

Science Group of the Anthroposophical Society in Great Britain Newsletter – September 2008

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An opportunity for friends of phenomenological science to support two book publishing initiatives by Adonis Press

Now that *Functional Morphology*, Johannes Rohen's great work on the human organism, has come out, I am looking forward to tackling two more major publishing projects: Andreas Suchantke's *Metamorphosis* and Wolfgang Schad's revised and expanded *Man and Mammals*. These two magnificent works represent a culmination of Goethean phenomenological science in our time.

Drawing on a lifetime of original research, Suchantke explores the creative principle of metamorphosis as it manifests in the plant and animal worlds. This is life science worthy of the name! Through the artistry of Suchantke's presentations, the reader gains a real sense of being able to inwardly participate in Nature's productions. His beautiful descriptions are enhanced by his exquisite drawings and photographs. This book shows as perhaps no other that the phenomena of the biological world are manifestations of an eminently creative lawfulness far richer than Darwin's natural selection.

Thoroughly revised and enhanced by five new chapters, Wolfgang Schad's new edition of *Man and Mammals* demonstrates the all-pervasiveness of the dynamic threefold principle within the mammalian world. For anyone who follows his detailed descriptions, this fundamental principle emerges incontrovertibly as a self evident biological fact.

In reading these books one begins to see and experience nature in a deeper, more meaningful way: it is as though one were developing new organs of perception. This new capacity of conscious participation in Nature is a prerequisite for developing practical ways of working with Nature. As guides to this new perceptual capacity, these books will contribute vitally to a truly ecological, healing culture.

However, the economic reality is that quality editions of large works such as these with numerous color illustrations can only be published if they are funded in advance.

The translation of Suchantke's 330-page *Metamorphosis* has already been paid for and is almost complete. Adonis Press has also already received a generous pledge of \$30,000 toward the publication of this book, which will almost cover the printing costs. However, more is needed for extensive editing and typesetting.

Schad's *Man and Mammals* is slated for publication in German this Fall, probably in two volumes. At that time it will be possible to assess the costs of the English edition.

Can you help make these books available to the English-speaking world?

Every contribution is greatly appreciated and will go directly toward the publication of these two books. Adonis Press is a

branch of the Hawthorne Valley Association, a non-profit 501 (c) 3 corporation, and all contributions are tax deductible.

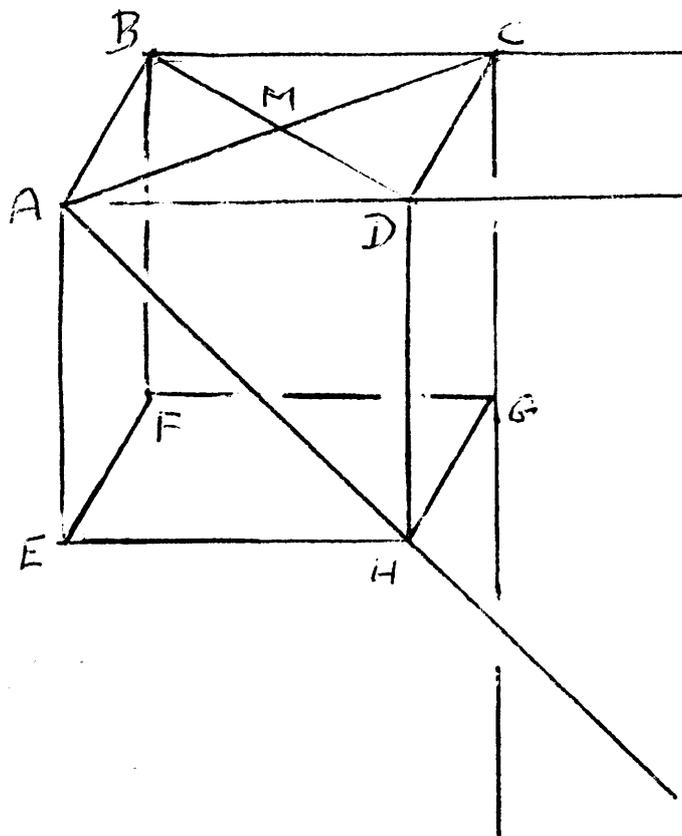
If you would like to support this work please contact John Barnes, Adonis Press, 321 Rodman Rd. Hillsdale, NY 12529, USA. Email: adonis (at) taconic.net. Web: www.adonispress.org. Tel: 518-325-1100.

Letter received regarding the experiment at Einsingen

Angela Patten as written to the Science Group enclosing copies of parts of *Farbenerkenntnis* published in German by Rudolf Steiner Verlag, Dornach, 1990, compiled by Hella Wiesberger and Heinrich O. Proskauer. These are written notes, documents and spoken descriptions from Rudolf Steiner 1889-1925. The pages enclosed are 73 to 105 and largely concern the experiment on bending the spectra in a magnetic field. Angela Patten's question to the Science Group concerns whether they 'give pointers to a new form of energy or energy source' as this 'could be very timely considering the world situation'. If anyone is interested in studying this material further and perhaps responding to Angela Patten's enquiry, please contact the Newsletter editor (contact details on last page).

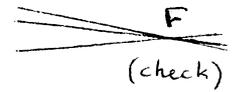
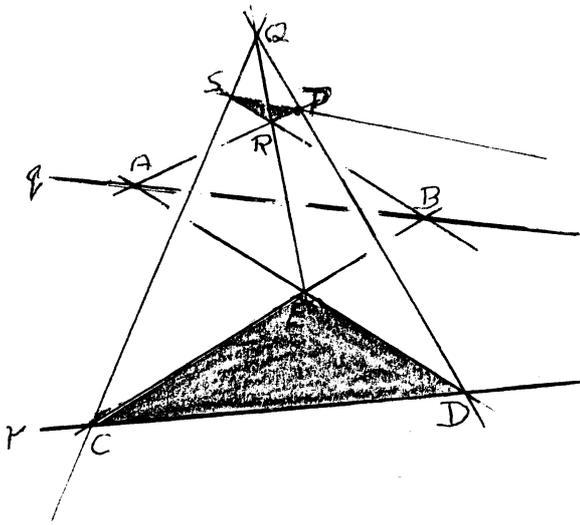
Away with this 'points at infinity' nonsense!

1) Consider any two lines in space. The most general case is a pair of skew lines, for example in the cube ABCDEFGH the



lines AH and GH do not meet each other. They are *skewlines*. Moreover there is no plane which contains both AH and CG.

Another case of non-meeting lines, but which do lie in a plane, are BC and AD. They are *parallel lines*, i.e. lines having the same direction, but not having a common point or meeting place.



In general, however, a pair of lines in a plane do have a meeting place, e.g. BD and AC meet in point M . These are *intersecting lines*.

2) Now take the practical problem of how to construct a line through some point P in space through the intersection point of two coplanar but not parallel lines q and r .

Choose any two points A and B on q and any two points C and D on r , such that AD crosses BC at E . Join P to A and D . Produce DP to any point Q . Join QE .

Since $QPDEA$ all lie in a plane, QE must cross PA (at R). Since $QCEBR$ all lie in a plane, BR produced must cross QC (at S).

But Q and r can meet only once (at F). So SP is the only possible solution; it is the line required.

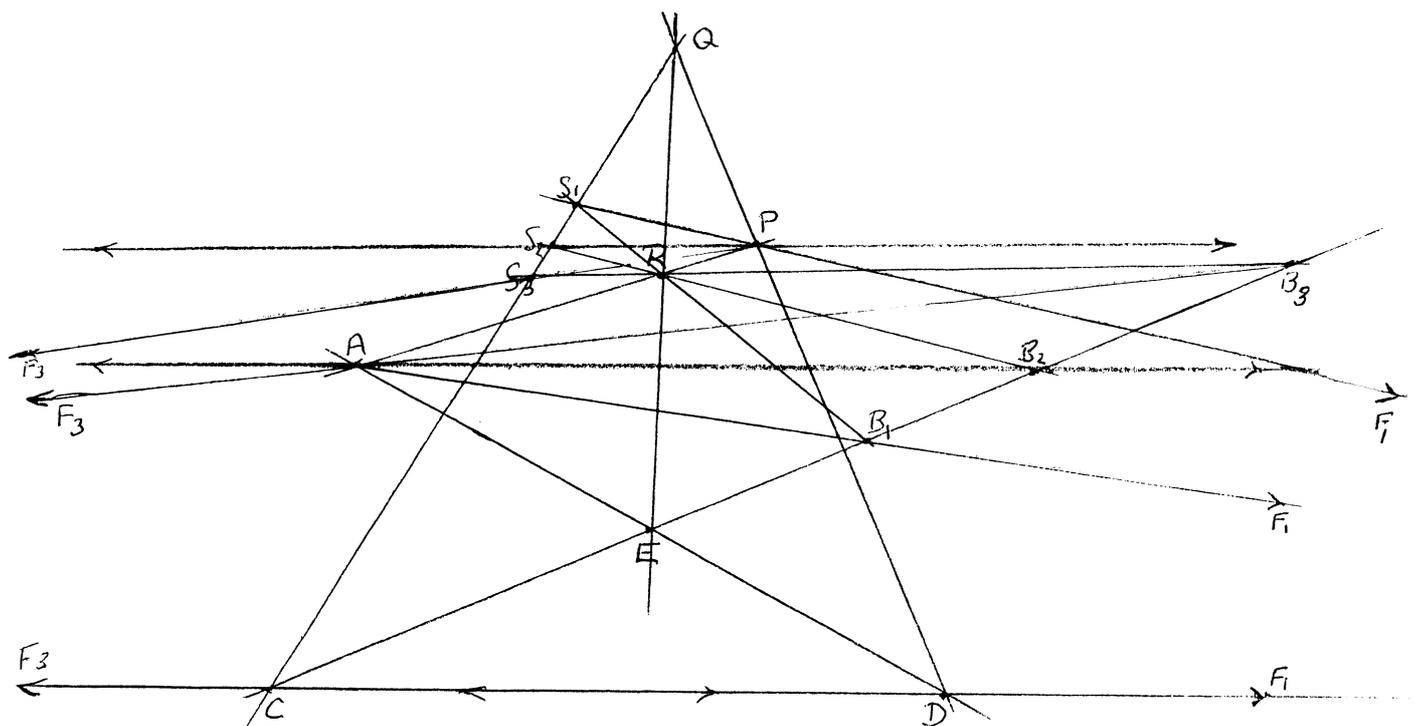
Re-emphasising, SP must meet CD in triangle QCD to the right and SP must meet AB in triangle RAB to the right. But F is the only point on both lines.

[The ten points $ABCDEFPPQRS$ are such that every point is the meeting of three lines in the figure and every line contains just three points of the figure.

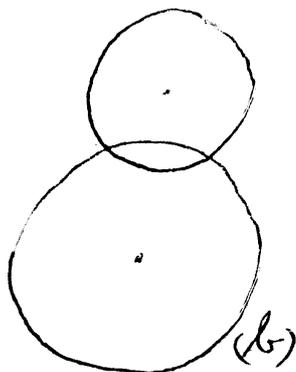
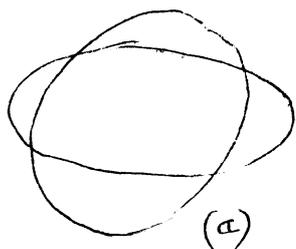
The two triangles shaded are copolar in Q and coaxial in q ; the first basic theorem in projective geometry discovered by Giraud Desargues. There are ten cases of pole and corresponding axis in the whole figure.]

3) Modify the practical problem so that q and r remain coplanar, but are also parallel. The same constructions can be carried out, but whereas S_1P would reach CD at F_1 to the right, AB_2 is parallel to CD and S_2P is parallel to AB_2 and to CD , so a meeting point (F_2) does not exist. F_2 is in fact a common direction. If a higher B_3 is chosen, S_3 becomes lower than S_2 and F_3 becomes a point to the left of C .

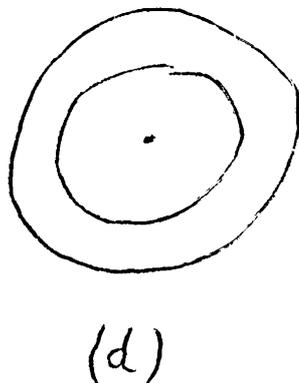
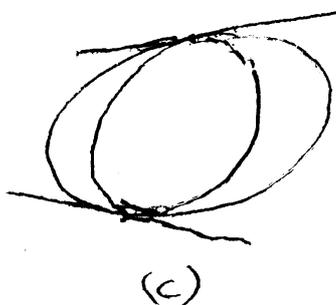
So as the position of F moves to the right a moment comes when F 's place no longer exists and immediately afterwards F is seen to be coming inwards towards C on the left.



4) When projective geometry is developed further, one describes ellipses and circles, saying that ellipses sometimes have four common points (a), circles only two (b).



But one has to describe two further points on these circles, called infinite imaginary points. Two ellipses can have double points (c), they have a pair of common tangents. But this is also true of concentric circles, although the common tangents are now imaginary (d). The two imaginary touching points are called infinite imaginary points. In every plane there are two such points called circles.



Had projective geometry adopted adjectives developed in anthroposophy, it might have called such invisible points inspired points and the invisible infinite point on every real line an imaginary point. There is no fourth kind of point (such as 'spiritual point'). For geometry does not deal with spiritual beings.

Ron Jarman

The 1940 Mather Moon-Phase Seedling Trials

The first thorough, scientific time-experiment with crop yields in relation to the lunar cycle, at least in the UK, was surely that of John Mather, working at the John Innes Institute. It was in the year 1940, and some early results of Kolisko's had by then been published, and although he does not mention her by name we may presume that it is her work that is being alluded to. He was testing the hypothesis that crops germinated better and grew better if sown just prior to the Full Moon, in fact two days before, which was Kolisko's argument. He published his results in the Journal of the Royal Horticultural Society in 1941, and his articles are the only ones ever published in that journal on the subject of lunar influence.

Mather sowed six rows of crops four times a month – two of tomatoes, four of maize – at each lunar quarter, or rather a couple of days prior to each lunar quarter, and he did this over 17 weeks, i.e. he sowed $17 \times 6 = 102$ rows altogether, as shown on the graph. Each row was harvested after the same 33 days of growth. If indeed any lunar quarter was having some influence, it surely ought to show up in so well-designed and carefully-executed an experiment.

He analysed his data by taking means of pairs of rows (his sowings of tomato, Maize 1 and Maize 2) so that he ended up with three sets of data instead of six, and he then put a five-point moving average through each of these three and subtracted these out from the data. Thereby he removed the seasonal trends. He then grouped the four data-sets by lunar quarter to see if there was any significant difference. Use of a five-point moving average has the effect of losing the first two and last two yield-values; so Mather's data ended up extending over three complete lunar months, after he had subtracted out his seasonal trend (he had one last row of a New Moon which he ignored and we'll follow him in this, its easier if there are the same number of rows for each lunar quarter). He obtained:

Seedling weight after 33 days, group means (percentiles)

1 st quarter	1.1 ± 13 oz. (n = 9)
Full Moon	1.45 ± 3 oz. (n = 9)
3 rd Quarter	-0.79 ± 2.3 oz. (n = 9)
New Moon	-0.11 ± 1.3 oz. (n = 9)

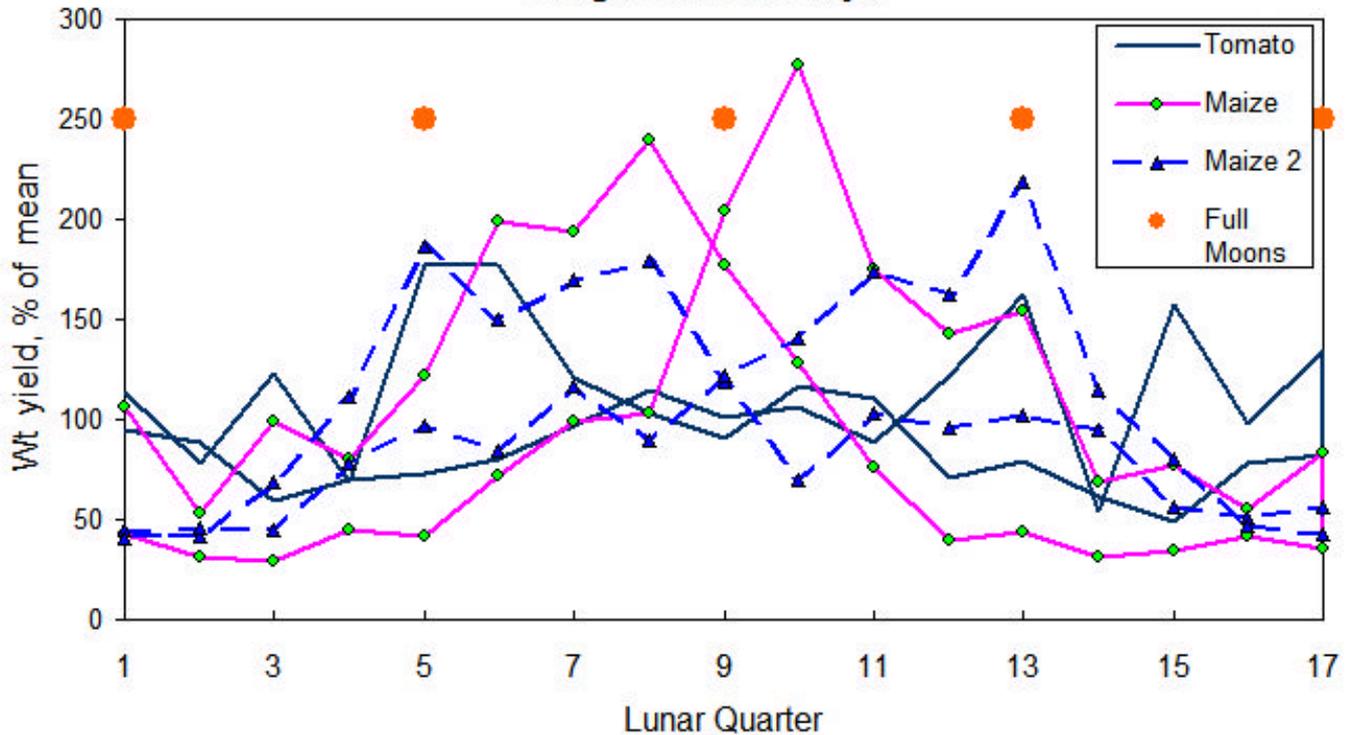
His mean weights for each of his six boxes of seedlings, per lunar quarter, were around 3-4 ounces. Overall, his results gave, for Full Moon sowings 1.45 ± 3.0 (n=9) and the rest -0.265 ± 1.7 (n=27), which gives a t-value of 2.0 and that is only very marginally significant, at say 1 in 20. He dismissed it. He claimed he had obtained a negative result. It is better to first transform the six data-sets so that they have means of 100, because in order to merge separate data-sets they need to have the same arithmetic mean. The figure on the next page shows the six data-sets, thus transformed. We then follow his example in putting five-point moving averages through the data-sets and grouping the trend-corrected data by lunar quarters, which gives us:

Seedling weight after 33 days, group means (percentiles)

1 st quarter	5.5 ± 14 oz. (n = 18)
Full Moon	11.2 ± 25 oz. (n = 18)
3 rd Quarter	-9.2 ± 36 oz. (n = 18)
New Moon	-7.1 ± 14 oz. (n = 18)

MATHER'S SEEDLING GROWTH TRIAL

Weight after 33 days



This is a clearly significant result. The primary hypothesis has been confirmed. There was overall a 17% yield difference between the Full and New Moon sowings, at just over one lunar month after sowing. Note that we have kept the six groups separate, we did not merge them together in pairs as Mather did.

For a statistical test we may prefer to form just two groups, viz those sown just prior to the Full Moon, and all the others. This gives us a Full Moon excess of 11.2% (n = 18), as we've already seen, and the others (n = 54) -2.7% ± 27. That overall 14% yield increase is significant at a level of 1 in 50 (t = 2.2). Mather has clearly obtained a significant result of large enough magnitude to be of relevance to the practical farmer.

Strictly speaking, we should use a four-point moving average rather than a five-point: if we are testing a hypothesis involving a fourfold pattern, as is the case with this data of sowings at lunar quarters, it is preferable for the moving average to be of this same length (or a multiple thereof, for example an 8-point moving average. Any other, for example a 5-point, will tend to interact with and subtract out the effect in question). A four-point moving average is achieved by taking five points, but giving a half-weighting to the first and fifth value. Repeating the analysis in this manner gave:

Full Moon sowings 12.7 ± 23 (n = 18),
Others -3.8 ± 23 (n = 54), t = 2.6

That is a notably better result, indicating a 15.5 % yield increase, and that improvement tends to give us confidence that a real effect is here present.

Discussion: The conclusion to be drawn here, I suggest, is that some men, with degrees and established positions, wished to discredit the views of a woman, moreover a German woman while war was raging, and to do this were prepared to be rather careless in interpreting their own very careful experiment. This suggests that the 'objectivity' of science may not be all it's cracked up to be. There is no

doubt that Frau Kolisko was demoralised by such a 'refutation' of her findings. But, objectively speaking, this Mather experiment must be accepted as the most thorough, independent vindication of the Moon-plant work of Kolisko, at least as published in the UK, in the 20th century.

References

- Kolisko, E. and L. *Agriculture of Tomorrow*, 1940, Ch. 2 Moon and plant Growth.
 - Mather, K. & Newall, J. (1941) Seed Germination and the Moon. *J. Roy. Hort. Soc.* **66**, 358-66.
 - Mather, K. (1942) The Effect of Temperature and the Moon upon Seedling Growth. *J. Roy. Hort. Soc.* **67**, 264-70.
- Nick Kollerstrom, nk (at) astro3.demon.co.uk*

Meetings/Conferences

UK Group of the Science Section

The Science Section for members of the School of Spiritual Science who are taking responsibility for the scientific work has been meeting twice a year in autumn and spring.

Our next meeting is on 8 November 2008 at Elmfield School, Stourbridge, West Midlands.

If you are interested in attending, but do not normally receive notification of Section meetings, please contact Simon Charter, Juniper Cottage, Ludlow Green, Ruscombe, GL6 6DQ. Tel: 01453 755614.

Email: simon (at) ebandflow.fslife.co.uk.

Coming to our senses

Devon, 1-2 November 2008. A conference on contextual science with Goethean studies in groups and lectures, including one from Brian Goodwin. This is particularly aimed towards upper school Waldorf teachers but is open to all

interested. For a programme, please contact Laura Cammish at Ruskin Mill. Tel: 01453 837605.
Email: laura.cammish (at) rmet.org.uk

Working group on evolutionary and developmental biology

I would like to set up a working group around the themes of evolutionary and developmental biology to meet regularly once a month, possibly more, in the Bristol area. The objectives would be to study evolution and developmental processes in nature in the light of Anthroposophy and Goethean science and we would also refer to recent literature, for example Wolfgang Schad's *Man and Mammals*.

I am currently working on a project with Bristol University and Bristol Museum in which I am applying the methodology of Goethean observation to the study of fossilised Jurassic marine reptiles. Various questions arise from my work, such as:

- (i) What are fossils as phenomena?
- (ii) What do they teach us and why, over the last 50 years, have we become so much more conscious of the prior existence of extinct animals, dramatically increasing our awareness of the multitude of extinct species with unusual body plans?
- (iii) What is the significance of this awareness for the future evolution of humanity?
- (iv) In what way do animatronic reconstructions (for example in the BBC's *Walking with Dinosaurs* trilogy) affect our consciousness and the way in which we experience these animals?

Group discussions with interested people would greatly help my work and together we might be able to tackle some of the questions I have raised.



If you think you might be interested in participating in such a group or if you would like to correspond with me, please contact: Dr. Judyth Sassoon, Dept. of Earth Sciences University of Bristol Wills Memorial Building, Queen's Road, Bristol, BS8 1RJ. Tel: 00 44 7811 323658. Email: js7892 (at) bristol.ac.uk.

INTERNET (III): The Emergence of the Eighth Sphere

A Conference organised by Anthro-Tech Institute, Scotland, based on Anthroposophical Spiritual Science. From Saturday 1st to Friday 7th November at An Tobar Arts centre, Tobermory, Isle of Mull, Scotland.

Organisation and theme of the Internet conferences: This is the third and final conference, in which we investigate the spiritual forces working behind, and through, the Internet and the World Wide Web. In the first of these conferences, we saw how the idea of data processing arose in Elizabethan times, in the fertile mind of the lord chancellor of England, Lord Francis Bacon, the inventor of the binary code. Using demonstrations and 'hands on' practical work, we explored the development of binary logic and its mechanisation. Evening lectures brought the specific aspects of binary technology into connection with mankind's evolution, and the working of the spiritual powers of good and evil.

The second conference dealt with the creation of punched-card technology in France in the first quarter of the eighteenth century and its historical development culminating in Hollerith's sorting and tabulating machines, which were the first IBM computers.

In this third conference, we shall look more deeply into the structure of matter itself from the viewpoint of anthroposophical spiritual science. The first use of vacuum tubes (valves) in electric switching circuits occurred in Rudolf Steiner's day. This was the birth of digital electronics, which developed rapidly and was used in the huge valve computers that played so important a role in the Second World War. Then came the 'fall into matter' – the use of doped crystals as electronic components: the 'transistor', the multiple transistor 'integrated circuit' and the 'microprocessor' with its millions of transistors, the technology of the World Wide Web.

We shall examine vacuum tube (valve) technology with its strange, unnatural properties, and the hidden working of doped crystals, which is so little understood even by the semiconductor industry itself. Here conventional theory breaks down. Spiritual science alone can help us to approach this realm of sub-nature. We have to strive to acquire deeper insights into the realm of electricity

As in the first two conferences, our intention is to approach our theme in such a way that all the persons taking part, whether technically minded or not, can follow and understand. This is of especial importance in the realm of digital electronics, which utterly dominates human life today.

Do I need prior knowledge in order to understand?

It is not necessary for you to have attended the first and second conferences, to be able to follow the subject matter of this third conference. The presentation of the theme will be tailored to take account of newcomers to it, and those who have no prior knowledge of computer technology in general and digital electronics in particular. The most essential aspects will be recapitulated briefly at the beginning of our study.

The treatment of our theme is not a 'cut and dried' presentation of insights gained in our research at the Anthro-

Tech Institute, but an ongoing investigation – research work in which the persons attending the conference also participate. As it includes not only practical aspects, but also some rather deeply-probing esoteric considerations based on anthroposophical spiritual science, a rough knowledge of the fundamental ideas of Rudolf Steiner's anthroposophy would be helpful.

As is usual at our conferences, the work of concentrated thought and reflection will be complemented and brought into balance by an artistic activity – either musical or the staging of a mystery play – connected with our theme. No trained musical skills or acting experience are necessary.

Booking your place: For practical reasons there is a limit to the number of persons we can cater for at the conference. If you would like to attend, please contact us at: Anthro-Tech Association, Church Brae, Tobermory, Mull, PA75 6PH. Tel: 01688 302532. Fax: 01688 302532 or 302464.

Advertisements

Chladni figures experimenting kit

Today, we are surrounded by complex sounds and pictures. This kit enables you to regularly make your own simple tones and images. The kit includes all you need for the experiments — a Chladni plate with base, a simple bow, sand, lycopodium and a fully illustrated A4 manual.

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Malin Starrett, experience of experimenting, Unit A28 Valley Business Centre, 67 Church Road, Newtownabbey, Co. Antrim BT36 7LS. Tel: 028 90552721

Book: In Search of Thinking – Reflective Encounters in Experiencing the World by *Richard Bunzl*. This book is for all people who have ever asked themselves whether the pictures they have of the world in their mind's eye are in any way the same as those experienced by others; and also, to what extent these same pictures are a true representation of the world as it really is.

Sophia Books. ISBN 978 1 85584 201 4. £10.95. Rudolf Steiner Press, London.

Textbooks on projective geometry

No longer required photocopies of mostly out-of-print textbooks on projective geometry available for the cost of postage. Example: Veblen & Young, vols 1 & 2, 1918. These are two-page spreads photocopied to one side of A4 so are at least double the bulk/weight of the original book. To find out which books are available and the corresponding postage costs, please contact David Heaf by email: 101622.2773 (at) compuserve.com.

Publications

In Context, The Newsletter of the Nature Institute

No. 19, Spring 2008: Toward a more informed GMO debate, *Steve Talbott*. Some examples of nontarget effects of genetic manipulation, *Craig Holdrege*. Understanding the nontarget effects of genetic manipulation, *Craig Holdrege*.

Elemente der Naturwissenschaft

No. 88, 2008: Nicht Baukasten, sondern Netzwerk – die Idee des Organismus in Genetik und Epigenetik, *Johannes Wirz*. Die Esche – Baum der Mitte, *Jan Albert Rispens*. Die Trennung der Geschlechter und die Bildung der Blütenorgane – Gestal-

tungsfreiheit, *Peer Schilperoord*. Das Mechanische – ein vom Menschen geschaffener Spezialfall, *Andreas Dollfus*. Goetheanismus – falsche Abgrenzungen, *Peer Schilperoord*. Entgegnung zum Beitrag von Peer Schilperoord, *Andreas Suchantke*.

Subscription enquiries to: Wochenschrift 'Das Goetheanum', Abo-Service, Postfach, CH-4143 Dornach 1, Switzerland. Email: abo (at) goetheanum.ch. Fax: +41 61 706 4465.

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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.science.anth.org.uk/eleminx.htm>.

Mathematisch-Physikalisch Korrespondenz

No. 232, Spring 2008: DNA-Doppelhelix und der lineare Komplex II, *Ingrid Hartmann & Peter Gschwind*. Selected topics in three-dimensional synthetic projective geometry, Chapter 10: Families of lines in three-dimensional projective space generated by collineations between bundles and fields, *Renatus Ziegler*.

No. 233, Summer 2008: Die projektive Welle-teilchen Metamorphose als ätherisch-physische Polarität und die Quantenaktivität der neuronalen Mikrotubuli beim Farbsehen, *Hans Thiel*. Ein Brief zum Aufsatz von H. Bauer in MPK 229, *Reinhard Brandt*. Selected topics in three-dimensional synthetic projective geometry, Chapter 11: Twisted cubics and cubic developables in three-dimensional projective space, *Renatus Ziegler*.

Subscriptions are SFr 50/€30 per year.

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Wasserzeichen

No. 28 (2008): The year of sanitation, *Maarten Gast*. Trinkwasserwerke am Rhein und wasserpolitische Entwicklungen, *Wolfram Schwenk*. Zum Wandel des Wasserbewusstseins der Menschen von der Antike bis ins 21. Jahrhundert, *Wolfram Schwenk*. Wirbel in Wasserglas, *Christian Liess*. Formen des Lebendigen – Was bewirken im Wasser herrschende Kräfte in der Organismenwelt? *Manfred Schleyer*.

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Membership

The Group has 60 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 February 2009.

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