

CORRESPONDENCE

OF THE NATURAL SCIENCE SECTION OF THE ANTHROPOSOPHICAL SOCIETY IN AMERICA

JANUARY-FEBRUARY 2019

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***Understanding Mammals:
Threefoldness and Diversity***

By Wolfgang Schad

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Editor's Note

With this “January-February” issue we continue with reports of Geology Group meetings from past years. In this issue, we have a report on the 2017 Geology Group meeting, together with two related items, one of Jennifer’s favorite poems and book extracts on a geology theme. (See 2019 meeting announcement on p.12).

Our Notes and Commentary section is meant to come from you, our readers, reflecting upon what you are encountering in science and technology. This is your opportunity to share a note on an article or a scientific paper you’ve just read, or a commentary on something that struck you in a book you are reading. This newsletter is intended for *reader participation*.

Don’t forget the availability of the video archive of each evening’s lecture for those who could not attend the “Bridging” conference with Prof. Dr. Heusser in November (see p.11). We are still hoping conference attendees and others will use these as a basis for talks or workshops in schools and Branches.

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](#).

Barry Lia, Ph.D.
Correspondence Editor

Please Support Our Work

We ask that you please consider making a financial contribution in support of our mission to bring a discerning and unique perspective on developments in science and technology into today’s culture.

Furthering the epistemological foundation of anthroposophy is not only a matter of scientific method. It is important to know that there *is* a scientific basis for a monistic science of spirit/matter and to know *what* that basis is. 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.

The video archive of Dr. Heusser’s public lectures presenting this theme will be a great aid to organize workshops across the country, reaching the broader audience that should take interest in these matters.

With these videos, together with the inauguration of the *Correspondence*, we have made a substantial advance in our outreach capability. We ask you to consider furthering this work financially.

Your donation of *any amount* will help us better serve the Society.

(It is possible to set up recurring monthly donations.)

To donate, click [here](#).

Or mail check payable to “Natural Science Section” in care of our Treasurer, Barry Lia at:
Anthroposophical Society in America, 1923 Geddes Ave, Ann Arbor, MI 48104

Thank you kindly for your consideration.

For a copy of our Case for Support, contact Jennifer Greene: jgreene at waterresearch dot org.

NORTH AMERICAN ANTHROPOSOPHICAL GEOLOGY GROUP – 2017 MEETING REPORT

—Report by Frank Fawcett

On July 30, 2017, a small group of enthusiastic anthroposophical geologists gathered in southern Ohio to learn more about the fossil record in this world-class (Cincinnati arch) collecting area. After moving into our pleasant residence in the Grailville retreat center, we planned our meals together for the next few days (first things first) and discussed possible collecting sites. Attending were Jerry Kruse (the main organizer), Jonathan Swan, Frank Perkins, and Frank Fawcett.

We began our search for the perfect fossil by exploring O'Bannon creek, which meanders through the grounds of the retreat center.



Although the quantity was not overwhelming, the quality was outstanding. Bryozoa, brachiopods, and cephalopods were collected.

Over a three-day period, 7 or 8 sites with exposures representing Ordovician and Devonian periods were visited, and representative fossils collected. One site was an Ohio state park, Caesar Creek, primarily Ordovician. The other sites were mainly roadcuts along and near Highway 9 (AA) in northern Kentucky, well-known to fossil collectors. The fossils were primarily bryozoa, brachiopods, and horn coral, with a good number within each category.



After supper in the evenings, the general activity was to first clean and inspect one's collection from the day. Microscopes were handy to obtain a clear up-close look at the details of the specimens. After sharing and discussing the fossils of the day, the group retired to the sitting room and read together from Steiner's *Three Essays on Haeckel and Karma*, first published in 1914.

Most of the collecting was done at roadcuts, where a pattern repeated itself—layers of hard, dark gray limestone a few inches to a foot or more in thickness, separated by layers of lighter gray, much softer shale.

The boundaries between the two materials were abrupt. The limestone was frequently (although not always) fossiliferous, the shale much less so. Some fossils were found loose on the surface of the shale exposures, although we found many areas had been picked over for these fossils. The main collecting areas were Ordovician—certain formations were the most fossiliferous, we had read. The best collecting was near the town of Maysville, Kentucky, and we had the best luck on a small, inconspicuous roadcut along Route AA, which had apparently been passed over.

Towards the end of the trip, we drove east towards the hills which form the transition to the Appalachian Mountains (the Ordovician limestone and shale is mostly flat "bluegrass country"). A very different type of thick layering appeared, shown in one photo.

We also took time out from geology one afternoon to dabble in anthropology, visiting Serpent Mound, one of dozens of ancient Indian mounds in Ohio.

In Memorium

Judith Erb reports that Frank Perkins, a member of her Ann Arbor community, crossed the threshold on January 6th at 1:10 AM. He died peacefully in the Henry Ford Hospital in Detroit, a few days after collapsing suddenly while visiting his brother. Frank was a participant in this Geology Conference, a long-time anthroposophist, and a kind, humor-loving, guitar-playing human being.



Rock

There is stone in me that knows stone,
 Substance of rock that remembers the unending unending
 Simplicity of rest
 While scorching suns and ice-ages
 Pass over rock face swiftly as days.
 In the longest time of all come the rock's changes,
 Slowest of all rhythms, the pulsations
 That raise from the planet's core the mountain ranges
 And weather them down to sand on the sea's floor.

Remains in me record of rock's duration.
 My ephemeral substance lay in the veins of the earth from
 the beginning,

Patient for its release, not questioning
 When, when will come the flowering, the flowing,
 The pulsing, the awakening, the taking wing,
 The long longed-for night of the bridegroom's coming.

There is stone in me that knows stone
 Whose sole state is stasis,
 While the slow cycle of the stars whirls a world of rock
 Through light-years where in nightmare I fall crying
 "Must I travel fathomless distance for ever and ever?"

All that is in me of the rock replies,
 "For ever, if it must be; be, and be still; endure."

Kathleen Raine (*Poetry* magazine, April 1952, Volume 80, Issue 1, p.3)

Notes and Commentary

“Rocks alive? Yeah, right!”

I’ve sandwiched a longer passage between two earlier paragraphs from David Abram’s *Becoming Animal: An Earthly Cosmology* (2010, Pantheon Books). Abram opens the chapter with his young child’s wide-eyed wonder at a howling chorus of coyotes just outside one night. This first excerpted paragraph tells of how we moderns, as individuals growing up, and as is our cultural heritage, lose the child’s sense of animated nature (p.42.8). Then there is the longer passage from the close of the chapter, in which Abram demonstrates an adult’s potential experience of living rock (p.54.8). In the text, the closing paragraph here (p.43.5), now informed by the longer passage, actually follows the first directly.

Abram’s project of re-animating the world through participatory phenomenology seems well-aligned with our Goethean-anthroposophical project. Don’t we need something like the experience of “animistic sensibility” today, in order to overcome our desecration of nature? —Barry Lia

Cut off in its earliest stage, dammed up close to its source, our instinctive empathy with the earthly surroundings remains stunted in most contemporary persons. Hence, whenever we moderns hear of traditional peoples for whom all things are potentially alive—of indigenous cultures that assume some degree of spontaneity and sentience in every aspect of the perceivable terrain—such notions seem to us the result of an absurdly wishful and immature style of thinking, at best a kind of childish naïveté. No matter now intriguing it might be to experience the land as animate and alive, we know that such fantasies are illusory, and must ultimately come up against the cold stone of reality. We cannot help but interpret whatever we hear of such participatory beliefs according to our own stunted capacity for emphatic engagement with the sensed surroundings—a capability that was stifled in us before it could blossom, and which therefore remains immobilized in us, frozen in its most immature form. Confronted with animistic styles of discourse, most of us moderns can only imagine it as a sort of childlike ignorance, a credulous projection of human-like feelings onto mountains and rivers, which surely amounts to madness for any adult soul. Rocks alive? Yeah, right!

Soon there’s a change in the soundscape: the cadence of crickets now interlaced with the fluid trills of tree frogs. And do you catch that new sweetness haunting the air? That’s the scent of the cottonwood leaves.

And here at last: the quiet gurgling of water.

We walk upstream along the bank as best we can, dodging branches, skirting clumps of willows and soggy spots, lulled by the liquid voice rolling over the stones. The dense tangle snags and grabs at our clothes, tripping up our feet. Over and again the frog trills fall silent at our approach—though if we wait, hushed for a few moments, the chorus starts up again louder than ever. The vibration of a hummingbird thrums the air near my ears, then rises above the branches and fades into the near distance. I plunge on, leading clumsily through another thicket of willows. Pricked and scratched, I round a bend in the stream, and am brought to a halt.

Here is the emphatic presence I’ve been longing to visit since the snows melted. I bow for a moment in greeting, then turn to wait for you. As you step into view, I watch you suddenly stop, and stagger backward a few steps, and hear the sharp, startled exhalation of breath that escapes your lips. I turn to gaze with you.

Rising from the other side of the creek is a huge sandstone cliff, carved into long, lateral striations by centuries of flowing water. The cliff leans far over the stream, eclipsing most of the sky. As your

eyes travel up its face, I watch your mouth drop open, and see your knees bend as you drop to a crouch. “Wow,” I hear you say.

“Uh-huh.” We peer into the sculpted face of this rock, letting its convolutions draw our awareness in curves and swoops across its ruddy expanse. Then we wade across the creek to press our hands against it.

After a while, I break the silence, “It’s weird, you know, the way so many people accept the notion that stone is inanimate, that rock doesn’t move. I mean, really, this here cliff moves *me* every time that I see it.”

You sigh, audibly: “Aw, come off it, Abram, now you’re stretching things too far. The so-called movement that you speak of, when you say that ‘this rock moves you,’ is just a metaphor. It’s not a real physical movement in, ya’ know, the material world, but only an internal *feeling*, a mental experience that has nothing to do with this actual cliff.”

“You must be kidding,” I blurt, exasperated. “I mean, how can you say that? I just saw you yourself stagger backward when you first caught sight of this rock face! It was quite obviously a physical movement in the actual, material world, and any bird watching from its perch in those cottonwoods would have to agree with me. You were quite palpably moved. Or do you mean to pretend that you were not?”

“Hmmm... Well I guess, in this case, that there was some real, material movement.”

“Well, then! D’you still want me to pretend that the rock moves you only mentally, or can we both admit that it is a physical, bodily action effected by the potent presence of this other being? Can we admit that your breathing body was palpably moved by this other body? And hence that you and the rock are not related as a mental ‘subject’ to a material ‘object,’ but rather as one kind of dynamism to another kind of dynamism—as two different ways of being animate, two very different ways of being earth?”

You are silent puzzling. I see you gaze back at the rock face now, questioning it, feeling the looming sweep of its bulk within your torso, listening with your muscles and the quiet composition of your bones for what this old, sculpted presence might wish to add to the conversation. I watch you lie back upon the stony soil, giving yourself to the shelter of the overhanging sandstone, inviting the cool embrace of its shadow. Water drips near your face. The stillness, the quietude of this rock is its very activity, the steady gesture by which it enters and alters your life.

We fail to realize that such a participatory mode of perception when developed and honed through the harsh discoveries of adolescence and on into adulthood, will inevitably yield a complexly nuanced and many-layered approach to the world. We fail to recognize that over the course of hundreds of generations, such participation with the enfolding earth will by now have been tuned so thoroughly by both the serendipities and adversities of this world, by its blessings and its poisons, its enlivening allies and its predatory powers, as to be wholly beyond the ken of any merely naïve or sentimental approach to things. Our indigenous ancestors, after all had to survive and flourish without any of the technologies upon which we moderns have come to depend. It seems unlikely that our ancestral lineages could have survived if the animistic sensibility were purely an illusion, if this experience of the sensible surroundings as sensitive and even sentient were a callow fantasy utterly at odds with the actual character of those surroundings. The long survival of our species suggests that the instinctive expectation of animateness, of an interior spontaneity proper to all things, was a very practical way to encounter our environment—indeed, perhaps the most effective way to align our human organism with the shifting vicissitudes of a difficult, dangerous, and capricious cosmos.

David Abram, *Becoming Animal: An Earthly Cosmology*, 2010 (Pantheon Books)

Commentary:

—Barry Lia

A friend's recent email concerning Owen Barfield got me reflecting (beta-thinking) about the Abram passages above in relation to Barfield's Saving the Appearances (1957, Harcourt, Brace & World) and Barfield's notions of the original participation experienced by the ancients, and by the remaining animist cultures of the present day, and of the final participation anticipated by our spiritual science:

p.138.4: "...we have seen that the major part of any perceived phenomenon consists of our own 'figuration'. Therefore, as imagination reaches the point of enhancing figuration itself, hitherto unperceived parts of the whole field of the phenomenon necessarily become perceptible. Moreover, this conscious participation enhances perception not only of present phenomena but also of the memory-images derived from them. All this Goethe could not prevail on his contemporaries to admit. Idolatry was too all-powerful and there were then no premonitory signs, as there are to-day, of its collapse. No one, for instance, had heard of 'the unconscious'.

"For a student of the evolution of consciousness, it is particularly interesting that a man with the precise make-up of Goethe should have appeared at that precise moment in the history of the West. By the middle of the eighteenth century, when he was born, original participation had virtually faded out, and Goethe himself was a thoroughly modern man. Yet he showed from his earliest childhood and retained all through his life an almost atavistically strong remainder of it. It breathes through his poetry as the peculiar Goethean attitude to Nature, who is felt as a living being, almost as a personality, certainly as a 'thou' rather than as an 'it' or an 'I'. It is almost as if the Gods had purposely retained this sense in Goethe as a sort of seed-corn out of which the beginnings of final participation could peep, for the first time, on the world of science. Perhaps it was an instinctive understanding of this which made him so determined to keep clear of beta-thinking.

*Mein kind, ich hab'es klug gemacht,
Ich hab' nie über das Denken gedacht.¹*

For beta-thinking leads to final, by way of the inexorable elimination of all original, participation.

Consequently Goethe was able to develop an elementary technique, but unable, or unwilling, to erect a metaphysic, of final participation."

p.140.2: "Unlike Goethe, however, Steiner did not avoid beta-thinking. At the same time that he was editing Goethe's scientific works in Weimar, he was writing his book *The Philosophy of Spiritual Activity*, in which the metaphysic of final participation is fully and lucidly set forth. Educated on 'the modern side' (as we should then have said) at school and university, he was thoroughly at home with the idols and never relied on any relic of original participation there may have been in his composition to overcome them. It is in his work and that of his followers that the reader should look for further signs of a development towards final participation in the field of science."

Might we also look for what Abram has to offer our Goethean concern to maintain a sensual empiricism in our spiritual science? He points not only to the limiting constrictions of reductionist science, but also cautions about the perils of other-world spirituality.

p.300.5: "If much of our natural science of the last two centuries held itself aloof from the nature it studied, pondering the material world as though that world were a huge aggregate of inert objects and mechanical events, many new-age spiritualities simply *abandon* material nature entirely, inviting their adherents to focus their intuitions upon non-material energies and disincarnate beings assumed to operate in an a-physical dimension, pulling the strings of our apparent reality and arranging earthly events according to an order that lies elsewhere, behind the scenes. Commonly reckoned to be at odds with one another, conventional over-reductive science and most new-age spiritualities actually fortify one another in their detachment from the earth, one of them reducing sensible nature to an object with scant room for sentience and creativity, the other projecting all creativity into a supernatural dimension beyond all bodily ken."

p.302.9: "Whether sustained by a desire for spiritual transcendence or by the contrary wish for technological control and mastery, most of our contemporary convictions carefully shirk and shy away from the way the biosphere is directly experienced from our creaturely position in the

¹ My child, I have it cleverly wrought, \ I have never about thinking thought. [Ed. Transl.] *Zahme Xenien*, iv.

thick of its unfolding. They deflect our attention away from a mystery that gleams and glints in the depths of the sensuous world itself, shining forth from within each presence that we see or hear or touch. They divert us from a felt sense that this wild-flowering earth is the primary source of itself, the very well-spring of its own ongoing regeneration. From a recognition that *nature*, as the word itself suggests, is self-born. And hence that matter is not just created but also *creative*, not a passive blend of chance happenings and mechanically determined events, but an unfolding creativity ever coming into being, ever bringing itself forth...

“Why is this simple and rather obvious intuition—this recognition of matter as generative and animate—so disturbing to civilized thought?”

p307.2: “The preceding chapters have tried to delineate some of the dimensions of our perceptual oblivion, exploring an array of ways to recover our attunement without abandoning intellectual rigor. Corporeal sensations, feelings, our animal propensity to blend with our surroundings and be altered by them, our bedazzlement by birdsong and our susceptibility to the moon: none of these ought to be viewed as antithetical to clear thought. Our animal senses are neither deceptive nor untrustworthy; they are our access to the cosmos. Bodily perception provides our most intimate entry into a primary order of reality that can be disparaged or dismissed only at our peril. Far from offering an untrustworthy account of things, our senses disclose an ever-shifting reality that is not amenable to any finished account, an enigmatic and encompassing field of relationships to which we can only apprentice ourselves. This ambiguous order cannot be *superseded* by reason and the careful practice of our sciences, since it provides the experiential substance without which reason becomes rudderless. As the very substance of the real, it cannot be supplanted—but it can be augmented, elaborated, clarified, and complexified by those sciences. And our participation *within* it can be honed and deepened by our discoveries.”

Might we recognize Abram as an ally to our Goethean spiritual science? In Becoming Animal, he does acknowledge conversations with Steve Talbott, Craig Holdrege, Arthur Zajonc, and Brian Goodwin among “a broad range of luminous souls.”

At his advocacy of “animism,” however, we might stop short and deem his work a seeming attempt at original participation. Yet, like the rest of us, Abram

was educated on ‘the modern side’ and displays no atavistic remnant of original participation. In his earlier book, The Spell of the Sensuous (1996, Vintage Books), returning to North America from anthropological study, he recounts how the world of beta-thinking and Western ‘figuration’ which we inhabit obliterated the animistic sensibility he had acquired from living among shamans and rural people in Indonesia and Nepal. He must work deliberately to re-attain and maintain his sensual technique of conscious participation. He is not selling himself as a New Age shaman. We may hold that Goethean-anthroposophical science offers additional methodology, but we might yet value Abram’s sensual technique of conscious participation as a means of schooling the sensual and moral imagination.

Back to Barfield:

p.146.8: “The systematic use of imagination, then, will be requisite in the future, not only for the increase of knowledge, but also for saving the appearances from chaos and inanity. Nor need it involve any relinquishment of the ability which we have won to experience and love nature as objective and independent of ourselves. Indeed, it cannot involve that. For any such relinquishment would mean that what was taking place was not an approach towards final participation (which is the proper goal of imagination) but an attempt to revert to original participation (which is the goal of pantheism, of mediumism and of much so-called occultism). To be *able* to experience the representations as idols, and then to be able also to perform the act of figuration consciously, so as to experience them as participated; that is imagination.

“The extremity of idolatry towards which we are moving renders the attainment of this dual relation to nature a necessity for both art and science. The attempt to unite the voluntary creativity demanded by the one with the passive receptivity demanded by the other is the significance of Goethe’s contribution to the Western mind, as the achievement of it is the significance of Rudolf Steiner’s. It is perhaps still not too late to attend to these portents. The appearances will be ‘saved’ only if, as men approach nearer and nearer to conscious figuration and realize that it is something which may be affected by their choices, the final participation which is thus being thrust upon them is exercised with the profoundest sense of responsibility, with the deepest thankfulness and

piety towards the world as it was originally given to them in original participation, and with a full understanding of the momentous process of history, as it brings about the emergence of the one from the other.”

These sentiments of Barfield’s seem kindred to the following from Abram’s The Spell of the Sensuous:

p.270.7: “Only if we can renew that reciprocity—grounding our newfound capacity for literate abstraction in those older, oral forms of experience—only then will the abstract intellect find it’s real value.* It is surely not a matter of “going back,” but rather of coming full circle, uniting our capacity for cool reason with those more sensorial and mimetic ways of knowing, letting the vision of a common world root itself in our direct, participatory engagement with the local and the particular.

“* [footnote] In contrast to a long-standing tendency of Western social science, this work has not attempted to provide a rational explanation of animistic beliefs and practices. On the contrary, it has presented an animistic or participatory account of rationality. It has suggested that civilized reason is sustained only by a deeply animistic engagement with our own signs. To tell the story in this manner—to provide an animistic account of reason, rather than the other way around—is to imply that animism is the wider and more inclusive term, and that oral, mimetic modes of experience still underlie, and support, all our literate and technological modes of reflection. When reflection’s rootedness in such bodily, participatory modes of experience is entirely unacknowledged or unconscious, reflective reason becomes dysfunctional, unintentionally destroying the corporeal, sensuous world that sustains it.”

I’ll close with another synchronicity. In my cycle of re-reading the Leading Thoughts, I’m just now at this passage from “THE WAY OF MICHAEL, AND WHAT PRECEDED IT”:

p.69.2: “When thoughts laid hold of the physical body, spirit, soul and life had been excluded from their immediate contents, and the abstract shadow attaching to the physical body alone remained. Thoughts such as these can make *only* what is physical and material into the object of their

knowledge, for they themselves are only *real* in the physical and material body of man. Materialism did not originate because material beings and processes alone can be perceived in external Nature, but because man had to pass through a stage in his development which led him to a consciousness at first only capable of seeing material manifestations. The one-sided development of this necessity in human evolution resulted in the modern view of Nature.

“It is Michael’s mission to bring into human etheric bodies the forces through which the thought-shadows may regain *life*; then the souls and spirits in the supersensible worlds will incline towards the enlivened thoughts, and the liberated human being will be able to live with them, just as formerly the human being who was only the physical image of *their* activity lived with them.”

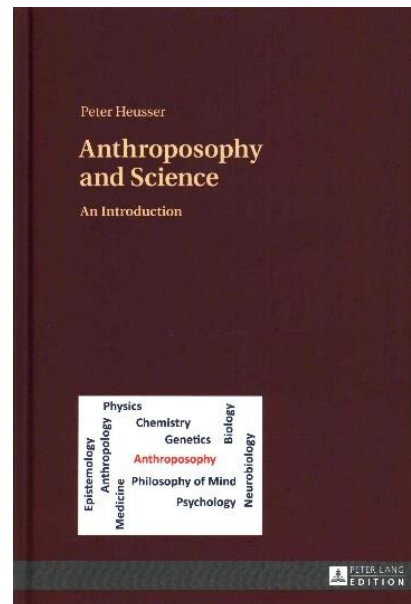


Study of Michaelangelo’s *David* by unknown artist, found in Magnuson Park, Seattle. (Photo by Barry Lia)

Video archive of Prof. Dr. Peter Heusser's Public Lectures



BRIDGING NATURAL SCIENCE AND SPIRITUAL SCIENCE



We wish that more of you readers could have joined us for the “Bridging Natural Science and Spiritual Science” conference in Spring Valley in early November.

However, you can now view Prof. Dr. Heusser's Public Lectures archived on our website.

These four lectures stand as a summary of his book and will hopefully serve as the basis of regional workshops continuing this work to promote an understanding of Rudolf Steiner's epistemology on a modern, scientific basis.

Lecture 1: ***Is there a place for the spirit in physics and chemistry?***
– ***On the importance of epistemology for natural science.***

Lecture 2: ***Is there a chemical or genetic explanation of life?***
– ***A closer look on causality and agency in modern biology.***

Lecture 3: ***Does the brain cause consciousness?***
– ***A way out of neurobiology's current doctrine.***

Lecture 4: ***From natural science to spiritual science.***
– ***Rudolf Steiner's contribution to the evolution of science.***

Click [here](#) to register for video access.

Announcement

Goethean Science Geology Conference

July 18-21, 2019
College Park, MD



How did the geology we see all around us form?

Natural Science - Phenomenological Science - Spiritual Science

**Location: Christian Community Parish House, 4221 Metzerott Rd,
 College Park, Md 20740 (Next to the University of Maryland)**

For geology professionals or those who feel geology as an avocation; but also those newer to geology are welcome (with some small ground rules)

***Pre-Conference field trip** by the DC metro-subway to the Smithsonian's Natural History Museum to see the geology/gem/mineral collection and the long-awaited Natural History paleontology exhibition newly opened! (Smithsonian Museums on the National Mall are free of charge)

***Departing Thursday July 18 at 8:00am** from 4221 Metzerott Rd College Park, Md

Conference Schedule Plan

Thursday July 18

5:00pm Welcome! Meet and Greet and check-in

5:45pm Conference Opening with verse from Goethe

5:50pm Orientation and housekeeping details for the Geology Conference

6:05pm Geologist Frank Fawcett Presentation on his translation of Dankmar Bosse's Natural History book into English from German. Dankmar Bosse is a remarkable Goethean Scientist dwelling in Berlin Germany who brings together Natural Science and Spiritual Science regarding the evolution of earth and humans.

6:50pm Geologist Jonathan Swan Presentation on the what? the how? the why? the who? of Goethean Science (i.e. Phenomenological Science)

7:30pm Guided discussion asking geology attendees about their approach to Goethean Science

8:00pm Open conversation among those with a geology background and welcomed observers

8:55pm Close with a verse from Steiner

Friday July 19

8:00am Biodynamic coffee and conversation

8:30 *Opening* verse from Goethe

8:40 Some small movement exercise for participants

8:55 Sculpting using Cretaceous creek clay; group attempts a sculpture of Coastal Plain-Piedmont-Blue Ridge-Ridge & Valley-Appalachian Plateau

9:30 Geologist *Jonathan Swan Presentation* on Piedmont-Coastal Plain Fall-line geology

10:10 Snack

10:30 Field Trip by car to The Falls of the Anacostia Watershed and then to the Great Falls of the Potomac Watershed (small entrance fee for a car); bring lunch, dinner, and gear; *(optional geology hike possible at Great Falls of the Potomac River)*

6:30-7:45 Return to the Geology Conference location

8:00 Review the geology seen on the field trip that day -Living with the question- ***How did the geology we observed form?***

9:00 *Closing* verse from Steiner

Saturday July 20

8:00am Biodynamic coffee, questions, conversation

8:30am *Opening* verse from Goethe

8:40am Some small movement exercise

8:55am Clay sculpture using Cretaceous clay and other natural materials continues modeling Maryland's & Virginia's Physiographic Provinces

9:30am *Michael Judge Presentation* on Maryland Mesozoic Cretaceous exposures

10:15am Field Trip to close by Paint Branch Creek and the Cretaceous exposures (110 mya)

11:30am Field Trip by car to Cretaceous iron ore siderite-dinosaur exposure (110 mya) at Muirkirk, Md; Bring lunch and gear; *Option of visiting a moon rock at nearby Goddard Space Flight Center - ***How did the moon form?***

6:00-8:00 Dinner on your own (many nearby options)

8:00 Review of the geology of the day -Living with the question -***How did this geology we have observed form?***

9:00 Reviewing the Geology Conference and thinking about future geology work

9:30 *Close Conference* with verse from Steiner

Sunday July 21 *Optional Field trip to Southern Maryland in the afternoon to see Miocene geology and possibly the Tertiary-Cretaceous boundary

****Cost for Geology Conference \$50 (pay upon arrival at the Conference)***

****Scholarships are available for those who need it; contact: [mjudge2000 at gmail.com](mailto:mjudge2000@gmail.com)***

****Let us know if you wish to come for a portion of the Conference, which can then be pro-rated***

****You can let us know your lodging and meal needs, as we have recommendations and options***

****It helps to let us know if you plan to come***

Contact: [mjudge2000 at gmail.com](mailto:mjudge2000@gmail.com)

Calendar of Events

2019

March 29-31, 2019: **Mathematics Alive! Negative Numbers and Linear Equations** with Henrike Holdrege and Marisha Plotnik (Nature Institute, Ghent, NY)

<http://natureinstitute.org/calendar/index.htm>

April 12: **Goethean Science and the Native Science of Indigenous Peoples** talk by Jennifer Greene (Nature Institute, Ghent, NY)

<http://natureinstitute.org/calendar/index.htm>

April 12: **Moving, Forming, and Rhythm in Water Flow: Experiencing and Understanding the Fluid Event of Water**, workshop with Jennifer Greene (Nature Institute, Ghent, NY)

<http://natureinstitute.org/calendar/index.htm>

April 27-May 4: **IPMT 2019 - International Postgraduate Medical Training** (Chestnut Ridge, NY)

<https://paam.wildapricot.org/International-Post-Graduate-Medical-Training/>

June 21-23, 2019: **Best Practices Mistletoe Course** (Baltimore, MD) This course is open to licensed MD's, DO's, ND's, NP's and PA's.

<https://paam.wildapricot.org/event-3217985>

June 2019-July 2020: **Encountering Nature and the Nature of Things: Foundation Course in Goethean Science**, a year-long, low-residency program (Nature Institute, Ghent, NY)

<http://natureinstitute.org/calendar/index.htm>

July 18-21, 2019: **Goethean Science Geology Conference 2019** (College Park, MD) [see p.13]

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