition of the *Light Course*, which I commented upon in the March 2005 Newsletter, as just one of many contradictory commentaries given over the past years. My own comments referred to the extenuating circumstances in which Steiner had to withdraw his opposition to Goethe's contention. Note too Steiner's remark about Ahriman's increasing influence upon our sense of sight.

A final thought: when one has attained to imaginative, inspired and intuitive cognition in spiritual domains, one has to learn that 'space', 'time', 'inside' and 'outside' require quite different concepts. Cause and effect are also unfamiliar. Even etheric space is not the same as physical space. Instead of looking at colour in the physical world, one lives within the colours when experiencing them etherically. In natural science one is dealing with the physical world and in my approach I seek to understand colours as physical phenomena rather than as etheric phenomena, wonderful though research into the latter is, guided by beings of the third and second hierarchies. The physical world is ordered by still more advanced beings – members of the first hierarchy. This may account for the divergences of views regarding after-images and coloured shadows.

Ron Jarman

The Thun-Heinze collaboration regarding sidereal Moon rhythms

Experiments have been performed by Maria Thun involving the sowing of twelve rows of vegetables over one sidereal month, and later in the season comparing their crop yields. The data website *Considera* by UK Biodynamic Agricultural Association member Mark Moodie (www.considera.org) requires actual sowing dates and yields of any such sowing trials. The question arises as to which published experiments contain this.

I have for many years alluded to these Thun experiments, in lunar gardening calendars that I have published; citing them as the very basis for accepting the hypothesis of sidereal four-element rhythms as have now been used by BD farmers for almost half a century. Of especial value here, was the Thun-Heinze collaboration, which meant that more than one person was involved in doing the experiment, always a good idea in scientific research. Dr Hans Heinze was a statistician.

It had long puzzled me that no sowing dates were given in many of the trials reported there. It has of late dawned upon me, that most of the experiments described in the Thun and Heinze publication of 1979* were not of this kind at all, but were 'Nachbau' trials. What they call a 'Nachbau' trial, is one where crops, e.g. potatoes are sown, over the 12 sidereal Moon-signs, then later in the season the seed potatoes are harvested, and these are then sown the next year, all on one day, in 12 separate rows. Then, at the end of that year, the crop yields are compared. Now, as an experiment concerning seed quality, that may be of interest under certain circumstances, provided that someone else was able to replicate it. However, it is not a sowing-trial as normally conceived.

Call me dim, but for about thirty years I have been misreporting these Thun-Heinze trials. May I here set the record straight? There are three years of potato sowing trials given in that book, 1963-65 ('Mondrhythmen' pp. 21-5), where dates of sowing are given and weight yields per row are also given – that is all that has been published, to my knowledge.

I am in touch with Nicolai Rudert-Smidt (grandson of Maria Thun, who has a doctorate in chemistry) and Gerhardt Staudenmaier, and they have not suggested any other such published trials. Occasionally one sees graphs published, showing the yields versus the twelve zodiac constellations,

with no dates, and that is not, I am here suggesting, quite adequate.

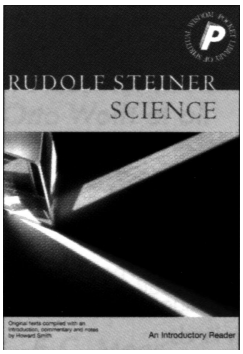
I had always assumed that other sowing trials had been performed with vegetables belonging, in the Thun theory, to other elements, e.g. beans as growing best on 'fruit/seed days' (the fire 'trigon' in the zodiac) or lettuce on 'leaf-days' (the water element), however this may well not be the case. Would any other readers perchance have a comment here?

Semantic postscript: The phrase 'workings of the stars on earthly substance' was used by Lilly Kolisko as the title of her 1928 publication. In this she erred: her work had nothing to do with the stars. The first demonstration, of' 'the working of the stars in earthly substance', was surely by Maria Thun, in these above-mentioned experiments.

* Maria Thun and Hans Heinze, 'Mondrhythmen im Siderischen Umlauf und Pflanzenwachstum' published by the Forchungsring, Darmstadt, 1979. The 1963-5 trials was published as 'Zusammenhänge zwischen Mond-Tierkreiskonstellationen und dem Pflanzenanbau' in *Elemente der Naturwissenchaft*, Easter 1967, p. 19-23. *Nicholas Kollerstrom*

Reviews

Rudolf Steiner: Science – An Introductory Reader
Original texts compiled with an introduction, commentary and notes by Howard Smith. 256 pp. ISBN 1 85584 108 8. Paperback. Sophia Books, £8.95. Translations have been revised by Matthew Barton. The book is part of a series called 'Pocket Library of Spiritual Wisdom'.



Overall this is a well-balanced selection of Rudolf Steiner's lectures and writings on science, illustrative without being a comprehensive tome.

Howard Smith's introduction makes the aim of the book clear and lays out the context of science in Rudolf Steiner's time. He makes a succinct portrayal of Spiritual Science and changed consciousness as well as dealing with the issue of 'belief in' what Steiner describes. The directness of his writing style would meet the needs of the reader new both to anthroposophy and issues in science.

The bulk of the book is Steiner's own words, with short commentaries for each chapter. Some of the latter are excellent as they avoid jargon and any hint of an exclusive 'we' set of assumptions, although there is a wobble (understandably?!) in Chapter 11 (Ethers). The commentary for Chapter 3 seemed too cryptic for an average reader and although some were excellent (Chapter 1 Pre-science) the tendency was for them to be too brief.

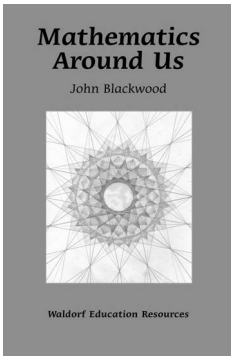
With its small format the book is already quite thick and I can understand this problem, but I also missed any reference to Einstein in Chapter 2 (Maths), to such as Schad and Holdrege in Chapter 5 (Goethe), to quantum, chaos and dark matter theories in Chapter 10. There is so much potential for a separate book here that I hope Howard Smith will consider it, because his best writing is both lucid and reader-friendly.

The notes at the back are good, there is no index (it would have had limited value and added bulk) but a list of books for 'further reading'. Always a problem this: what do you leave out? Nevertheless, I was sorry not to see Schad's seminal *Man and Mammal*, Arthur Zajonc's *Catching the Light*, Craig Holdrege's *A Question of Genes*. There were no references to research centres such as the Nature Institute, or even the briefest reference to education in science. Was it a considered decision not to mention the Science Section of the School of Spiritual Science? No websites were given either and these might have led readers to some of these omissions.

I have to comment on the style of the jacket in the hope that a reprint could consider this afresh. There seems to be far too much information in very small print on the back and if I turned it over in a bookshop, I would not be drawn to it. The contents and the biography of Rudolf Steiner should be inside and the full cover size given to a slightly shorter version of the rest. I have never seen so many words on a back cover! The front cover is good, with an eye-catching appropriate prism/colour experiment.

Altogether, well chosen source material for this 'Introductory Reader' and it was important that this title took its place alongside the many other more common themes of Agriculture, Education, Medicine, etc. Howard has done a good deed here and so have Sophia Books. *Graham Kennish*

Mathematics Around Us *John Blackwood.* pub: Floris Books 2006, ISBN 0-86315-838-3, £12.99



The author is an experienced teacher at the Glenaeon Rudolf Steiner School in Sydney, Australia. Besides giving regular courses in mathematics to high school classes there, he describes in this book his experiences of introducing important topics to younger students, especially to 13-year-old boys and girls in Class 7. He is especially concerned to help the children use mathematics to read what is revealed in 'the book of nature', a language of the Gods.

Many drawings constructed by the teenagers have been photographed and included in the book as well as their written observations and it is clear that they have much enjoyed what they have learnt. Having begun the three-week period by revising the basic geometrical constructions met in Class 6, the author encouraged them to find examples of geometrical form in the world around them – ripples in ponds and above all the rainbow – to reveal the circle. From circular loci and envelopes, attention proceeded to examine the overall forms of eggs of emus and other birds. Accuracy in the use of instruments like ruler, compasses and sharp pencil was constantly required. Regular hexagons constructed from circles led to examination of beehives; also of snowflakes. Archimedean and equiangular spirals exemplified by coiled ropes and snail shells respectively followed. The latter led to Fibonacci spirals and the golden ratio, and the question arose as to how far this ratio is found ideally in the human form.

The second section of the book deals with number relationships and different ways of measuring the world around us, leading to Pythagoras' theorem and Pythagorean triads – extending the simple triads of 3, 4, 5 and 5, 12, 13 to many more applicable to the length of sides of right-angled triangles, finally to a proof of the theorem.

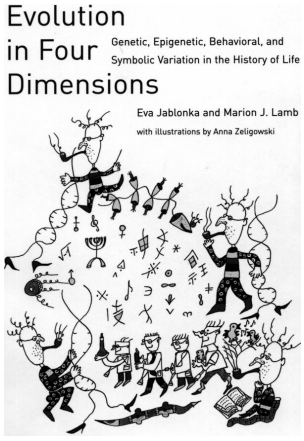
The book is a fine example of how a teacher can stimulate interest for a subject in his pupils.

One hesitates to criticise, but one would have liked to see how some of the discovery work could lead to practical human tasks in the world. For example, Pythagoras' theorem is essential in building and engineering construction. Geometrical progressions are not only observable all over the plant king-

dom and in animal shells, but in human dealings with money – debts over loans, even mortgages. However, it all depends on how long a period of time a teacher has at his disposal. Three weeks is too short a period for a 'main lesson', especially if the daily ration of 2 hours is cut down to 90 minutes. The time it takes the Moon to go through all its phases is required to really experience a subject and enable the memory to transform it for use when following up the subject several months or a year later.

Also published in 2006 by Floris Books of Edinburgh in its Waldorf Education series is *Mathematics in Space and Time* for Class 8 by the same author. Such books by practising teachers have much greater value that what is often produced by departmental offices of education. *Ron Jarman*

Evolution in Four Dimensions – Genetic, Epigenetic, Behavioral and Symbolic Variation in the History of Life *Eva Jablonka and Marion J. Lamb.* pub: MIT Press, Cambridge 2005. ISBN 0-262-10107-6



Eva Jablonka is Professor at the Cohn Institute for the History and Philosophy of Science and Ideas at Tel Aviv University. Marion J. Lamb was Senior Lecturer at Birkbeck College, University of London before her retirement.

The editor of GM Watch (No. 150, www.gmwatch.org) commenting on the BBC TV *Horizon* programme about epigenetics in 2005 wrote: 'It showed a bunch of geneticists catching up with what's been obvious to most of us all along: that environmental factors cause heritable effects in humans'. In fact, epigenetic inheritance systems, i.e. systems for handing down biological changes apart from the genes seen as DNA sequences, first gained wider recognition amongst biologists in the 1970s. While the role of such systems in evolution is not yet universally accepted, Jablonka and Lamb argue a good case for epigenetics being the second dimension in evolution, genes being the first. They describe a number of processes outside the genome that pass on information such as altered expression of genes and particular states of cellular metabolism or structures. Ways in which it could occur at the molecular level include chromatin marking (DNA methylation), prions (proteins that can change shape and pass on the change to others) and interference RNA (gene silencing).

But it is harder to envisage epigenetic inheritance playing a part in organisms where the germ cells (eggs, sperm) are separated at birth from those of the rest of the body, as in animals. Recognition of this fact has allowed several generations of biologists to laugh at Lamarckism. With germline segregation, how could giraffes who stretched their necks more in order to reach more fodder pass on such an advantage to their offspring? But with experiments showing that maternal diet can affect coat colour in subsequent generations of mice of uniform genetic composition, inheritance of acquired characters is clearly possible at the physiological level even with germline segregation.

Less controversial is the inheritance of the two remaining dimensions: behaviour and the use of symbols. Genomic inherited behaviour is instinctive. But much animal behaviour, such as the opening of milk bottles by tits, has to be learned, handed down by a mixture of imitation and trial and error. Clearly something is being behaviourally inherited, as too are the non-instinctive parts of animal 'cultures' and the ecological niches which they occupy.

The fourth dimension, is the use of symbols. 'What makes the human species so different and special [...] is our ability to think and communicate through words and other types of symbols...'. Language is passed from generation to generation. It is justifiably part of a person's inheritance.

Having identified the three plausible levels of extra-genomic inheritance the authors go on to show that these can have adaptive significance and can therefore contribute to evolution. This supplements genomic evolution which was traditionally seen by neo-Darwinism as *chance* mutation or recombination of genes leading to phenotypes (manifestations of the genes) which are then acted on by natural selection, eventually increasing or decreasing the frequency of particular genes in the population. Now, characters at levels of physiology, morphology, behaviour or language, whether acquired by chance or by some directed process, can not only play a part in evolution but also provide pathways where phenotypes can evolve far more rapidly than genotype alone would allow. The authors are unashamedly Lamarckian, but so, they point out, was Darwin in his section on the 'use and disuse of parts' in *The Origin of the Species*' (Chapter IV, 1st Edition).

How could a Lamarckian evolutionary process be reconciled with the neo-Darwinian? The authors gather several lines of evidence to show that epigenetic and behavioural inheritance can eventually be fixed or assimilated by the first dimension, namely by genetic inheritance. Selected variation, which was at first outside the genome, eventually becomes assimilated by the genome. This is hardest to picture with behaviour until we consider that the speed of learning a behaviour which has survival or mate selection value could be subject to genetic control and therefore be part of neo-Darwinian evolution. Once this is accepted, it is not difficult to extend it to language. Faster learning of language could allow some measure of genetic assimilation which could have adaptive benefits especially in the early stages of hominid evolution.

The authors hold the view that evolution acts at the level of the organism. It is not parts that evolve, such as so-called selfish genes or memes, but higher level entities where they are available. In a multicellular organism it is the whole organism; in colonial organisms, the colony and in social organisms including humans, the society. Evolution is marked not only by competition but also by cooperation at all levels.

Despite their Lamarckism, the authors are careful to rule out concepts of goal direction, purposiveness, 'hand of God', teleology and progression from their view of evolution. The nearest they come to such ideas is that where organisms are faced with a stressful situation, for instance when bacteria have a single food source for which they lack the necessary enzymes, they can induce hypermutability and possibly 'intelligent guesses' in parts of their genome, thus increasing the variation on which selection can act. This may also take place in higher organisms. The authors see no reason then why evolvability – the increased ability to generate non-lethal, relevant, phenotypic variation on which selection can act – cannot itself evolve and be under the control of the organism. There is no need to conceive this in a teleological way.

Although many of the ideas in the book remain controversial, not to say heretical, it provides some evidence that the genocentric view of the living world is beginning to give way to a more holistic approach. However, the authors still appear to regard organisms as *products* of genetic and epigenetic systems (e.g. p. 276). There is no hint of the primacy of the organism or the idea of the type. Thus Jablonka and Lamb are

restricting themselves to one side of the organism, the outer side, overlooking the inner principles of form, the laws of biological organisation that are essential for the complete picture. As Goethe put it:

'An internal and original community lies at the basis of all organisation; the difference of forms on the other hand arises out of the necessary relationships to the external world, and it may be justified therefore to assume an original simultaneous difference and [at the same time] a continuous progressive transformation in order to understand the constant as well as the divergent phenomena' (Die Skelette der Nagethiere. J. W. von Goethe, In: *Werke. Hamburger Ausgabe in 14 Bänden* (E. Trunz, ed.), vol. 13, p.218, Chr. Wegner Verlag, Hamburg, 1948-1966.)

As *Evolution in Four Dimensions* strives to encourage a major step forward in biological thinking, it presents all the examples the authors can assemble to support their case. In this respect it is a rich sourcebook, as evidenced by the thirty pages of bibliography. More background information and sources appears in a further thirty pages of notes. The authors also used an unusual literary device throughout, somewhat reminiscent of Plato's Socratic dialogues. At the end of each chapter they included a 'dialogue' between themselves and a hypothetical sceptic of their thesis. Not only does this allow them to revise chapter content and emphasise particular points, but also this device provides an opportunity to bring further argumentation. I expected it to be a time wasting gimmick but found it interesting and useful. However, I was less impressed by the somewhat artless illustrations throughout.

One criticism of their sceptical dialogue partner is that practical evidence for epigenetic evolution is still very thin. This, the authors argue, is because the prevailing views in biology for a century have largely prevented researchers from looking in the right place. Hopefully their book will help stimulate a shift in thinking, a broadening of biological vision. All the possibilities for external explanations may have to be exhausted before the inner, i.e. supersensible, ones are recognised and studied, at least beyond the fringes of the community of Goethean scientists. Some further thoughts along these lines, illustrated by the thinking of three exponents of a monistic theory of development and evolution, Rudolf Steiner, Jean Piaget and Conrad Waddington, can be found in Johannes Wirz's article 'Towards complementarity in genetics' (*Archetype* 4, 1998, 21-36). *David Heaf*

Publications

Die *Philosophie der Freiheit* von Rudolf Steiner als Grundlage der Logik des anschauenden Denkens *G. A. Bondarev*. 967 pages. illus. h/b. CHF 95.-, €60.-. pub: Freie Philosophische Association Basel, Postfach 102, CH-4312 Magden, Switzerland. Fax: 00 41 61 841 00 72.
Email: philoassobasel (at) solnet.ch.

In this book the attempt is made to give a systematic description of the methodology which underlies anthroposophy and which, at the same time, constitutes its essential core. This methodology has on the one hand a universal and on the other hand a subjective character – by virtue of its anthropocentric nature. It shows how the modern human being with his capacity for thinking in concepts can qualitatively transform the character of his thinking – and thereby also of his consciousness – by ascending from reflection to perceptive thought, and with the help of 'the power of judgement in beholding' (*anschauende Urteilskraft*) can perceive the ideas directly within the objects – just as this was possible for Goethe.

Such a transformation of the character of his thinking leads the human being to a metamorphosis of his own self, and ultimately also of his own species. And it is for this, above all, that anthroposophy provides a basis in method. It shows how humanity through the course of a long evolution has, in a certain sense, arrived at a threshold and also a point of crisis, in which it becomes evident that the creative forces of abstract thinking are exhausted. This crisis can be overcome and the threshold crossed by each single individual only if he is able to transform the quality of his thinking through the forces of a strengthened 'I'-consciousness.

This metamorphosis leads the human being to freedom. For this reason he can only realize it himself in full independence – in contrast to the evolutionary metamorphoses of the past, thanks to which he first became an upright, then a speaking and finally a rational being (*homo sapiens*), and in which he was carried by nature and by the general cultural development. On this path the methodology of anthroposophy will provide invaluable help.

This methodology can become the single unifying methodology of all modern sciences, as it describes the unitary sensible-supersensible reality. The subjective side of the methodology is expressed in the fact that its own reality arises only insofar as it is realized through each individual human subject, corresponding to the transformation of consciousness he has achieved individually. It assumes a special form in each human being. In order to master it, an assimilation of it in the form of knowledge is not enough: it needs to be learnt through practice. Theory and practice of this methodology have been given in the best and at the same time the simplest form by Rudolf Steiner in his *Philosophy of Freedom* (*Spiritual Activity*).

G. A. Bondarev's book contains, therefore, a complete structural analysis of this work, in which Rudolf Steiner presents the fundamentals of his theory of knowledge. Thinking takes place in the *Philosophy of Freedom* (*Spiritual Activity*) through the movement of sevenfold metamorphosis. A living experience of this thought structure constitutes the practical part of the methodology of anthroposophy.

If sufficient interest is expressed by English-speaking readers of the above, it may be possible to make available at least certain key sections of Bondarev's work in translation. Any communications on the subject to: Graham Rickett, 'Franaker', Box, Stroud, GL6 9HP, UK. Tel. 00 44 (0)1453 886468.

In Context, The Newsletter of the Nature Institute
No. 14, Fall 2005: As well as short items of news, reviews and comment, the publication carries the following feature articles: Wildlife observations, *Craig Holdrege.* Aristotle's opinion of modern physics (notes on a project to put the whole of Kurt Riezler's book 'Physics and reality: lectures of Aristotle on modern physics' on the institute's web site), *Steve Talbott*. The gene – a needed revolution, *Craig Holdrege.* The forming tree, *Craig Holdrege*.
Editor: Steve Talbott. Single copies of *In Context* are available free of charge while the supply lasts. Contact details: The Nature Institute, 20 May Hill Road, Ghent, NY 12075. Tel: +1 518 672-0116. Fax: +1 518 672 4270. Email: info (at) natureinstitute.org. Web: www.natureinstitute.org.
The Nature Institute's online *NetFuture* newsletter is available at www.netfuture.org.

Elemente der Naturwissenschaft
No. 83, 2005: Equisetum-Arten im Steigbild, *Ruth Mandera*. Betrachtungsebenen – von der Morphologie der Tropfbilder

bis zum Lebenszusammenhang, *Andreas Wilkens*. Untersuchungen an Knollen transgener Kartoffelpflanzen mit der Empfindlichen Kristallisation, *Haijo Knijpenga, Christine Ballivet, Beatrix Waldburger*. Digitale Erfassung und Analyse von Kristallisationsbildern – die Fraktaldimension, *Christine Ballivet, Johannes Wirz, Haijo Knijpenga, Catherine Mennessier, Aurélien Hazebrouk, Kathlyn Jean-Marie.* Begriff und Kontext in der Methode der Empfindlichen Kristallisation, *Beatrix Waldburger*. A Commitment to Observation, *Florian Theilmann*. Supplement: Bildschaffende Methoden, *Uwe Geier, Stefan Hirschberger, Christine Ballivet*

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Orders for back/single issues to: Naturwissenschaftliche Sektion am Goetheanum, Elemente der Naturwissenschaft, Postfach, CH-4143 Dornach 1, Switzerland. Tel. +41 61 706 4210. Fax +41 61 706 4215.

E-mail: science (at) goetheanum.ch.

Cost: Annual subscription (2 issues, including postage): €20.- / CHF 32.-. Single issues: €12.- / CHF 18.- ISSN 0422-9630.

A list of the contents of back issues is available at http://www.anth.org.uk/Science/elemindx.htm.

Tycho de Brahe Jahrbuch für Goetheanismus

2005: Spuren des Chronos im Wurzelbereich, *Manfrid Gädeke.* Über das Verhalten des Blattgrundes an blütennahen Laubblättern der Gattungen Ranunculus und Adonis, *Thomas Göbel.* Die Dreigliederung der Haut, *Ute Edlund*. Krkonoše – das Kernland des Riesengebirges: Eindrücke nach der Wende, *Wolfgang Schad.* Der goldene Schnitt und das Mysterium der Schönheit, *Ruben Stelzner*. Laut – Sprache – Rhythmus und Reim, *Thomas Göbel.*

224pp, 73 illus. (19 in colour), ISBN 3-926347-28-7, €23.50. All back issues still available. Please request a list of contents. ISSN 0177-168x. Edited by Rolf Dorka, Roselies Gehlig (Editor-in-Chief) & Angelika Heinze. Tycho de Brahe Verlag GdBR, Am Eichhof, 75223 Niefern-Öschelbronn, Germany. Am Eichhof 30, D-75223 Niefern-Öscheibronn, Tel. 07233-68 416, Fax 07233-68 413, E-Mail: Tycho.Brahe-Verlag (at) t-online.de Contact: Dr. Roselies Gehlig, Email: cg.carus (at) t-online.de.

Mathematisch-Physikalisch Korrespondenz

No. 222, Autumn 2005: Kritik des Gödel'schen Unvollständigkeitsbeweises, *Hermann Bauer*. Noch so viele Beispiele geben kein Garantie, *Bengt Ulin*. Magische Quadrate, *Paul Blok.* Selected topics in three-dimensional synthetic projective geometry: introduction, references and index, *Renatus Ziegler.*

No. 223, Winter 2005/6: Trefftypen, *Lou de Boer.* Rauschen – ein Grenzphänomen, *Ingrid Hartmann*. Nicht materialistische Einführung in die Wärmelehre, *Kurt Pfister.* Selected topics in three-dimensional synthetic projective geometry: Chapter 1 – Projectivities between primitive forms of one and two dimensions, *Renatus Ziegler.*

Subscriptions are SFr 50/€30 per year.

Edited by Prof. Dr. Peter Gschwind, Mathematisch-Physicalisches Institut, Benedikt Hugiweg 18, CH-4143 Dornach, Switzerland. Tel: +41 61 701 5968. Email: p.p.gschwind (at) intergga.ch.

Wasserzeichen

Nr. 23 (2005): Forschung zwischen Beweisen und Verstehen lernen, *Michael Jacobi.* Aufprallender Strahl und Wirbeltrichter – eine Polarität, *Andreas Wilkens.* (Both articles illustrated with photographs of flow experiments). In addition to the articles in this in-house magazine, its 62 pages have many shorter contributions including items on the Flow Research Institute's work, conferences and publications. Price €3.00 per issue. Free to sponsors.

Editors, Georg Nitsche & Andreas Wilkens, Institut für Strömungswissenschaften, Stutzhofweg 11, D-79737 Herrischried, Germany, Tel: +49 (0)77 64 9333 0, Fax +49 (0)77 64 9333 22.

Email: sekretariat (at) stroemungsinstitut.de.

Internet: www.stroemungsinstitut.de.

Treasurer's Report

Accounts summary for 2005: Income £575.43 (Subscriptions, £403.06; *Archetype*, £119.60; Other, £52.77). Expenditure, £485.03. Balance at 31.12.05: £2,016.31.

Membership

We welcome Lynda Hepburn (Scotland) and Dr Marco Melone (Italy) as new members and Dr Judyth Sassoon (Scotland) as a re-joining member. The Group has 63 subscribers.

The membership subscription is £5 (UK), £6 (Europe) or £7 (elsewhere).

Next Issue

This newsletter is issued to members in March and September each year. Copy for the next issue should reach the editor at the address below by 20th August 2006.

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Science Group web site: http://www.anth.org.uk/Science