

CORRESPONDENCE

OF THE NATURAL SCIENCE SECTION OF THE ANTHROPOSOPHICAL SOCIETY IN AMERICA

DECEMBER 2020

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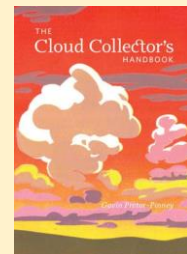
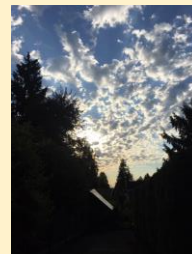
**Steering Committee
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Mathematics-Astronomy Section**

Judith Erb
Jennifer Greene (Representative to Collegium)
Barry Lia (Editor; Treasurer)
Andrew Linnell (Webmaster)
Mark Riegner
Gopi Krishna Vijaya

ONLINE COLLOQUIA

Monthly roundtable series based on the
October Dornach Section Conference

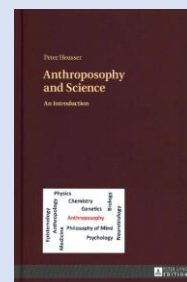
See [p.4](#)



INITIATIVE FOR SCIENCE AND ANTHROPOSOPHY

Based on Peter Heusser's book
Anthroposophy and Science

See [p.3](#)



Editor's Note

Our *Correspondence* resumes. In the new realities of a pandemic, much has been brought to a standstill. Yet unseen opportunities may also be realized. Our newsletter has been idle, but our steering committee has been active. We are now ready to announce new initiatives borne out of this hiatus.

It was devastating to have to cancel Dr. Peter Heusser's planned visit to the States last April. Several of us had spent the prior months busily arranging flights and seminars and gatherings. In lieu of his visit, we have started an Initiative for Science and Anthroposophy based upon his work (see [p.3](#)). We intend this as an anthroposophical science education course of sorts and to prepare us even better for a future visit yet, when in-person gatherings are allowed once again.

We have also begun an initiative together with the leadership of the Section at the Goetheanum and leaders of the Science Group in Great Britain. This is a collaborative effort to build resources for English translation so that the leading Section work in the German language may reach the international English-speaking audience (see [p.4](#)).

A first fruit of this collaborative will be a series of virtual meetings based upon presentations delivered in German at the recent Natural Science Section conference in Dornach on diverse aspects of our climate crisis. As preparation for these world café-style online discussions, voice-over interpretation in English of the recorded video presentations will be made available for study *prior to* the scheduled online meetings (see [p.4](#)). The idea is that by meeting virtually we might reach a larger audience than our in-person meetings afford and generate even more participation with the work in Dornach.

Finally we have news from Dornach, Great Britain, the Geology Group, and The Nature Institute; announcement of the new edition of Schäd's *Threefoldness in Humans and Mammals*; a short book review; and other notes and commentary.

For ease of navigation, we have also set up the **Contents subheadings as internal hyperlinks** (without underline) and put "Back to top" links at the bottom of each page.

As always, the *Correspondence* welcomes pilot research reports, comments on current scientific research and news, book and article reviews, letters from readers, reports on meetings and workshops, and announcements. There will be editorial review. **For submissions**, click [here](#). We look forward to hearing from you. Please send **feedback** [here](#).

Blessings for the coming Holy Days and Nights,

Barry Lia, Ph.D.
Correspondence Editor



Initiative for Science and Anthroposophy

As we had announced in our last issue (Nov-Dec 2019), we were arranging a coast-to-coast tour for late April of this year for Dr. med. Peter Heusser to speak of his work and his book, *Anthroposophy and Science* (2016, Peter Lang GmbH). He had been keynote speaker for our 2018 conference in Spring Valley.

We had flights booked. We'd arranged for academic seminars, connections with integrative medicine centers, and events for the anthroposophical community in five cities.

Well, COVID-19 foiled those plans.

But we can continue with this initiative elsewhere and be even better prepared should we be able to bring Dr. Heusser yet in future, when travel and meeting restrictions are lifted.

Therefore, we have obtained permission from the publisher to serialize the chapter summaries from Dr. Heusser's book in our *Correspondence*. These will be accompanied by a précis of the corresponding chapter. In addition, we will gather and solicit

accompanying material related to the themes of the given chapter.

There are also archived videos of the four public lectures Dr. Heusser gave at our 2018 Section meeting in Spring Valley (see below).

All this is aimed to aid your own reading of this highly recommended book—pertinent not only to *our* Section work in particular, but significant for *all* students of anthroposophy.

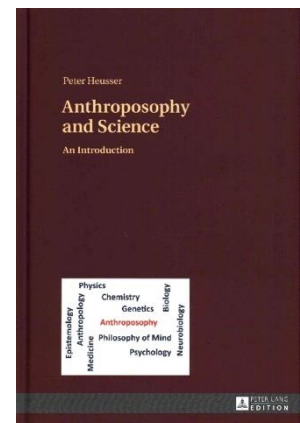
Anthroposophy not only has something to offer science—medical science specifically in this case—but a finer understanding of the direction and frontier of *conventional* science, which Dr. Heusser explores, contributes to the validity and justification of spiritual science as well.

Time and again, Dr. Steiner spoke of the importance of a renewal of spirit in science for the health of culture and society. Dr. Heusser's book lays out an epistemological foundation of this renewal, based on Goethe's and Steiner's insights.



Four public lectures

BRIDGING NATURAL SCIENCE AND SPIRITUAL SCIENCE



Click [here](#) for access to videos of the four public lectures which Peter delivered at our 2018 Section conference in Spring Valley and which serve as an introduction to his book, *Anthroposophy and Science*:

Is there a place for the spirit in physics and chemistry? – On the importance of epistemology for natural science.

Is there a chemical or genetic explanation of life? – A closer look on causality and agency in modern biology.

Does the brain cause consciousness? – A way out of neurobiology's current doctrine.

From natural science to spiritual science. – Rudolf Steiner's contribution to the evolution of science.

Collaborative for English-language Translation

The leading Section work in Europe has been in the German Language. In order to further Goethean and anthroposophical science for the broader English-speaking international audience, we have initiated conference calls with Johannes Wirz and Matthias Rang, our Section leaders in Dornach. We had already been in discussions with previous Section leader, Johannes Kühl, about finding resources to transform *Elemente der Naturwissenschaft* into a fully bi-lingual journal. Judyth Sassoon and Alex Morrell in the UK have also now joined our efforts to raise funding and organize translation resources for an expanded English-language initiative.

The first collaborative effort will concern the recent Dornach Section conference (see next). The conference itself was held in German. We will arrange voice-over interpretation in

English of the presenters who were video recorded, melding this together with their corresponding visual illustrations. Some presenters have offered to re-record their presentations directly in English.

Then on a monthly basis, selected presentations will be made available on our website for viewing *prior* to online roundtable sessions. These presentations and sessions will continue the climate theme from our 2019 conference in Ann Arbor last year.

In future, we hope that newsletters, journals, and conference materials now presented only in German may be made available in English translation.

See: science.goetheanum.org/en/research/periodicals

If you can offer translation services, please contact us: editor@naturalsciencesection.org

Online Colloquia on Climate Crisis

In this pandemic situation, in-person meetings and conferences are no longer on the agenda. We feel the downside as we miss the camaraderie. But many organizations have seen that there is also an upside in new opportunities realized through online activities.

“Meeting” on virtual platforms is a relatively new experience. There are certainly uncanny aspects to being faced by a screen full of talking (and not-talking) heads. A researcher pointed out on a recent radio interview that since ancient times when someone faces you without speaking, they are either expressing sexual interest or about to become aggressive!

For our steering committee work, we had already been transitioning from weekly conference calls by phone to Zoom video conference calls. You, as well, have all probably been discussing these new social and psychological phenomena, scrutinizing the ramifications in one’s psyche.

Knowing we were not going to be planning our usual annual meeting in-person this year, we began casting about for possibilities for an online venue. Andrew Linnell has already had

experience planning the recent MysTech virtual conference. Through the Center for Anthroposophical Endeavors, Frank Dauenhauer even set up their online conference platform.

As we then learned of the comprehensive scope of the autumn Section conference in Dornach, which shared the climate theme of our own Ann Arbor conference last year, we began to correspond with Goetheanum Section leaders, Johannes Wirz and Matthias Rang. The COVID situation allowed them an in-person meeting last October, at which all the presentations were in German. Johannes and Matthias arranged for these presentations to be video recorded. Together now with Alex Morrell and Judyth Sassoon of the Science and Math Group of the Anthroposophical Society in Great Britain, we are enlisting Bernard Jarman for voice-over interpretation in English of these recorded presentations, incorporating the presenter’s visual illustrations.

These prepared recordings will serve as the basis for a monthly series of online Section meetings beginning the end of January. *Prior* to each meeting, one or two of the

presentations will be made available for viewing, together with any supporting study materials and suggested questions, in order to serve as the basis for discussion.

Virtual meetings on an online platform will then take place on Saturdays in a time frame to accommodate time zones from the West Coast to Central Europe (e.g., 10-11:30 AM Pacific and 7-8:30 PM in Dornach). Using our materials, folks in the Australasian region could organize their own virtual meetings in their own time frame as well.

We are aiming for more than casual participation; we are striving for a more academic-flavored colloquium format. And we aim for action guided by participation, possibly leading to further study, to interaction with other Sections, to involvements with other groups, etc. We want to meet and build the enthusiasm of our community, helping spur initiatives like the Geology Group (see [p.11](#)).

We are still envisioning the structure of the virtual colloquium itself. Occasionally the presenters themselves may be able to join us. There should be some form of World Café format involved, wherein questions are worked on and brought to the larger roundtable. Facilitation of follow-up interactions and reports in our *Correspondence* must also be arranged.

Our first session in January will include an orientation to the envisioned colloquium process. Look for more information in our next issue.

For orientation on the breadth of the themes and presenters at this year's October Dornach Section conference, the program bios and abstracts follow in translation.¹ Note that the scope of the online colloquia we will be holding over the next year is more than "scientific": it encompasses social, economic, psychological, and spiritual themes as well, which should be of interest for a broad audience.

Dornach Section Conference Program



The **CLIMATE** *needs* *our* **CHANGE**

Research Institute at the Goetheanum
1. - 4. October 2020

Technically, almost anything is possible. The spring of 2020 has shown what is also politically and economically possible, if a common insight unites people. Within a few weeks we saw massive restrictions of individual well-being zones the governments worldwide had to impose in order to slow the global spread of a Virus—even the far-reaching adjustment of air traffic.

For half a century we have known what the salutary effect of such air travel measures would be for the climate and atmosphere. Nevertheless, shortly before the Corona crisis, business associations—politically successful—had warned against "premature action" regarding even any increase in the price of aviation fuel!

Why can we not, without a virus, implement what we already recognized as proper long ago? How must we ourselves change, so that knowledge and feasibility come together?

¹ <https://science.goetheanum.org/veranstaltungen/das-klima-braucht-unseren-wandel/themen>

In this conference we invite you to consider the long, shared history of climate and earth and their organismic character. How did the current situation come about, what is the “factual material,” and how can people implement their knowledge of a healing action in the individual fields of life? Presentations from experts will introduce topics for discussion in small groups or in plenum. On the third day we will be concerned with the vision of the Fridays For Future youth, which calls for sustainable use of the environment. What reasons are there on a mental and social level that this “dream,” shared by many, cannot lead to action? What does a change in consciousness look like, how does a cultural revolution, which gives humanity coherence and power, shape its future and that of its environment from a feeling of belonging together? The conference closes with an outlook on lived spiritual insight, which can arise from self-knowledge and self-training.

Matthias Rang and Johannes Wirz with the Section team in Dornach.

Das KLIMA braucht unseren WANDEL – Herbsttagung der Naturwissenschaftlichen Sektion				
	Donnerstag, 01.10.20	Freitag, 02.10.20	Samstag, 03.10.20	Sonntag, 04.10.20
09:00–09:30		Rückblick auf den Vortag	Rückblick auf den Vortag	Rückblick auf den Vortag
09:30–10:30		Die Erde – ein Lebewesen <i>Albrecht Schad</i> 15' Plenumsgespräch	Wandel im Stoffverständnis und neue Organik <i>Beate Oberdorfer & Andreas Pook</i> 15' Plenumsgespräch	Sich selbst verwandeln: anstrengend, leidvoll, grossartig <i>Johannes Köhl</i> 15' Plenumsgespräch
10:30–11:00		Kaffeepause		
11:00–12:30		Vom kosmisch impulsierten Klimawandel zum anthropogen verursachten Klimabruch <i>Hans-Ulrich Schmutz</i> 45' World Café	How dare you? <i>Pauline Lutz</i> Der magnetische Mensch «Mutter Erde» und die Naturwissenschaften <i>Otto Ulrich</i> 45' World Café	World Café Rückblick und Ausblick
12:30–14:30		Mittagspause		
14:30–16:00		Dialogspaziergang zu Tagungsthemen		
16:00–16:30		Kaffeepause		
16:30–18:00	Beginn 17:00 Uhr Begrüssung NN Klima und Mensch – eine gemeinsame Geschichte unter heutiger Verantwortung des Menschen <i>Meinhard Simon</i>	Die Tierhaltung in der Landwirtschaft und das Klima <i>Anet Spengler Neff</i> Wie Ackerbau klimafreundlicher wird <i>Paul Mäder</i> 45' Gesprächsgruppen	Klimapsychologie <i>Stefan Ruf</i> 45' Gesprächsgruppen	
18:00–19:30	Abendpause			
19:30–20:30	Der organismische Charakter des Erdklimas – ein Blick in die Vergangenheit <i>Susanna Kimmell</i> 15' Plenumsgespräch	Klimawandel als Herausforderung für die Wirtschaft: Transformation statt Wachstum <i>Bernd Siebenhüner</i> Integraler Klimaschutz <i>Stefan Siemer</i> 15' Plenumsgespräch	Natur und Kultur im Anthropozän <i>Hartmut Böhme</i> 15' Plenumsgespräch	
20:30–21:00	Eurythmische Grundübungen: Sich mit der Welt verbinden			

(Änderungen vorbehalten)

LECTURE SPEAKERS



Meinhard Simon Born 1953, studies of biology and hydrology in Constance and Freiburg. Since 1997 at the University of Oldenburg worked as a professor for Marine Microbiology and Biological Oceanography. He has undertaken research cruises in the Southern, Atlantic, and Pacific Ocean, and busied himself for some time with issues of climate change and its impact, especially on the seas. He is a member of the Section Collegium of the Natural Science Section at the Goetheanum.

Climate and the human being - a shared history under the responsibility of mankind today

In the course of the history of the earth, the mean annual temperature has leveled off to around 15°C and reached great constancy in the late tertiary, roughly when the first human ancestors appeared. This is a signature of the earth's homeostasis and individuality, which is comparable to the human being's ego existence. This homeostasis was only possible through the 'anabolic' and 'catabolic' life processes of the entire biosphere, plants, animals, and especially, microorganisms. Man has been part of nature over this long period of his presence on earth.



Susanna Kümmell *Waldorf school Bochum-Langendreer, studies of geology/paleontology in Bonn and Waldorf teacher training in Stuttgart. Currently working in the Institute for Evolutionary Biology at the University of Witten/Herdecke. Research focuses on evolutionary trends and patterns in limb development in mammalian forerunners. A special interest is also for a long time the issues of climate change and the urgency of this issue.*

The organismic character of the earth's climate - a look into the past

The earth can largely regulate its climate over long periods. It differs e.g. from our neighboring planets Venus and Mars. Greenhouse gases play a major role in regulation. In the past, they contributed to the development of a balanced climate, with only "minor" global fluctuations. Without the greenhouse gases, we would have a very uncomfortable, icy climate on Earth. With such a regulation of its climate, our earth has an organismic character. However, crises occurred again and again, in which global climate changes made life on earth difficult. (more)



Albrecht Schad *Studies of Biology and Geography in Heidelberg. Since 2007 senior teacher at the Freie Waldorfschule Uhlandshöhe. Since 2010 professor for methodology-didactics of natural sciences at the Free University of Stuttgart.*

The earth—a living being

The earth shows a physiological ability that we only know from the most advanced vertebrates: it has a constant body temperature. How is that possible? We can learn from human embryonic development that life creates envelopes in which centric life can then exist. For example, the early microbial world on Earth has influenced living conditions for more than three billion years in such a way that centric life begins and enables development. We can understand this as an impressive indication of the living being of the earth.



Hans-Ulrich Schmutz *Born 1945 study of geology with Promotion 1973 at the ETH Zurich. Seven years of social work with students in Zurich and then eighteen years as a senior teacher for geography and technology at the Rudolf Steiner School in Wetzikon, Switzerland. From 1982, beginning periodic teaching as a freelance guest lecturer at the teacher training institutions in Kassel, Kiel, Mannheim, Moscow and Witten Annen. Specialized courses for geography in Brazil, Finland, Italy, Japan and Georgia. Geological publications and author of books on the topic geography of the upper and lower level.*

From cosmic-impulsed climate change to anthropogenic-induced climate disruption

Geological documents in marine sediments and ice cores largely show a convergence of the slowly occurring climatic temperature changes with the variation of solar radiation through the ice age periods, which represents an image of the long-period cosmic rhythms. In contrast, the radically changed and accelerated carbon turnover has documented a change in the temperature trend since the beginning of the industrial revolution, so that the impulse by the cosmic rhythms has been overridden. A civilizing work in harmony with nature requires taking this seriously and dealing honestly with the cosmic rhythms.



Anet Spengler Neff *Born 1963 in Basel, she has worked two years for several agricultural enterprises and learned animal husbandry in particular. She studied agriculture at the ETH Zurich in the field of livestock sciences and also farmed in the Alps in Muotathal (canton Schwyz) each summer. For 19 years she has been working at the Research Institute for Organic Agriculture (FiBL) in Frick (CH), where she oversees projects for cattle husbandry and breeding and performs various teaching assignments. At home, she keeps a flock of about 20 Engadine sheep.*

Animal husbandry in agriculture and the climate

What animal husbandry and how many animals of which species are required:

- to feed the world population healthily today and in the future
- to preserve and adequately use the huge grasslands around the world
- to increase biodiversity on agricultural land
- to store more carbon in the soil and let less into the air
- to produce good fertilization
- to protect our waters, our soils, and our food from contamination with toxic substances
- to maintain high quality in human-animal relationships



Paul Mäder *Born 1954, studied agronomy at the ETH Zurich in crop production. Doctoral thesis at the University of Basel in biology on root symbioses. After completing his studies, Paul Mäder worked as a teacher for soil science and ecology at an agricultural school before taking over the management of the long-term DOK cultivation system comparison at the Research Institute for Organic Agriculture in Frick. Establishment and management of the Soil Science Department with the subjects of soil and climate, as well as nutrient flows with an agricultural focus. He leads numerous national and international research projects in Europe and India.*

How agriculture is becoming more climate-friendly

Along with the rise in the carbon dioxide levels in the atmosphere, the temperature has risen in recent decades, and the effects of climate change are now clearly noticeable also in arable farming in the temperate climatic regions. Agriculture contributes around 11% of global greenhouse gas emissions, and the entire food system contributes as much as 29% to greenhouse gas emissions. Conversely, the soil has the potential to store large amounts of carbon dioxide in the form of humus. In numerous long-term tests, FiBL is looking for arable farming systems which have a humus-building effect, and which have minor emissions of greenhouse gases.



Bernd Siebenhüner *After study of political science and economics at the Free University Berlin, conducted research and taught at the Martin Luther University of Halle-Wittenberg, Kennedy School of Government, Harvard University, Potsdam Institute for Climate Impact Research (PIK), and Carl von Ossietzky University in Oldenburg. Here was he appointed professor for Ecological Economics 2007. From 2010 to 2015 was he vice president for scientific innovations and quality management. In numerous BMBF, EU, Volkswagen Foundation, DFG, DAAD and MWK-funded projects, he researches international environmental policy, social learning and transformation processes, transdisciplinarity, ecological economy, sustainability management, social-ecological system interactions and adaptation to climate change.*

Climate change as a challenge for the economy: transformation instead of growth

The massive use of fossil fuels in the past decades has enabled immense economic growth and material prosperity for large parts of the world population. At the same time, climate change and social inequality have grown just as quickly and put the industrialized growth model into question. In view of these effects, the question increasingly arises as to whether a growing economy can go hand in hand with a decarbonization of the economy or whether a solution must come about through shrinkage and post-growth.



Stefan Siemer *Head of Corporate Sustainability of the WELEDA Group since 2018. Studies in applied cultural studies and doctorate in education for sustainable development in Lüneburg and Vienna. Then strategy consultant in the intersection of brand management, communication, and sustainability, from 2009-2018 with his own company for groups, medium-sized companies, NGOs, and public clients. He has three adult sons and lives in Switzerland and Germany.*

Integral climate protection

WELEDA is undergoing an organizational transformation. The IMU's integral competence model is a helpful tool in this regard. Its basic assumptions also have important consequences for a deeper understanding of the climate crisis and for possible solutions. These relationships are briefly outlined and substantiated using the example of the WELEDA climate strategy that is currently being developed.



Beate Oberdorfer *Studies of Food Technology / Food Chemistry; since 1992 member of Sonett Management.*

Andreas Pook *Freelance architect, with Sonett since 2014 in the field of building planning and machine development.*

Change in understanding of matter and new organics

The more the orderly and creative processes in nature lose their strength, the more a new life is needed—created by humans and their responsibility. The traditional understanding of matter and substance must also change. Using the example of working with mistletoe, we want to describe such a process that ultimately leads to products.





Pauline Lutz *She finished secondary school this summer and has now started to study International Relations in Geneva. She has been active in the climate strike movement since the first climate demonstrations and was part of the Amnesty youth group during her time at the Leonhard high school. As a balance to her political activities, she loves to play the cello and writes a lot.*

How dare you?

A climate activist tells of her everyday life and a life in which the environmental catastrophe hovers in the back of her mind without a break. This explains why it is so important to her to be heard as a young woman, and why we should on principle listen to young people more.



Otto Ulrich *Physics engineer and political scientist. In the Federal Chancellery and the German Bundestag he dealt many years with issues of technology assessment.*

The magnetic man - "Mother Earth " and the natural sciences

We are ourselves in a yes-but-Situation: The always promised triumphal advance of scientific and technical civilization, its promise to achieve the goal of life with a materialistic lifestyle, called prosperity, exposes itself as hostile to life, even deadly for the earth as well as for humanity.

Earth, nature and man must be viewed together. The healing of the earth requires a perspective of the living, that is, an organic understanding of the earth and man.

It is important to ask about the possible consequences of digitization on the relationship between the magnetic "mother earth" and us, the magnetic human being—possibly the gateway to the latest virus pandemic.



Stefan Ruf *Specialist in psychotherapy and psychosomatic medicine and therapeutic director of Mäander Jugendhilfe.*

Climate psychology

The threat of the climate crisis is open to us, the key facts are known. Why are we still not able to draw the necessary consequences for our behavior, privately and politically? What hinders us?

And what could potentially help us to take the next step so that the crisis becomes an opportunity, an opportunity to develop an "atmospheric awareness" that helps us to understand more deeply the atmospheric processes with which we are all connected thus to come into a more global perception.



Hartmut Böhme *1977–92 professor for modern German literature at the University of Hamburg and 1993–2012 professor for cultural theory and history of mentality at the Humboldt University in Berlin. He was often head of DFG research projects, including spokesman for the special research area "Transformations of Antiquity" (until 2012). He was awarded the Meyer Struckmann Prize in 2006 and Hans Kilian Award in 2011.*

Nature and culture in the Anthropocene

The Anthropocene also means facing a possible end to culture. If the culture collapsed, the second, technically transformed nature would also perish. What would remain would be a slightly devastated first nature. The earth as a whole would not be affected by techno-catastrophes. Culture disappears, nature exists, although not the same as we knew it. The weakness of humanity today has turned against nature: the economic dynamics and the distribution of goods, the ecological damage and the extinction of countless species, have become a danger to the earth. Mankind has become a parasite that puts a heavy burden on its "host", *tellus mater* (mother earth). What we need is the cultural and technical project of nature.



Johannes Kühl *Born 1953 in Hamburg. After attending Waldorf School and civil service in agriculture, study of physics, mathematics, and chemistry in Hamburg and Göttingen. Subsequently, scientific collaboration in the natural science section at the Goetheanum in Dornach (CH). From 1982 to 1996 senior teacher at the Waldorf School Stuttgart Uhlandshöhe. Since 1982 member of the collegium of the natural science section at the Goetheanum, from 1996 to 2019 head of this Section. Work on Goetheanistic optics and color theory, various areas of physics and science as well as on physics didactics.*

Transform yourself: strenuous - painful - great!

The aim of the contribution is to examine the extent to which the technical age challenges an inner, cognitive ("spiritual") change, which difficulties and possibilities are connected with it, and which paths are available.

Dornach Section News

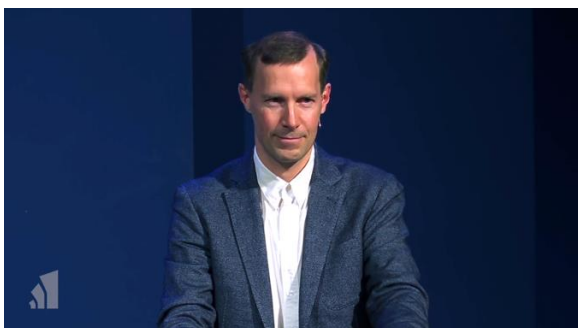
Natural Science Section

The Section has inaugurated a [newsletter](#) (in German). This first issue includes an article on the life of long-time Section leader, Jochen Bockemühl, who crossed the threshold last May.

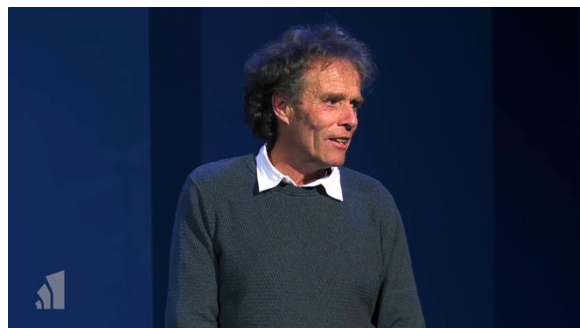
A memorial colloquium for Jochen Bockemühl will be held in Dornach from Saturday, March 13, 2021, 3 pm to Sunday, March 14, 12.30 pm, for both scientific and memorial contributions. An obituary appreciation may be found [here](#) (in German).

The next autumn conference for the Section in Dornach, from October 6th to 10th, 2021, will mark the 100th anniversary of the Research Institute at the Goetheanum. It will also be a triennial *Evolving Science* conference, aimed for international participation, with presentations and translation in English.

Finally, you can listen to two recent recordings, one by Matthias Rang and one by Johannes Wirz, [here](#) on the Goetheanum website, from the “Signature of Our Time?” series of addresses by Section leaders. These videos afford an experience of listening to voice-over interpretation, such as we will have for our upcoming virtual colloquia. Matthias opens with the double-edged nature of technology and pleas for a science extended in culture and context; Johannes opens with reflections on the corona crisis and closes with wonderful passages by Goethe and Adolf Portmann, calling for a humane science of participatory relationship to nature and each other. Both talks may bring to mind our struggle not to fall into scientific “sub-nature.”



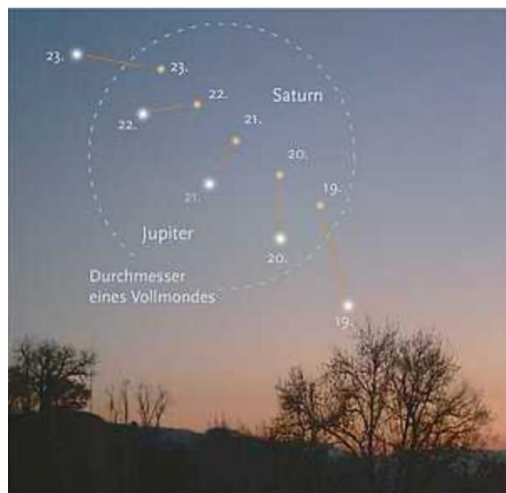
Matthias Rang



Johannes Wirz

Mathematics and Astronomy Section

In celebration of the Great Conjunction on December 21st, the Mathematics and Astronomy Section will present four webinar lectures:



- [Friday, December 4th, 8 PM \(in German only\)](#)
Dr. Hartmut Ramm: *Kosmische Signaturen im Corona-Jahr - Berechenbares und Unvorhergesehenes*
- [Friday, December 11, 8 PM \(in German only\)](#)
Wolfgang Held: *Die Grosse Konjunktion von Jupiter und Saturn - ein Ruf des kosmischen Ichs*
- [Friday, 18. December 2020, 8 PM CET \(English\)](#)
Alexander Murrell: *The Great Conjunction and Challenges of Our Time*
- [Friday, 19. December 2020, 8 PM CET \(English\)](#)
Mary Stewart Adams: *Building Narrative out of the Great Conjunction of Saturn and Jupiter, Winter Solstice 2020*

Each lecture lasts approximately one and three-quarter hours. The recordings can also be viewed afterwards. Livestream and/or recording costs CHF 20.00 per lecture. Registration and further information can be found [HERE](#).

Great Britain Section News

The current newsletter of the Science and Mathematics Group of the Anthroposophical Society in Great Britain contains an extensive article titled, “Kepler’s Search for the Creative Harmonies,” written in Autumn 2019 by Maarten Ekama (for subscription, contact Simon Charter [here](#)).

The author states in the Overture that, “Kepler was well aware of the major changes taking place in human consciousness set in motion by Copernicus and the Renaissance. He considered it his calling to develop a cosmology which united recent discoveries in astronomy, several of which had been developed by him, with the essence of ancient traditions. His search for the foundations of cosmic harmony was central to this work. By taking this ancient idea, by attempting unsuccessfully to integrate it into the birth of modern astronomy, and by wrestling with the inconsistencies of his failed attempts, he discovered the three laws of planetary motion, still valid today.”

The author’s story concerns how “Like Pythagoras, Kepler believed that because God had created humankind in His image, it would be possible to find the harmonies underlying all of creation by intent listening.”

Studies of music and harmonics were key to his discoveries: “Kepler was not one to give up easily, and after considerable trial and error, all described in the usual self-critical detail, he realised that with elliptical orbits the pitch of each tone would vary in

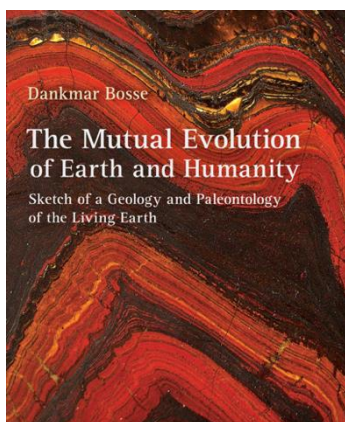
proportion to the planets’ varying orbital speeds. At long last he found what he was looking for.

“But first he explained for the benefit of his readers (and possibly Aristotle!) how it was possible to perceive sound through the movements of the planets: ‘In fact, there are no real sounds in the heavens, and the movement is not so turbulent that a whistling is produced by friction with the heavenly air.’ [27] Kepler explained that the celestial harmonies are carried to us by the light with which we see the planetary movements, and it is the light which enables us to ‘hear’ the music in our minds.”

As to finding the music, “Kepler would not have been Kepler if he had left it at that. He now needed to discover why God had created the cosmic harmonies. As they cannot be heard on earth, surely some conscious being somewhere, besides God himself, had to be able to hear them. In the epilogue to *Harmonice Mundi*, an essay in praise of the sun, Kepler suggested that the ‘intellect’ (self-consciousness) best able to appreciate the planetary harmonies might reside in the place where they originated, namely, in the sun.

“‘For whose use are all these furnishings, if the globe (the sun) is empty? Indeed, do not the senses themselves cry out that fiery bodies dwell here which are receptive of simple intellects, and that in truth the sun is, if not the king, at least the palace of intellectual fire?’”

Geology Group News



Geology Group members, interested in an anthroposophical approach to geology and the earth’s evolution, have organized conferences reported in past issues of our *Correspondence*.

They have now been conducting an online group study based largely upon Dankmar Bosse’s *The Mutual Evolution of Earth and Humanity: Sketch of a Geology and Paleontology of the Living Earth* (2019, SteinerBooks), together with various works by Rudolf Steiner and others.

Online virtual meetings are usually the first Monday of the month on the GoToMeeting platform. Presentations by various contributors have considered subjects such as *Earth’s Life Sphere Through Time*, *The Rock Cycle*, *The Life of Colloids*, *Fluid Circulation of the Earth and the Descent of Rock and Ore*, *The Location of Atlantis*, *The Separation of the Moon from the Earth*, *Crystalline Basement Rocks*, and associated topics.

Their next call is on Monday, December 7th at 4pm (Pacific time), when Michael Judge will present on “The Human Being in the Tertiary—Pleistocene Geological Periods” (Steiner’s Atlantean times). The call lasts approximately 1.25 hours. Should you wish to participate, please contact James Lee ([here](#)).

News from The Nature Institute



The Institute Resources Programs Publications Events



“The question is not what you look at,
but how you look and whether you see”

— HENRY DAVID THOREAU

October 2020

Dear Friends,

It's official: Our redesigned and updated website for The Nature Institute is now live! Click on natureinstitute.org and you'll find all the extensive resources and content we've always featured on our site, but now with a fresh, easier-on-the-eyes display. The result of seven months' work by an in-house team, our new digital home had a gifted builder in Seth Jordan, who (patiently) led the project. Because of his fastidious skill, our site is polished, more browsable, and simpler to navigate whether you're on a phone, laptop, or desktop computer. As one early reviewer commented, "It is spaciouly terrific! I've enjoyed hopping around in it..."

We've just posted the new Fall issue (#44) of our publication, *In Context*, to the site, which you'll find filled with in-depth articles, thoughtful Notes, and Reviews by our staff. We hope you enjoy this latest offering as well as some of the new features at natureinstitute.org, including:

- A short video on our [About](#) page, describing the genesis and mission of the institute;
- A [Resources](#) tab that guides you to the institute's archived research and education material;
- A separate [Programs](#) tab detailing our courses;
- The latest article by Craig on [Encounter-Based Science](#);
- A link to the new homepage for Steve Talbott's current work, [Biology Worthy of Life](#)

While it may look different, natureinstitute.org remains unchanged in its purpose: to serve our work of realigning science and human activity with the living qualities of nature.

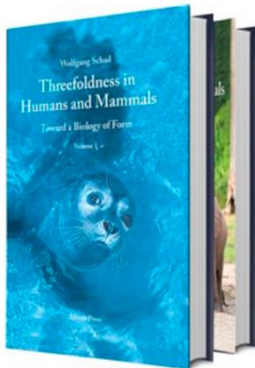
Thank you for being a part of that effort.

Elaine Khosrova
Outreach and Relations
The Nature Institute

[Back to top](#)

Notes and Commentary

Book Announcement:



Threefoldness in Humans and Mammals Toward a Biology of Form

9780932776648

\$125.00

Hardback

12/21/2020

Coming Soon

Wolfgang Schäd, author

Mark Riegner, editor

Catherine E. Creeger, translator

2-Volume Slip-cased set

6.5 by 9.3 inches; 1328 pages; order [here](#).**Adonis Press** (John Barnes, publisher)

The result of more than fifty years of research, *Threefoldness in Humans and Mammals* is the beautiful, authorized edition of Wolfgang Schäd's lifework. In chapter after chapter of this monumental two-volume work, Schäd demonstrates in detail how the dynamic concept of the threefold organism—first described by Rudolf Steiner a hundred years ago—sheds new light on aspects of the mammals, such as their size, form, coloration, physiology, embryonic development, behavior, and habitat. Indeed, he shows how a key to understanding the extraordinary diversity of our closest animal relatives is, in fact, the threefold nature of the organism—consisting of the nerve–sense system on the one hand, the metabolic–limb system on the other, and the mediating circulatory–respiratory system.

Reading this book, one can experience a growing sense of satisfaction, even wonder, realizing that each species, through its particular constitution, actually explains itself—that right down into its specific features it expresses its own unique embodiment of the threefold organization. Moreover, the reader begins to experience the threefold organism itself—not as an abstract, rigid thought construct against which the mammals can be measured and categorized, but as a creative, lawful principle that comes to unique expression in each species.

Thus, Schäd follows in the footsteps of Johann Wolfgang von Goethe, who said of his scientific pursuits: "The ultimate goal would be to grasp that everything in the realm of fact is already theory.... Let us not seek for something behind the phenomena—they themselves are the theory."

The first volume offers a comprehensive description of the threefold human organism that lays the groundwork for a detailed consideration of the most familiar groups of mammals, including stunning chapters on antelopes and deer with their horns and antlers and a concluding chapter on mammals' intimate relationship with their natural environment. The second volume begins with chapters on the more primitive mammals and continues with studies of mammalian embryology, milk, emotional life, and relationship to death. Volume 2 concludes with a chapter on human threefoldness.

The reader will do well to begin with the first chapters in volume 1, which introduce the main motifs that recur and build throughout the book. Although the content includes a great deal of specialized knowledge, it is presented in language accessible to the general reader. Moreover, the theme of threefoldness in humans and mammals uncovers the natural affinity between our own threefold organization and that of the mammals—an affinity that affords us direct experience of their particular nature and enhances our understanding and empathy for them.

The text is richly illustrated with well-chosen photographs and drawings. Numerous diagrams illumine the dynamic interrelationships within various groups of mammals. The two-volume set is protected in a sturdy, handsome slip case. In both form and content, this is a classic edition of a groundbreaking work that should find its place in every home, school, biology department, and library.

This authorized edition replaces the earlier one, *Understanding Mammals: Threefoldness and Diversity*.

WOLFGANG SCHÄD is Professor Emeritus at the University of Witten/Herdecke, Germany. Born in southern Germany in 1935, he studied biology, chemistry, and education before becoming a science teacher in 1962 at the Goetheschule (Waldorf School) in Pforzheim. From 1975 until 1991, he taught at the Seminar for Waldorf Education in Stuttgart and, in 1992, was appointed head of the Department of Evolutionary Biology and Morphology at the University of Witten/Herdecke, a position he held until retiring in 2005. This publication is Professor Schäd's completely revised, significantly expanded, and updated version of his classic *Man and Mammals: Toward a Biology of Form* (1977, Waldorf Press).

Book Review (Jennifer Greene):

The Cloud Collector's Handbook by Gavin Pretor-Pinney (2009, The Cloud Appreciation Society)

This publication of The Cloud Appreciation Society in Britain is a wonderful example of how an observer can look behind the phenomena of cloud formation. The dynamic growth of where and how clouds grow, no matter how ethereal, is amply illustrated through photos and clear-cut descriptions. It is well written in the tradition of English amateur nature writing, with whimsy and precise detail. Knowledge of the whole landscape is enhanced by looking up!

The TUBA cloud entry is an example of the writing style and observation:

The air below a storm cloud is often a wild confusion of blustery, gusty and not-at-all tranquil winds. But when the storm develops from a single Cumulonimbus cloud into a co-ordinated system, known as a multicell or supercell storm, the mêlée of air currents becomes much more organized. This is when a tuba can form.

Resembling a cloud finger descending from the storm's base, the tuba forms in the air sucked upward into the storm to feed its vigorous vertical growth. Like an upside-down version of bath water going down a plug hole, the rising air can start rotating in a vortex. In a big storm cell, the rapidly rising air expands and cools enough for some of its moisture to condense to form the walls of the tuba. Also known as a 'funnel cloud', it can be the birth of a tornado.

A tuba can also form when the air is not rising but sinking from the base of the individual clouds, such as Cumulus congestus and Cumulonimbus. Fraggled towards the ground by the cloud's heavy showers, this sinking air can cause vortices to form. These are rarely as violent as the upward ones, so tubas are less pronounced. They herald not tornados, but the less ferocious landspouts or waterspouts.

Whatever a tuba is heralding, keep your distance when adding it to your cloud collection—just in case it has a mind to add a cloud spotter to its own collection of flying debris.

The KELVIN-HELMHOLTZ cloud, such as adorns our *Correspondence* header, “scores the highest number of points of all the clouds.”

Small enough to fit in a coat pocket, this treasure will afford many fruitful hours of observation, as one becomes a companion of clouds!

Note (Barry Lia):

Many of the following notes expand a bit on recent posts on our **Facebook** page: <https://www.facebook.com/nssanthro>. We encourage you to share posts of interest to our Section work on our page.

We also encourage you to submit your own notes and commentary aimed to bring a discerning and unique perspective on developments in science and technology to our Correspondence. **For submissions**, click [here](#).

Note (Barry Lia):

Gregory Cajete is a Tewa Indian from Santa Clara Pueblo and professor emeritus at the University of New Mexico, and author of *Native Science: Natural Laws of Interdependence* (2000, Clear Light Publ.). There is embedded in this article below a worthwhile half-hour video on “Astronomy through Native Eyes” by Cajete. An opening remark from his talk: “Resonance is really the key term in this whole perspective; the idea and the understanding that the focus of native science was really not to try to explain away the mystery of the natural world but was really about finding ways to resonate with the natural world and the natural order towards the effect of sustainability and also of meaning of Indian life as a whole.”

<https://www.yesmagazine.org/environment/2020/09/18/environmental-science-indigenous-educators/>

Indigenous Educators Bridge Native and Western Science in the Classroom

by Natalie Rademacher, Sept 18, 2020 *Yes! Magazine*

In Cajete's experience, students are angry that a nature-centric, long-view approach is not part of their early education. Part of his role as a teacher involves trying to facilitate hope in students that the status quo in environmental education can change.

“Science is a human knowledge system; it can change,” Cajete says. “Education is key. Education is what caused the condition in the first place and education can correct that. ...It's developing very slowly. But it's developing and moving forward.”

Note (Barry Lia):

This short article compares and contrasts conventional and native science. Imagine research “a lot more fun and interesting”! As regards “our relatives,” check out this video which unwittingly makes for an accidental analogy contrasting reductionist science and the science for which we strive—how phenomena are conventionally treated like mere crash test dummies, but that something amazing could happen if we didn’t think of them so.²

<https://www.sciencedirect.com/science/article/pii/S0190052815001303>

Native Science: Understanding and Respecting Other Ways of Knowing

by Linda Black Elk, 2020, *Rangelands* 38(1): 3-4.

It is first critical for researchers to understand that good rangeland management (according to Native science) requires recognition of ecological interrelatedness. This is perhaps best exemplified in the Lakota phrase *mitákuye oyás’iŋ*, which translates literally as “all my relatives.” This phrase reflects the belief that we, as human beings, are related to everything and everyone—from huge

cottonwood trees to the cool wind, and from barking prairie dogs to the fertile soil. Understanding this concept of interrelatedness can make research a lot more fun and interesting, and our results gain relevancy when our collaborators, our lands, and all of these plants and animals are considered our relatives.

Note (Barry Lia):

Jennifer Greene, our representative to the Collegium, tells of a discussion about what we’re dealing with regarding our human capacity to meet cultural needs. She posed the need as a “public health” issue, broadening the concept of public health to ask: What do we do to keep the earth as a place for life? What do we need to become more fully human? What sustains sustainability? (cf. Cajete’s opening remark above.)

Ehrenfried Pfeiffer once asked Rudolf Steiner, “How can it happen that the spiritual impulse, and especially the inner schooling, for which you are constantly providing stimulus and guidance bear so little fruit? Why do the people concerned give so little evidence of spiritual experience, in spite of all their efforts? Why, worst of all, is the will for action, for the carrying out of these impulses, so weak?” The reply, “This is a problem of nutrition. Nutrition as it is today does not supply the strength necessary for manifesting the spirit in physical life. A bridge can no longer be built from thinking to will and action. Food plants no longer contain the forces people need for this.”³

These two comprehensive notions of public health and nutrition are somewhat echoed in the following article about an indigenous approach to climate change.

<https://www.washingtonpost.com/climate-solutions/2020/11/24/native-americans-climate-change-swinomish/>

An ancient people with a modern climate plan

by Jim Morrison, Nov 24, 2020, *Washington Post*

[The Swinomish] recognize that the endangered “first foods”—clams, oysters, elk, traditional plants and salmon—are not mere resources to be consumed. They are central to their values, beliefs and practices and, therefore, to their spiritual, cultural and community well-being. ...

A tribal member who earned a geology degree from Dartmouth College and a master’s degree at Washington State University, Mitchell returned to work for the tribe 20 years ago. “I think the missing piece—and I’ve been working on it ever since I got here—is how to take this straight-up science in the academic sense and put it together with traditional knowledge.”

One way the tribe’s approach differs from others is an innovative focus on community health. While the health effects of a changing climate have become a focus in recent years, the Swinomish, typically, have developed a broader view.

Jamie Donatuto, the tribe’s environmental health officer, and Larry Campbell, a 71-year-old tribal elder, have created a tool, Indigenous Health Indicators, that goes beyond typical morbidity and mortality measures and considers ecosystem health, social and cultural beliefs, and values integral to a community. “It’s a very different way of thinking about health,” she said.

Seen through that lens, restoring “first foods” is important not just for diet and nutrition but for nourishment of the soul.

² https://youtu.be/SkpaSe_Zj60

³ *Spiritual Foundations for the Renewal of Agriculture*, (1993, Creeger & Gardner translation, p. 260-261).

Note (Barry Lia):

It was the first line below which caught my eye.

<https://www.theguardian.com/commentisfree/2020/oct/09/people-carbon-targets-climate-crisis-action-activists>

People, not carbon emissions, should be at the heart of the west's climate action

By Aruna Chandrasekhar, Oct 9, 2020, Last modified on Oct 13, 2020, *The Guardian*

The western climate movement's rallying call to "trust the science" is vital, but I wonder if the overwhelming emphasis on it is making our solidarity more misanthropic and apolitical. Most days, it seems easier to take refuge in graphs that detail the shelf-life of methane as a greenhouse gas in the next two centuries than address the messiness of human relationships or urgent human rights violations.

...If it's a new world we want, we must look beyond token diversity and admit that there will be no economic recovery or green deal without a plan for workers of colour whose oppression and displacement we all benefit from, that addresses historical issues of land, access to commons and justice.

The climate crisis may not be what keeps the majority of us up at night, but it blows up everything that was flawed to start with. There are no easy answers and many difficult questions. Everything is up for rebuilding, and therein lies the need for us to be at our most human, most creative and to cast the widest net. There's a need for long-term thinking, just as there's a need to pass the mic and stand up for inconvenient truths that don't fit within our existing politics. The emergencies are already here and multiplying, if we can take off our glasses that filter people into little boxes of faceless climate victims and the rest of us. Will we engage with these grey areas and centre climate justice around rights and life, in all its messiness? It's time to put humanity and life, not just carbon, at the centre of the climate crisis and our solidarity.

Note (Barry Lia):

Perhaps many of you have also had this hunch?

<https://www.bbc.com/future/article/20201110-charles-darwin-early-life-theory>

Charles Darwin's hunch about early life was probably right

by Michael Marshall, Nov 11, 2020, *BBC.COM*

Darwin never wrote about how life began in his books, but he did speculate about it in private. The key document is [a letter he wrote, dated 1 February 1871, to his close friend the naturalist Joseph Dalton Hooker](#). This letter is now almost 150 years old. It is short – just four paragraphs – and hard to read because of Darwin's spidery handwriting. In it, after a brief discussion of some recent experiments on mould, Darwin outlined the beginnings of a hypothesis:

"It is often said that all the conditions for the first production of a living organism are now present, which could ever have been present. But if (and oh what a big if) we could conceive in some warm little pond with all sorts of ammonia and phosphoric salts, light, heat, electricity etc. present, that a protein compound was chemically formed, ready to undergo still more complex changes, at the present day such matter [would] be instantly devoured, or absorbed, which would not have been the case before living creatures were formed."

... What is clear, however, is that Darwin's idea was far-sighted. He envisioned the need for a range of chemicals to become concentrated in a small space, and the need for an energy source that could drive chemical reactions.

"Just like many of Darwin's insights," says [Lena Vincent, of the University of Wisconsin-Madison], the warm little pond hypothesis was "very prescient".

Darwin made one other point in his letter, which is "underappreciated", says Vincent. "The processes that happen in that warm little pond might happen so easily that they happen all the time," she says. We may not see it simply because, whenever a new protein or similar forms naturally, a hungry bacterium gobbles it up.

"We talk about the origin of life like it's something that happened in the deep past," says Vincent. "But it's something that could be trying to happen even now."

Calendar of Events

Geology Group Online Study

Monday, **December 7**; 4pm Pacific time [recorded] (contact James Lee [here](#))

Review of Michael Judge's approach to Natural/Goethean/Spiritual Scientific Questions

1. How can it be said the Tertiary and Pleistocene geologic periods are Steiner's "Atlantean"?
2. The problem of the human being (Homo) in the Tertiary
3. Steiner's seemingly way-out assertions about the human being.
4. Are there any plausible indications in the geologic record or present human biology for Steiner's indications? Aquatic humans? "Animal Group" humans? Cartilage humans? The Logos intervened in human evolution?
5. The fossil appearance of Homo in the geologic record and what is then the subsequent evolution.
6. Homo's transition to the Holocene/Anthropocene (i.e., Steiner's "Fifth Post Atlantean").

Kolisko Institute Webinar

Wednesday, **December 16**; 5pm Pacific time (register [here](#)).

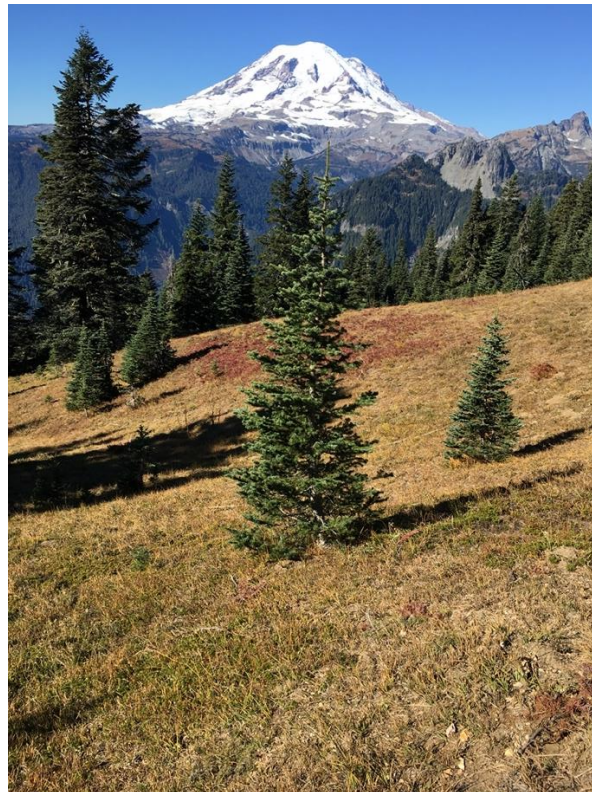
Meditative Thoughts for the Holy Nights

Connecting to this year's Great Conjunction of Jupiter and Saturn that will lead us into the next year, we will: • discuss an amazing formula that will allow us to find the constellations with no additional equipment except for our mind; • present a eurythmy form; • touch on important meditative practices; • show practical medical and other work as it may relate to the Stars.

Online Colloquium on Climate Crisis

Saturday, **January 30**; 10am Pacific time (tentative: details in January issue)

Climate and the human being - a shared history under the responsibility of the mankind today, with Meinhard Simon.



Mount Rainier from Shriners Peak trail (B. Lia)

Please Support Our Work

Please consider making a financial contribution in support of our mission to bring a discerning and unique perspective on developments in science and technology to the Society's membership and out into today's culture.

The epistemological foundation of anthroposophy is not only a matter of scientific method. Having a strong foundation in the scientific basis for a monistic science of spirit-matter is important for a healthy attitude towards conventional science today and to overcome its materialistic bias. This is important for *all* of us working with anthroposophy to further our culture today, be we teachers, farmers, doctors, therapists, artists, entrepreneurs, or anyone seeking to heal the contemporary worldview.

Support for German-to-English translation is especially desired.

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