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NEWSLETTER

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From the Chair

Some progress may be fast...some progress may be slow. But all progress is incremental...it occurs in steps. Sometimes we take a step back to move two steps forward...we make short term sacrifices for long term gains. We concentrate on what is important rather than being sidetracked by what is supposedly urgent (I use the definitions of Stephen R. Covey's "7 Habits of Highly Successful People" here shamelessly). Sometimes progress isn't easy...but I've always felt that we in the geological sphere are or should be more open to it. Some of us were exposed to the principles of uniformitarianism and catastrophism in first year introductory modules, not as dichotomous principles but rather as principles that have both resulted in what we see in the world around us today (the only difference being that

catastrophism works much more quickly). Compare subtle erosion against landslides and earthquakes – neither is more “true” than the other. For some of us in third year hydrogeology (or geohydrology or whichever offends the least sensibilities), we learnt that whilst “laminar” flow and “turbulent” both occur in fluids (depending on the Reynolds number), it is the “turbulent” flow that tends to move particles...though once again neither is more “true” than the other. Perhaps, it is the natural tendency of the geosciences to not look at the earth as composed of dichotomies but rather as constituting a “whole” with different players, that has endeared it to myself and as long as “truth” is valued higher than status I hope to use these metaphors in helping bring about progress (even though there may be some turbulence or catastrophes along the way).

Sincerely

*Igor Željko
Tonžetić*



Jill Richards honoured for 25 years' service as MINSAs's secretary/treasurer

Spending 25 years making a contribution to a specific cause is a long time in anyone's life. Dr Jill Richards reached this significant milestone last year, serving as MINSAs's secretary/treasurer, through many changing times and scenarios in the field of mineralogy.

As Jill was away visiting family overseas when the AGM (at which she was to be honoured) was held last year, the event was celebrated in January this year. A luncheon was held in her honour at the Vigour and Verve Restaurant, Silverstar Casino.



Jill, in her acceptance speech, related a few stories of her time as secretary, particularly the highly successful and well-attended field trips that members embarked on in the past. She also commented on how times have changed, with less value placed on such outings, now replaced by increased workplace pressures. Typing up committee meeting minutes, making photocopies of these, folding and placing in addressed envelopes and attaching stamps for posting to members, speak of a bygone era in a rapidly evolving world of e-mail and social media for instant communication. This piece of information was certainly an eye-opener for some of the younger folks in the party, whilst eliciting nostalgia for some of our longer-serving members!

Excited conversation also revolved around the splendid memento from MINSAs to Jill to mark the occasion. She was presented with a necklace comprising 25 stones, including an ammonite. The necklace was designed and made by the MINSAs Chair, Igor Tonžetić. Igor further crafted the

elegant and functional kiaat wooden box in which the necklace was beautifully displayed. Jill was thrilled with the gesture, and thanked everyone for the honour.



The necklace presented to Jill

MINSAs is deeply grateful for Jill's contributions over the years. She continues to serve as treasurer on the committee, and has a ready answer when members come unstuck over a MINSAs matter and are in need of some advice. We look forward to many more years with her on board.

Contributed by Deshenthree Chetty

Touring Melville Koppies

The Melville Koppies guided tour took place on the 16th October 2016, which brought together 15 MINSAs family and friends. This nature reserve and heritage site is located between the lush suburbs of Melville and Emmarentia. Wendy Carstens, the chairperson of Melville Koppies and our tour guide, enlightened us about the geology, flora, fauna, archaeology, ancient history and recorded history of the koppies. The central koppie is the only area the tour goes through. This area is access-controlled, while the east and the west koppies are open to the public.

The geology of the area is made up of Wits Supergroup and its gold-bearing conglomerate layers, which lie unconformably on basement

rocks. The northern slopes have thick reddish topsoil from the weathering of the basement rocks. The ridges and the southern part of the reserve are made up of shales and quartzites of the Wits Supergroup. The soil in this area is acidic which allows for proteas and hardy shrubs to flourish. There are sedimentary structures such as cross bedding and ripple marks that are evident in the quartzites. The koppies are covered in small, milky quartz pebbles from all the quartz veins present. There are dykes that have intruded which lie along the Westdene Spruit.

The central koppie fauna and flora are all indigenous; the koppies are a close representation of what the Highveld was, before the gold rush. The cultural history is rich as the Tswana homestead that was established here. A furnace was discovered in the same area, where smelting of iron from the banded ironstones took place. Tools such as hoes, spears, chisels, and bangles have all been uncovered here. Late Stone Age tools used by the Bushmen were discovered here, too. Quartzites dipped in poison were used as arrowheads. Tools dating far back as 2 million years were unearthed here!



Melville Koppies appreciate all the funds collected at tours and hikes for the maintenance of the koppies. One can also add 'Friends of Melville Koppies' to your Woolies 'My School' beneficiaries.

There are a few monuments on Melville Koppies such as the Florence Bloom pool; Florence was a great bird lover.

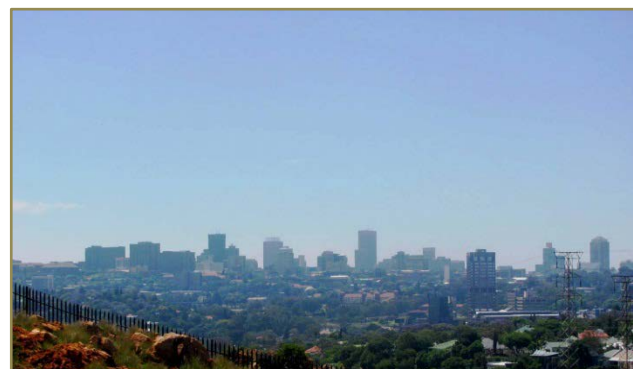
From the top of the koppies, a panoramic view takes you from the valley of Marks Park, across

Emmarentia Dam wall all the way north to Northcliff tower, Northgate dome and right to the rolling hills of the Magaliesberg (photo 2). A look to the south and the Jozi CBD is in full spectacle (photo 3).

The tour takes about 3 hours and covers a distance of 5 km. A Sunday morning well spent with nature in the heart of Jozi (as I fondly know it as), after which an ice-cold beverage and pizza awaits me.



The view from the top of Melville koppies: Looking north, showing Northgate dome and the Magaliesberg.



Looking southeast: Johannesburg City; how many of the landmarks you can identify?

References: <http://www.mk.org.za>



Contributed by Keshree Pillay

MINSА 25 YEARS AGO

Adapted from the MINSА Report in Geobulletin vol 34 no.3 1991 by L. Andrews

MINSА OUTING TO THE PILANESBERG NATIONAL PARK (May 1991)

MINSА members and their families visited the Park and went on a guided tour of the old Moepo Fluorite Mine, situated 6 km from the Bakubeng Gate. Guiding the tour were Dr Chris Lee, then working at JCI and a member of the Friends of Pilanesburg (FoP), and Mr Lee Roeland, a FoP Ranger Naturalist.

The Pilanesberg Alkaline Complex forms an impressive landmark above the surrounding countryside. The mountains are all that remain of an enormous ancient volcano active around 1300 million years ago. The remnants of volcanic activity and post-volcanic intrusions form a ring complex around 25 km across. The alkaline intrusives are host to many rare and interesting minerals; some are rich in niobium and others contain rare earth elements. Fluorite occurs at a number of localities in the Pilanesberg Complex, having a hydrothermal origin and is often associated with the red foyaites. The Moepo deposit was first discovered by Dr Carl Mauch in the nineteenth century.

Dr Lee described the geology and the workings of the mine. The fluorite formed when a plug of white foyaite intruded into pre-existing volcanic rocks (lavas and tuffs). Mineralization of the contact zone and alteration of the surrounding rocks resulted in the formation of fluorite, aegirine and apatite.

The site of the old processing plant was visited first. In the 1920's, various attempts were made at fluorite purification using an inclined furnace and an upright pot but problems arose from the apatite content and high levels of potassium. Attempts to leach out the apatite caused trees to become stunted downhill of the plant – an unexpected result of the elevated phosphate levels.



Chris Lee introduces us to the Moepo Fluorite Mine Trail.

At this point the group left the path and examined some of the rock exposures. Rhinos were known to be present in the area, but none were sighted – can it be true that rhinos prefer to charge downhill? Dr Lee pointed out the volcanic capping rocks, the white foyaite and the mineralization at the tuff/foyaite contact. A number of excavations and an adit were examined. Finally, the group returned to the car park *via* the mine dump where fluorite specimens could be scrutinised, but not removed.



Pete Wedepohl finds a new friend in the walk-through aviary.

The Friends of Pilanesberg, a voluntary society, had developed a number of sites of geological interest within the Park. Polished slabs of stone were mounted at several locations, along with geological descriptions, and a geological trail was established. These sites allowed a “do-it-yourself” tour of Pilanesberg geology.

After the mine tour, the group enjoyed a picnic at the Education Centre, and then many members visited the aviary close by, or tried their luck at the Sun City Casino.

Disclaimer: *Information on the origin of the Pilanesberg, and access to the Moepo Trail are those provided in the 1991 article, and may have changed since then.*

Contributed by Lesley Andrews

The 2017 MINSA Book Prize

Preamble

The Mineralogical Association of South Africa offers a book prize annually to the value of R1500 in the field of Mineralogy (*sensu lato*) for geology students studying at any South African Tertiary Institution or South African students studying geology in foreign Tertiary Institutions in line with its constitutional mandate to promote the study of Mineralogy in South Africa.

Criteria

- 1.) A MINSA book prize may be awarded for a completed Honours Project and/or a completed Masters Dissertation in any given year i.e. in any given year two prizes may be awarded, 1 for an honours student and/or 1 for a Masters student but not 2 Masters students or 2 Honours students.
- 2.) The majority (51%) of the analytical techniques used in the projects or dissertations must be considered to be mineralogical in nature. This would for instance preclude geophysics, geomorphology, structural geology, mapping, whole-rock geochemistry and sedimentological methods (amongst others). This is not to say that the entire dissertation or project should consist of 51% mineralogy, only that the “Methods” section (and hence “Results” and “Discussions” section) should have a majority (51%) of mineralogical techniques applied to it (for instance and very much NOT restricted to: SEM, EDS, Microprobe, Petrography, XRD etc.) – If this criteria is not followed then the committee will pass on as a recommendation that the applicant consider applying for a GSSA prize.
- 3.) An Honours project need not have a resultant paper for publication in a journal (though it would STRONGLY aid and credit the awarding of a prize).
- 4.) A Masters dissertation MUST have a publication in process resulting from the dissertation itself (and this must be submitted in conjunction with the dissertation for consideration of the prize). The paper need not have been accepted by a journal, only submitted. I.e. it should at the very least be in the final revisions/drafts before potential publication.
- 5.) The fundamental conclusions derived from the methods, results and discussion must, for the most part (>50%) be derived from the mineralogy garnered from those sections. That is to say that mineralogy cannot be treated as simply “going through the motions” or as a “filler” in the dissertation or project. The mineralogy must have made an impact on the conclusions.
- 6.) In any given year, if there are very few applicants, the awarding of a prize is entirely at the discretion of the book prize panel and need not be awarded at all, if the applications are of inferior quality.
- 7.) A project/dissertation completed in any given year may be submitted for the award the same year OR the following year, i.e. a project/dissertation completed in 2016 may be submitted for an award in 2016 or 2017 (but not 2018 or onwards).

- 8.) In accordance with the constitution of MINSA, namely to promote Mineralogy in South Africa, the prize is restricted to anyone of the following applicants:
- South African citizens studying in a South African institution,
 - South African citizens studying in foreign institutions, or
 - Foreign students studying in South African Institutions.
- 9.) The judging of the MINSA book prize will be conducted by the Executive Committee of MINSA for the current year. The MINSA Executive Committee for the 2016/17 season currently is:
- Igor Tonžetić
 - Desh Chetty
 - Robert Schouwstra
 - Bertus Smith
- 10.) The Executive Committee judging is final and no plea will be entered into.

Submission/Application

A supervisor, mentor or adjudicator must submit the Honours Project or Masters Dissertation (with Paper) to minsa@gssa.org.za by no later than the 1st July 2017. The subject line of the email must be titled "Application for MINSA student Book Prize" with reference being made to whether the application is for an Honours Project or Masters Dissertation. Contact details of the supervisor/adjudicator/mentor and the student in concern must accompany the application. A letter of reference or testimonial may be submitted with the project/dissertation but is by no means compulsory.

Presentation

The MINSA Book Prize will be awarded at the Annual General Meeting of 2017.

Contributed by Igor Željko Tonžetić



Course

Introduction to Auto-SEM-EDS
by
Igor Tonžetić

23-24 March 2017
Sci-Ba Headoffice Cape Town

Visit our webpage to download registration form
or email courses@sci-ba.co.za

www.sci-ba.com

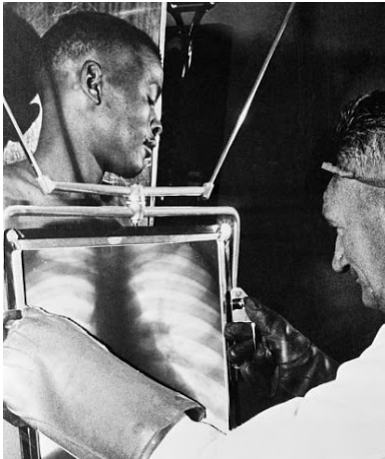


Forthcoming Events & Attractions

- 20th – 22nd March: Process Mineralogy 2017, Vineyard Hotel, Cape Town
- 4th May: “Truth & Error in Scientific Publishing” by Rodney Jones (19h30 UJ Reading Room)
- 5th – 9th June: ICAM 2017, Nova Yardinia Conference Centre, Taranto, Italy
- 15th – 17th August: LabAfrica 2017
- 17th August: MINSA Symposium
- 18th – 22nd September: International Kimberlite Conference, Gaborone, Botswana
- September 2017: Barberton Excursion
- Excursion to RBM: TBD
- Excursion to Koeberg: TBD

Other gems

De Beers miners X-rayed



De Beers mine workers are X-rayed at the end of every shift before leaving the diamond mines. Kimberley, South Africa. 1954.

The machine (see photo above) is actually called a fluoroscope - that's how it was done. The X-rays hit a phosphor screen and emit light. They don't use them anymore because of a number of factors, mostly the doctor was getting a hell of a lot of radiation as well. A nice read on it:

'Miners wedge diamonds behind sweatbands, tap them into ears, and insert them in other orifices. At one De Beers mine, security guards caught a thief only because he'd inserted so many gems into his rectum that he was waddling.'

'In one scheme workers smuggled trussed homing pigeons out to the mining areas in lunch boxes. They fit the birds with harnesses, load them with rough, and set them free. Sometimes the thieves were too ambitious. Security officials at NAMDEB caught one thief when they found his pigeon dragging itself along the ground, its harness loaded beyond takeoff capacity'

Source: reproduced without permission from

<http://rebrn.com/re/de-beer-mine-workers-are-x-rayed-at-the-end-of-every-shift-befor-2617915/>.

Contributed by Susan Foulkes

Man-Made Minerals

A recent press release highlighted the publication in *American Mineralogist* (March 2017) by Robert Hazen, Edward Grew, Marcus Origlieri, and Robert Downs, who have formally identified 208 new mineral species forming directly as a consequence of human intervention. These range from minerals crystallising on the walls of mines (the majority) to purpose-built synthetic minerals. They go on to discuss the implications for the characterisation of the Anthropocene Epoch, a proposed post-Holocene geological time interval, as a future stratigraphic marker, which includes the fact that humans have redistributed selected natural minerals around the globe. Think of that next time you come back from a field trip with your latest sack of samples! For more, see the article by Hazen *et al.* (2017) On the mineralogy of the “Anthropocene Epoch”. *American Mineralogist*, v. 102, p. 595-611.

Contributed by Steve Prevec

Geology in song: Garnet Nodules

Geologists, when provoked, are prone to bouts of often unanticipated creativity. The song "Garnet Nodules" has had a resurgence thanks to David Reid's performances of it at recent conferences, and Igor Tonžetić has provided this account of its earliest performances:

According to Dave Reid, "The lyrics were written by John Gurney and I think they were published in one of the proceedings of an IKC in 1977. The tune follows the old song "Oh my darling, Clementine." Craig Smith adds "It was the New Mexico kimberlite conference in about 1977, I think in the abstract volume (not in conference

proceedings; I've checked.) A certain noted academic (noted at least then) stood on a table in middle of the conference dinner and recited the Ballad of Eskimo Nel. In his underwear.

I was a broke grad student and could not afford accommodation, so I slept in the woods. I followed the field trip bus with the beer truck through the Navajo Reservation (risking arrest and jail).

Our youngsters have it awfully easy today."

The lyrics, in full, are as follows:

Garnet Nodules

Words by John Gurney, tune by Percy Montrose (1884)

Chorus:

Garnet nodules, garnet nodules,
garnet nodules, mighty fine,
Samples of the upper mantle
from the mid-Cretaceous time.

Verses:

Garnet nodules, garnet nodules,
garnet nodules, mighty fine,
Some are brown and some are orange;
some are red and some are wine;
But the best ones, they are chrome jobs
and their colour's purple bright,
Til' you flip them, and they turn green,
cos they're full of knorringite.

The diopsides, big diopsides,
they are several shades of green,
Some like apples, some like bottles,
and the alteration's cream.
You get hot ones, you get hot ones,
but the most exciting sight
Is a cool one, yes, a cool one,
intergrown with ilmenite.

Phlogopite and opx's, olivines and ilmenite
All occur as discrete nodules
in a rock called kimberlite
And the best place for you to see them;
discrete nodules mighty fine
Is in the Free State, the Orange Free State
at the Monastery Mine.

A YouTube performance featuring Dave Reid can be found at <https://youtu.be/zrlyh9LsbM4>.

Would you like to place an advertisement in the MINSAs newsletter?

Our advertising rates for 2017 are:

- 1/8 Page: R 100
- 1/4 Page: R 200
- 1/2 page: R 400

Please write to minsas@gssa.org.za for payment details.

If you have any news that would be of interest to the MINSAs community, contributions can be sent to Steve Prevec (s.prevec@ru.ac.za).

The deadline for submissions for the next issue of the MINSAs Newsletter (surely we can come up with a catchier name for it?) is May 31, 2017.