

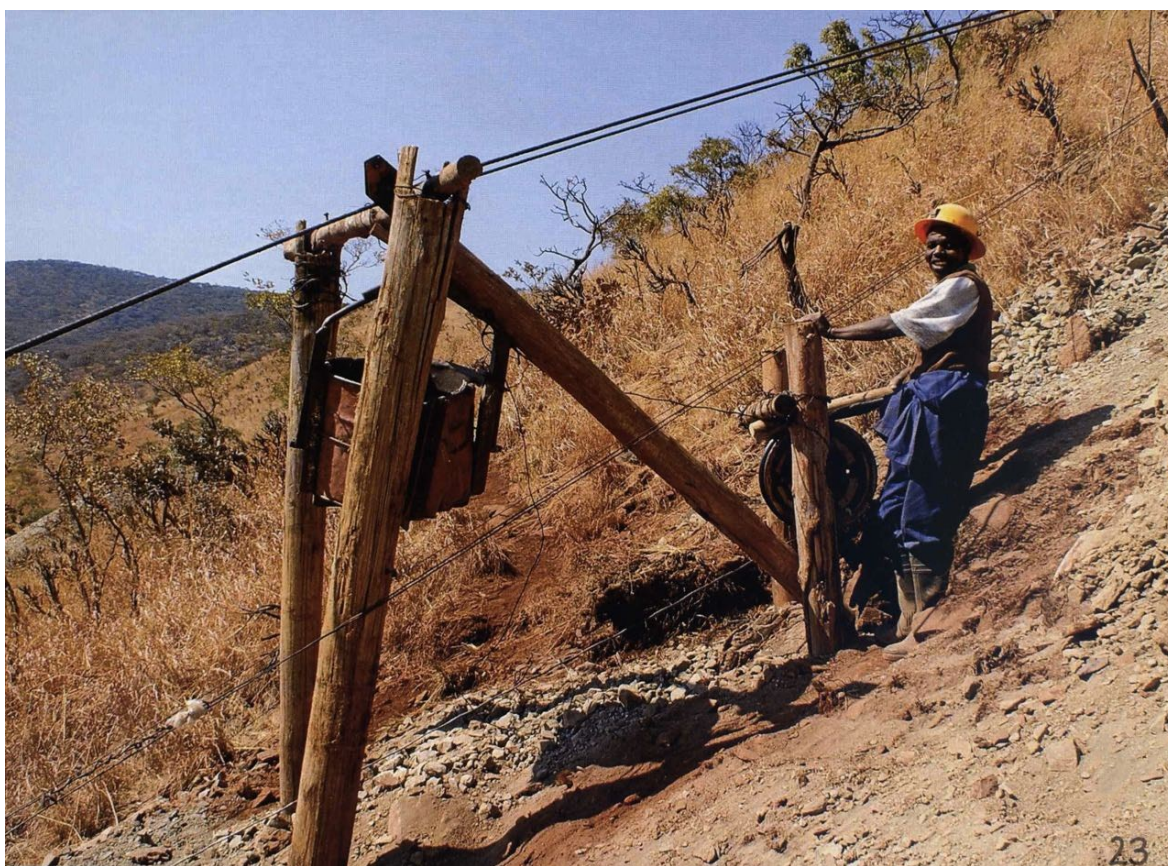
Geological Society of Zimbabwe



Newsletter

June 2018

No. 2 of 3 of 2018



Artisanal chrome mining on the Great Dyke south of Mutorashanga

Photo: Rolf Hangartner

www.geologicalsociety.org.zw

The Geological Society of Zimbabwe, P.O. Box CY 1719, Causeway, Harare

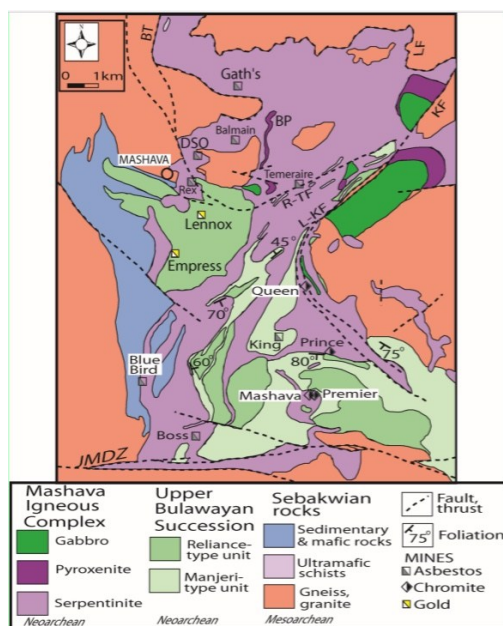
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Editorial

It is time to welcome Steve Duma and his Committee for 2018 as they face the challenges and stimulation that these tasks engender in order to further the interests of the Geological Society of Zimbabwe. Indeed, as becomes apparent through the pages of this Newsletter, your Committee is already hard at work. The Summer Symposium, brought forward to the 6th September, promises an impressive line-up of speakers, including Professor Lew Ashwal from Wits, who is this year's Geological Society of South Africa's Alex du Toit Memorial Lecturer. Details of his presentation are posted. In addition Tom Blenkinsop, Andy Moore, Sharad Master and Peter Fey, amongst others are making a special effort to be at the Symposium. We hope you as Members will also endeavour to be part of the proceedings. The Symposium will be followed immediately by a four-day field excursion to the 'ophiolite' complex of the Chewore Inliers and will include a visit to the Ntumbwe dinosaur tracksite. Moves are also afoot to stage the next A.M. Macgregor Memorial Lecture later in the year, and arrangements are in hand to bring to fruition an international conference on 'Zimbabwe's Mineral Resources' in June 2019.

Jeff Chaumba, Associate Professor of Mineralogy/Petrology and Economic Geology at the University of North Carolina at Pembroke, USA, gave his talk on the *Petrogenesis of Cr-enriched chromites from Prince Mine, Mashava Igneous Complex* on Friday 1st June at the Geology Department.



Although for long interpreted as a 'layered mafic intrusion', analyses by Jeff suggest that the Mashava Igneous Complex likely originated at a convergent margin boundary as chromite chemistry lends support to an 'ophiolitic' origin for the Complex.

Then on Saturday 16th June nineteen Members congregated at the Pickstone Mine where they were hosted by management and given a tour by George Rusike of the Pickstone and Peerless open pits, drilling operations and an exploration trench. Grateful thanks are due for the opportunity to visit this positive gold mining venture on deposits that have been

explored and exploited since the turn of the 20th Century. Thanks are due to Nevison Chikandiwa for the pictorial record.



Peter Fey, through the offices of Neil Bliss of Kadoma Bulletin fame, provided the following photograph. It represents a ‘blast-from-the-past’ in that it is a record of the 1967 Committee of the Geological Society of South Africa (Rhodesian Branch) who organized and hosted the ‘Symposium on the Rhodesian Basement Complex’ held in Harare in October 1967. The proceedings of this gathering were published as an Annexure to Volume 71 of the Transactions of the Geological Society of South Africa in 1968. A total of 25 significant and relevant papers were presented to a list of delegates totalling 100 from Zimbabwe, Zambia, Botswana, South Africa, Swaziland, Australia and the USA.



L to R: Dr J.W. Wiles, Mr A.E. Phaup, Mr C.J. Lenz, Dr I. Goldberg, Dr J.F. Wilson, Dr D.H. Laubscher, Prof G.Bond, Dr J.W.N. Sharpe, Mr N.W. Bliss, and Mr C.A. Gibson

The award winners for 2017 were announced at the Society AGM held at the CFX Country Club on 9th March 2018 as follows:

The A.E. Phaup Award - F.R. Chauque, U.G. Cordani, D.L. Jamal and A.T. Onoe
 The Geoffrey Bond Award – Pauline Maradza
 The Michael Vinyu Award – Alfred Chikandiwa
 The Keith Viewing Award – Tim Broderick

As a point of record I wish to record the passing of Charles Rea who died in a light aircraft accident in Zambia on 8th March this year. Charles was well known in civil engineering circles in Zimbabwe, Zambia, Canada and elsewhere in the world, including Panama for his significant contribution to geotechnical and seismic investigations, notably on many of the larger dams across Zimbabwe. Following on from Keith Fisk and preceeding Penias Mpofu, Charles managed GPR Geophysics in Zimbabwe.

Once again I thank sincerely all those who made their respective contributions to this Newsletter, and thereby make its publication possible.

Tim Broderick

Stop-Press: It has recently been announced that Allan Mashingaidze has been appointed the Hwange Colliery Company Board. This follows appointment of Ellah Muchemwa to the ZCDC Board and David Murangari's re-appointment to the ZMDC Board. Congratulations are expressed to all three on these appointments.



Chairperson's Chat

Stephen Duma

It is my great honour to serve you and lead the Geological Society of Zimbabwe Committee for 2018, and it is indeed an exciting time to be in Zimbabwe. This is not only to witness the rebirth of our great nation, but also for us as geologists to be able to participate in the historic rebuilding process, especially of our beloved mining industry.

Your committee has embarked on an ambitious plan to grow our membership base during the months and the year ahead while we endeavour to provide you with fulfilling and stimulating fieldtrips and talks that are led by subject-matter specialists and reputable champions in their fields. The year will be used to prepare the ground for our very own international geological conference, the details for which have been flighted on our website www.geologicalsociety.org.zw where they will be constantly updated to keep you well informed during the countdown to June 2019 and which will allow you to participate as the reality comes to life and the programme takes shape. This is a mammoth task and our entire geological fraternity must steel themselves for the work that lies before us in order to make this conference a success. All players in the industry, large and small, are called upon to rally behind the committee and offer support in various ways to ensure that our nation's rich endowment in mineral deposits and geological expertise is showcased to the World and to demonstrate that Zimbabwe, once more, is 'open for business'.

Our now famed Summer Symposium will this year will be held in September. Professor Lew Ashwal has agreed to present the current Alex du Toit Memorial Lecture at the Symposium to combine with a spectacular line-up of presentations already in place. The Symposium is followed by a field excursion to Chewore which is outlined elsewhere in this Newsletter.

The 12th A.M. Macgregor Memorial Lecture is being organised for later this year and we look forward to seeing most of you at this prestigious event, especially those from the southern region.

It is with pride that I present to you, at the end of this Newsletter, the sitting committee, which is infused with new blood and adorned by many of the older grey hairs of wisdom and knowledge. This accolade has been earned through years of selfless commitment to geology and dedicated, passionate application to our cause. We truly are in for an activity-packed year and I thank you for your continued support in making our Society a vibrant organisation for professional development.



GSZ Research and Development Fund

Enquiries relating to the distribution of funds through this facility should be made through the standing Chairperson.

Articles and Reports

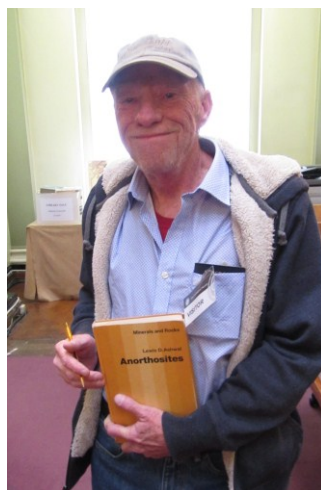
The 2018 Alex du Toit Memorial Lecture

The Fellows Committee of the Geological Society of South Africa (GSSA) has the privilege of presenting the 2018 Alex du Toit Memorial lecture tour, in honour of one of South Africa's most influential scientists. The lecture tour is staged every two years and is aimed at highlighting and comparing modern scientific endeavor to the achievements of Alex du Toit (1878 -1948).

The 2018 Alex du Toit Lecturer is Professor Lewis D Ashwal of the University of the Witwatersrand, and he will present "*Wandering continents of the Indian Ocean*", documenting his work in the discovery of ancient continental crust underlying parts of the Indian Ocean. This work has been reported by the popular press and has included international coverage by the BBC.

The Geological Society of Zimbabwe is honoured to have Professor Ashwal to come and deliver this talk at the Summer Symposium on 6th September 2018 at the University of Zimbabwe.

Professor Ashwal's geological expertise covers a broad spectrum of the earth sciences, including igneous and metamorphic petrology, geochemistry and geodynamics. He is one of the few South African-based experts on meteorites, and is an internationally recognized expert on the origins of anorthosite and related rocks. He has published 125 research papers and two books, and has won numerous awards. He has recently been awarded a major grant from the Oppenheimer Memorial Trust to research Large Igneous Provinces in southern Africa, and he has served as an Editor for the South African Journal of Geology since 1999.



The Zimbabwe Craton in Mozambique: A brief review of its geochronological pattern and its relation to the Mozambique Belt

Chauque, F.R., Cordani, U.G., Jamal, D.L. and Onoe, A.T.

A.E. Phaup Award for 2017

Abstract: The eastern margin of the Zimbabwe Craton, along the Mozambique-Zimbabwe border, includes the oldest rocks of west-central Mozambique constituting a large terrain of granite-greenstone type dated between 3000 and 2500 Ma. These rocks consist mainly of gneisses and granitoid rocks of tonalitic-trondhjemitic-granodioritic composition belonging to the Mudzi Metamorphic Complex in the northern part and to the Mavonde Complex in the southern part. The latter is associated with a granite-greenstone terrain, which includes the eastern part of Mutare-Odzi-Manica greenstone belt. A volcano-sedimentary sequence cover, belonging to the apparently Mesoproterozoic and Paleoproterozoic Umkondo and Gairezi groups respectively was deposited along the eastern margin of the craton and is exposed in the territory of Mozambique. The Umkondo minimum age is marked by intrusive dolerite in Zimbabwe dated at 1100 Ma while for the Gairezi it is still not well established. The Gairezi Group was subjected to progressive metamorphism of Pan-African age. At the margin of the Zimbabwe Craton, in its northern part, metasedimentary units occur representing a passive margin of Neoproterozoic age. They make up the Rushinga Group, which includes felsic metavolcanic rocks dated at *ca.* 800 Ma. Granulites and medium- to high-grade paragneisses, and migmatites of the Chimoio, Macossa and Mungari groups of Neoproterozoic metamorphic age, overlie the ortho-metamorphic pre-existing rock of *ca.* 1100 Ma, which belong to the Bárue Magmatic Arc. They characterize the N-S trending Mozambique Belt, which appears to the east of the craton tectonically juxtaposed on the Archean rocks. The maximum age of deposition of these rocks, indicated by U-Pb dating of detrital zircons, is *ca.* 700 Ma and their minimum age is limited by a few monzonitic Cambrian intrusions dated at *ca.* 500 Ma.

The Neoproterozoic bimodal Guro Suite, dated at *ca.* 850 Ma and composed of felsic and mafic members characterizes the east-dipping outer rim of the craton margin in the north. The felsic member comprises the Serra Banguatere aplitic granite gneiss-migmatite and the mafic member consists of the Magasso metagabbro and mafic gneiss-migmatite. The geochemical signature and bimodality are all characteristics of anorogenic, A-type granites.

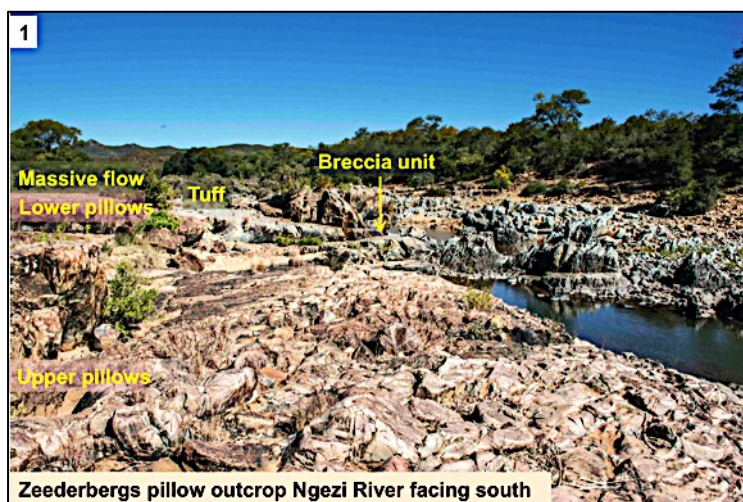
The tectono-thermal effects of the Pan-African orogenic event, of approximately 500 Ma, are visible along the margin of the Zimbabwe Craton. Deformation and metamorphism are progressive from the craton towards the belt, from greenschist facies to granulite facies. The main suture in the study area shall be placed along the frontal thrusts of the Mungari and Macossa/Chimoio nappes of Neoproterozoic to Cambrian age. To the west of the suture the rejuvenated margin of the craton occurs, indicated by K-Ar dating. To the east, the Mozambique Belt occurs with its paragneisses of the Neoproterozoic overlaying the Mesoproterozoic granitoids of the Bárue magmatic arc.

J. Afr Earth Scis 2017. **129** (May), pp. 366-379.

Some aspects of the Zeederbergs Formation

Tony Martin

The Zeederbergs Formation of the Belingwe Greenstone Belt consists dominantly of basaltic volcanic rocks, which lie conformably on the Reliance Formation. Typically it is a monotonous sequence of pillowed and massive flows with minor sills, breccias and intercalations of tuff. Exposure is generally poor as much of the 6km-thick succession is represented by fragments of basalt and red soil that supports *Miombo* woodland, but there are two good exposures. One is on a hilltop 8.5km just west of south from Zvishavane town and the other 20km in a similar direction in the bed of the Ngezi River. Some features of the latter are described below.

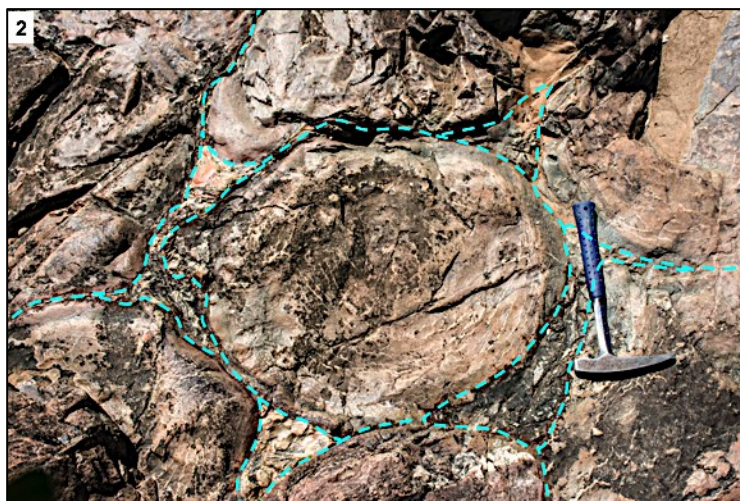


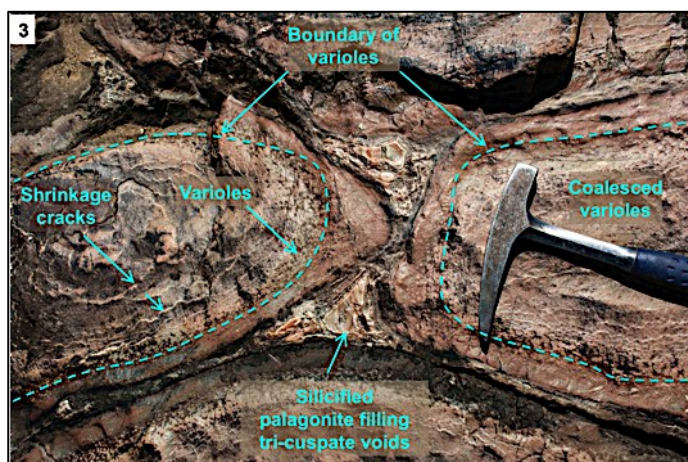
The river cuts across the strike and from the south of the outcrop there is a unit of massive basalt (see also Plate 12) overlain by tuff and two distinct sequences of pillows separated by a thin and irregular zone of breccia and flow-banded lavas.

The progression of photographs and their descriptions start from the

top-most pillowed unit.

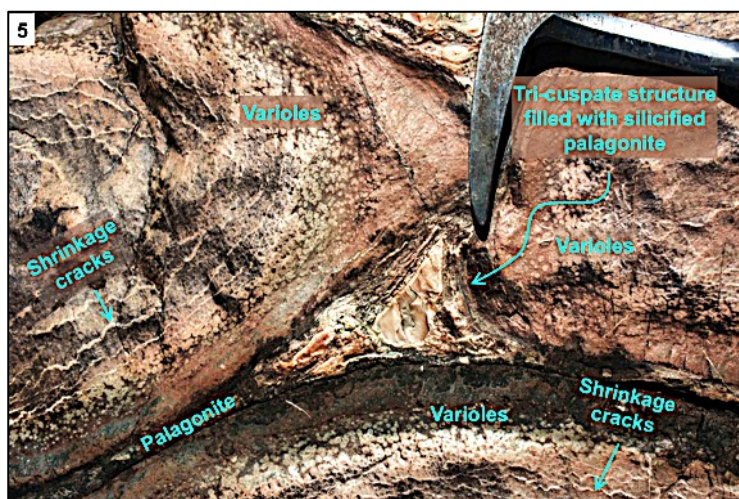
The upper unit pillows are generally rounded in the outcrop plane although vertical sections on the left bank indicate a vertical elongation. The pillows are well defined by palagonite of variable thickness, a gradational chilled rim and the tri-cusped structures that form between three pillows. In the example at right the tri-cusped structures in all but two instances, merge with each other. Typically these upper unit pillows show thin, irregular, concentric fractures filled with a more felsic mineral, which have been interpreted as shrinkage cracks that formed late in the cooling history as they are more prevalent away from the pillow centre and they cut the varioles.





of varioles.

Varioles are spherical, more felsic zones (usually alteration products of feldspar) within basalt. They tend to form in zones away from and parallel to pillow margins, and often coalesce into a more felsic mass towards the centre of the pillows – but not always. There are many exceptions where they form random more linear zones. Almost all of the pillows in the upper unit have a high proportion



crystals which in places feather into the more mafic groundmass (but not always) and where they coalesce they commonly retain their relict spherical shape within the massive variolitic zone. The varioles may also display a poorly defined internal concentric zonation.

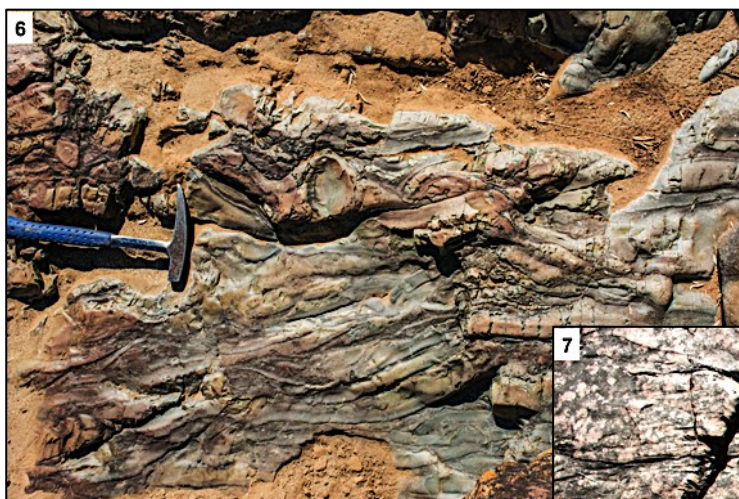
The origin of varioles is disputed and different processes may produce them. The variolitic parts of the Ngezi pillows generally parallel pillow margins and their timing of formation, seems to be post-pillow formation and pre-total solidification, suggesting that they formed during crystallisation. Further evidence for this comes from the presence of feldspar



So varioles appear to grow outwards from a central point and the best explanation is that feldspar crystallisation is triggered ahead of pyroxene by diffusional ingress of water through the chilled pillow margin and into the centre of the pillow. However, this process should result in a greater proportion of varioles nearer to the

pillow margins, which is not the case. To explain the variole distribution I would invoke a hotter pillow centre, thus allowing feldspar crystallisation over a longer period of time. But further work is required – in particular examination of more thin sections and some detailed geochemistry across the variole/matrix interfaces.

Turning now to the narrow and irregular zone that separates the upper and lower pillow units. This contains breccias and flow-banded rocks, which suggest a brief hiatus in volcanic activity.



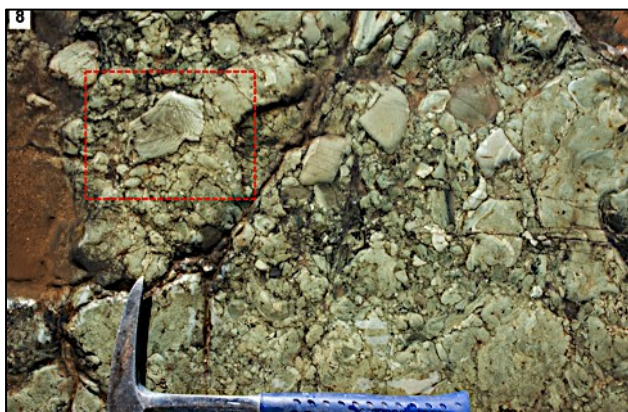
The breccia clasts consist of chilled pillow margin material and palagonite. They are interpreted to be the result of an overlying flow breaking up and smearing out partly consolidated pillows. Perhaps the flow was hotter,

less viscous and produced the

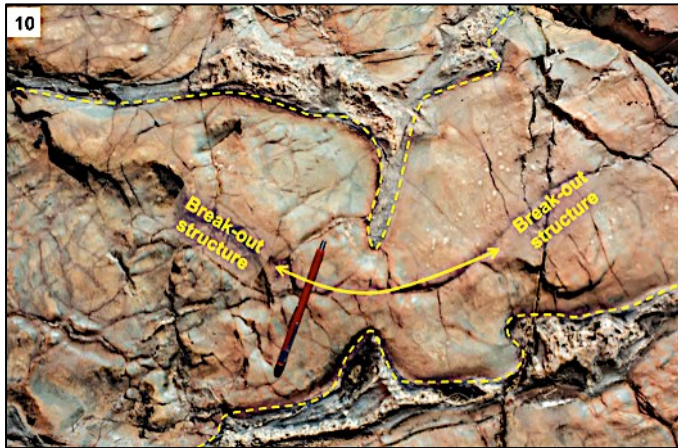
flow-banded unit associated with these breccias (Plate 7) – perhaps – because I need to check the field relationships on my next visit.



Whatever the explanation, these breccias are broken up pillows – note the shrinkage



cracks with detail in plate 9.

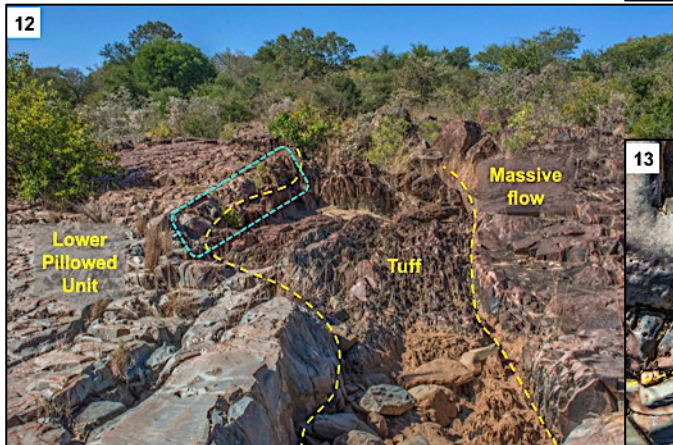
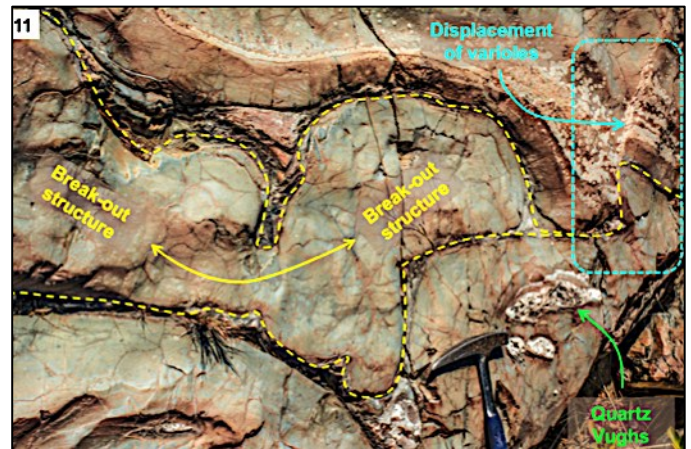


uneven floor and superincumbent load as the pillows piled up above.

Quartz vughs are not common and are not always present in the upper parts of the pillow. In ideal circumstances they have a concave-up top and a planar base where lowering of the magma surface below the chilled pillow crust creates a void subsequently filled by quartz.

The lower pillow unit shows no shrinkage cracks but there are a number of breakout structures where the chilled crust of an earlier pillow has split due to magma pressure and formed a new pillow.

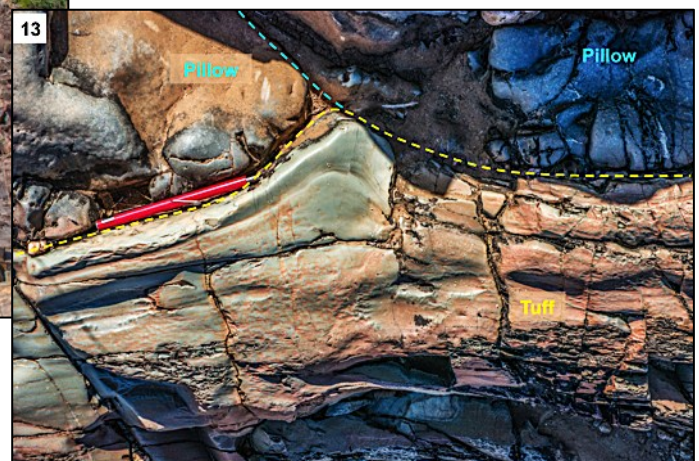
Note in Plate 11 the displacement of the pillow-margin layer of varioles (blue box), which is possibly due to post-crystallisation deformation resulting from an



lower pillow unit (blue rectangle in Plate 12).

The folding of the layering was caused by two pillows deposited on unconsolidated tuff.

The tuff layer is sheared with an almost slaty fabric except close to the upper-most contact with the



And... more on the Hokonui next newsletter.

The Chairperson's Statement at the AGM for 2017

CFX Sports Club, Harare – 9th March 2018

Dr Maideyi Meck

I am pleased to welcome you all as distinguished members of the geological fraternity to this year's annual general meeting of the Geological Society of Zimbabwe. As I will be handing over chairmanship of the Society to Mr Steven Duma, it is an opportune time to reflect on the achievements of the past twelve months and, in part, muse on the agenda for the coming year.

When I took up chairmanship a year ago I was afraid because I was not sure whether I would get the support that goes with the position but to my delight both the executive committee and the membership went beyond expectations. I appreciate this support and continued commitment from you all. Due to the overwhelming backup received our Society managed to achieve most if not all of the objectives set in February 2017.

I will give a brief update on the objectives and the progress made in each.

When we started the year, we set out to update and reorganise our membership database. I am pleased to announce that we achieved this objective satisfactorily.

We promised that we would identify key interested persons in each mining region to serve as regional co-ordinators in order to bring the Society and its activities closer to local geologists. During the year, Forbes Mugumbate and Collins Mwatahwa were asked to serve as regional coordinators for the Northern and the Southern regions respectively. They have become channels for the dissemination of information and are responsible for mobilizing activities in their respective domains. In the southern region meetings have started and we expect activities to increase in frequency. We are yet to see what the northern region will come up with.

We also promised to organise social functions in order to give members a chance to interact, socialise and exchange ideas as a means to update each other on regional developments. The past year saw the first braai at which members enjoyed an event without having to pay.

As a committee we also promised to try our best to strengthen our professional standing for the benefit of members through our collaboration with credible global institutions that fall in line with a shared vision. A formal discussion on professionalism was staged and the initiative is on going. The Society through the Administrator now maintains a register of attendees at meetings and events that may attract continuous development points (CDP) for our members who require these for other professional bodies they are affiliated to. The preparation for an international Conference, proposed during the tenure of Brent Barber, has gained momentum and shows good progress. A tentative date is now available and it remains for the incoming committee to take this initiative to fruition.

During the year one of our objectives was to increase information dissemination to ensure inclusiveness and to publicise our activities to both members and non-members. We have made use of the Newsletter to achieve this goal. The website was continually updated and is now more interactive in a way that we have managed to capture a wider

audience. The Honorary Secretary through the Administrator have continued to disseminate geologically-related news and events to the membership.

Sadly, though it was one of our objectives, we did not manage to maintain the number of field trips, talks and workshops at the level set in the previous year.

Many thanks go to my committee members who were behind this year's successes. I would like to thank this wonderful group comprising Brent Barber, Ali Ait-Kaci, Kudzai Musiwa, Collins Mwatahwa, Andrew du Toit, Nevison Chikandiwa, Forbes Mugumbate, Julie Kuhn, Steven Duma, Ernest Mugandani and Houda Bouammar.

As I hand over to Mr Duma it is my sincere hope that the membership will give him the support that I received.

Thank you!

News



Geology Department, University of Zimbabwe

Maideyi Meck

The Department of Geology is now an integral part of the School of Earth and Mineral Sciences. The School was approved by the University of Zimbabwe Academic Committee on the 12th of December 2017 when it was also agreed that its operation should start with immediate effect. The School was initiated with four departments, namely Mining Engineering, Metallurgical Engineering, Geology and The Institute of Mining Research. In order to fully integrate into the School, the Department will review its curriculum and proposes to canvass the opinions of the Mining Industry in Zimbabwe. This is to ensure that future graduates meet the requirements and expectations of industry in terms of the quality and numbers of graduates.

Points for discussion will include the preferred student attachment period, student numbers, the courses to be taught and their relevance to industry as well as to research, and will include the degree structure.

The Department continues to do well and the staff was joined by Mr Surrender Ncube on a part time basis. However, Dr T Njila and Mr Chinoda have left the Department. Miss Ncube will be joining the University of Johannesburg to pursue a PhD at the beginning of July. Mr Mupaya was involved in a car accident in May and we are not sure when he will re-join the department. The department will be advertising posts in the Sunday Mail, so please alert all geologists who may wish to apply for the posts.

The semester, which came to an end on 9th June, had its fair share of disturbances but we managed to pull through. The second-year students will attend the Belingwe Greenstone trip under the leadership of Dr Anthony Martin, which will take place over 8 days. All geologists in the area who can spare a day to help the youngsters are welcome to join in.



The Mennell Geological Society

Audious Kashesha (Chairperson) Bernatrix Makenah (Secretary)
audieekm@gmail.com panashebp@gmail.com

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Mr. P. Sena	Technical Assistant	psena@science.uz.ac.zw	0772390026		15193
Ms. S. Gorogodo	Messenger/Cleaner		0772390026		15029

NEWS FROM THE ZIMBABWE SCHOOL OF MINES

The Minister of Mines and Mining Development, Hon. W. Chitando has approved a new Board for the School, whose mandate runs from 2018 to 2020. The new Board comprises:

Mr Munodawafa	Permanent Secretary – MM&MD, Chairman
Mr Chinyowa	A/ Director: MM&MD
Mr Paskwavaviri	A/ Director: MM&MD
Mr E. Mugandani	A/Director: Geological Survey, MM&MD
Mr J. Matutu	Association of Mine Surveyors of Zimbabwe
Mr M. Makina	Director of Finance & Administration - MM&MD
Mr J. Makandwa	Director of Mining Promotions - MM&MD
Dr M. Meck	Geological Society of Zimbabwe
Mr K. Musiwa	University of Zimbabwe
Mr D. Matyanga	Chamber of Mines of Zimbabwe

Mr C. Musa	Institute of Mining Materials and Metallurgy of Zimbabwe
Mr A. Mhembere	Chamber of Mines of Zimbabwe
Mr P. Sana	Association of Mining Engineers of Zimbabwe
Mr R. Mvududu	Special Interest Group
Mr A. Mushonhiwa	Association of Mine Managers of Zimbabwe
Eng Manuwa	ZIMCHE

The Board was inaugurated in February and underwent their induction, followed by a curriculum-development workshop with stakeholders. The first semester started well, but was disrupted by disturbances that lasted over a month. I am glad to announce that the situation has now normalized and new Board Members are doing their best to sort out the grievances of both staff and students. As a result the term had to be extended.

Maideyi Meck

GSZ representative on the ZSM Board

The Professor Tom Blenkinsop UZ Geology Field Trip Fund

Following the successful presentation of the 2013 A.M. Macregor Memorial Lecture in Harare and Bulawayo, and his lead of the field trip in the Renco Mine area, Professor Tom Blenkinsop made a generous donation of \$200 to the Geological Society of Zimbabwe (GSZ). This was in support of University of Zimbabwe (UZ) geology student field trips. Over the years the UZ Geology Department has been under funded, resulting in their failure to raise sufficient money to conduct the mandatory field trips for its students. The GSZ responded by donating funds and materials from its own resources as well as from members. This assistance went towards the welfare of the geology students, especially in meeting costs for field trips.

Using the donation from Prof. Blenkinsop as seed money, the GSZ has now established the “*Professor Tom Blenkinsop UZ Geology Field Trip Fund*” to be administered by its Executive Committee. Tom has indicated an interest in supporting the Geology Department on a long term basis, not only to help in mobilizing funds for various activities, but by also providing moral and material support. Annually the students go on their main field trip, which lasts around 2 weeks with direct costs being in the range of \$6000 per class. Therefore we are appealing to all our members to donate generously to this worthy cause both in cash or in kind. Materials such as fuel and food are most welcome.

The direct benefits that accrue to the geological profession are that it ensures a properly trained graduate. Referring to the adage that the best geologist is the one who has seen the most rocks, our students need quality field trips. From these field excursions we also want to develop the Zimbabwe Geology Atlas.

Your donations, either in cash or in kind, should be forwarded to our Treasurer, Collins Mwatahwa – E-mail: cmwatahwa@Angloplat.com or to our Administrator, Julie Kuhn - E-mail: geol.soc.zimbabwe@gmail.com

THANK YOU FOR YOUR GENEROSITY

H. N. Gumbo



MIDLANDS STATE UNIVERSITY
FACULTY OF MINING AND MINERAL PROCESSING ENGINEERING
ZVISHAVANE CAMPUS

1. Introduction

Students completed their examinations in the first week of June 2018 and proceeded on vacation, ending a very exciting first semester of the year. They return for the second semester in July 2018.

2. Highlights of Semester 1 (February – June) 2018

- a) The Faculty recruited additional lecturers (5), technicians (2), and tutors (3).
- b) Short courses, previously pencilled in for this semester, were shelved to give the new lecturers time to settle, consolidate their materials and establish links with international counterparts to ensure the best possible delivery of their short courses in future.
- c) The Faculty's Mining Industry Advisory Committee (MIAC) held its second meeting of 2018 at Zvishavane Campus on 1st June 2018. MIAC resolved to hold a strategic planning meeting in August 2018.
- d) The Faculty, through the Department of Metallurgical and Materials Engineering, enrolled pioneer students for BEng (Materials Engineering), possibly the first fully-fledged undergraduate Materials Engineering programme in Zimbabwe. The programme is set to propel MSU to the high end of the value addition chain, presenting an opportunity for Zimbabwe to develop strategic materials, benefit from the world's insatiable demand for new materials and increase export earnings.

3. Level 4 Internship/ Attachment/ Work-Related Learning

The Faculty's nine pioneer Mining Engineering students are due to undergo one year of internship/work-related learning/attachment, starting in June/July 2018. The Faculty appeals to Industry for internship places for these students. MSU and the Faculty value industry input and recognise that internships offer an exchange platform to ensure that our programmes meet industry expectations. Companies, institutions or individuals who can assist with internship arrangements for our students can contact Antony Mamuse using the email address below.

4. Conclusions

The Faculty values strengthening of research and development programmes in partnership with sister training institutions, the mining industry and government so that Zimbabwe's mineral and other resources are sustainably developed for the country's maximum socio-economic benefit.

Submitted by Dr Antony Mamuse, Executive Dean
antony.mamuse@graduate.curtin.edu.au



Geological Survey Department

Ernest T. Mugandani
etmugandani@gmail.com

Staffing

- **Dr. Mabasa Temba Hawadi** had his contract as Director renewed at the end of February following his retirement in November 2017.
- The writer has been appointed Acting Provincial Mining Director for Midlands Province while **Lloyd Shavarira**, who was Acting Deputy Provincial Mining Director for Manicaland, has been appointed Acting Deputy Director in the Geological Survey Department effective from 1st May 2018.
- **Tendai Kashiri**, Senior Geologist has also been moved from Mashonaland East Mining District to Manicaland Mining District as Acting Deputy Provincial Mining Director whilst **Forbes Mugumbate** takes over as Director for Mashonaland East.
- **Sokesimbone Lunga**, **Frank Muzanenhano** and **Ms Sibongubuhle Mpindiwa**, all Principal Geologists, continue to act as Provincial Mining Directors for

Matabeleland South, Mashonaland West and Masvingo mining districts respectively.

SPONSORED SKILLS DEVELOPMENT TRAINING

1. Organization of African Geological Survey (OAGS)

The Department is participating in training programmes offered under the Pan African Geoscience Project (PanAfGeo). The training aims at restoring skills gaps that exist within African geological survey departments.

The writer and **Lloyd Shawarira** attended a workshop on Artisanal and Small-scale Mining in Lusaka, Zambia. The aim of the workshop was to discuss the challenges faced by Artisanal and Small-scale miners and the role of the Geological Survey in assisting them.

Geologists **Benedict Ncube** and **Miss Rumbidzai Shereni**, participated in the geoheritage training workshop held in Tanzania in May 2018.

2. GOVERNANCE INSTITUTIONAL STRENGTHENING PROJECT (GISP)

This project comes to an end on the 30th June 2018. Cartographers and a GIS specialist from the Council for Geoscience in South Africa visited Zimbabwe in May to assist our own cartographers to finalize the digitizing of 7 new maps.

More than 15 Geological Survey publications have been sent to South Africa for reprinting.

NEWS from the MINING INDUSTRY

Forbes Mugumbate
fmugumbate@gmail.com

The new political administration led by President Emmerson Mnangagwa that ‘hit the ground running’ with the mantra “Zimbabwe is open for business” following the ouster of former President Mugabe, is working round the clock to promote investment in the country’s mining industry. There is hardly a day that passes without news about developments in the mining industry.

The new government has maintained the investment promotion thrust that started when President Mnangagwa visited Davos, and also when minister Chitando had his infamous presentation at the Cape Town Mining Indaba in February 2018, by continuously presenting the country case at investment forums, and holding meetings with visitors from all over the world. Pursuant to this impetus, the minister led a delegation comprising several government and private sector officials to Toronto, Canada for a Mining Indaba on June 6 and 7 to lure investors from one of the world’s most attractive

mining regions. The trip organised by the Zimbabwe is Open for Business (ZOB) Forum is reported to have been successful. The minister explained economic policies, vision, plans for the future and opportunities in the mining sector while mining companies operating in Zimbabwe had opportunities to scout for capital to fund mineral exploration and expansion.

The Toronto Zimbabwe Mining Indaba came on the heels of a similar engagement in London, the world's leading financial capital, where Government officials and mining executives met foreign investors, including officials from the London Stock Exchange, to tell the Zimbabwe story. The conference, dubbed 'ZIMDABA London 2018', held on 15 and 16 March 2018, was the biggest foreign investment conference since the leadership change in Zimbabwe.

Here at home, minister Chitando took his mantra to the Chamber of Mines of Zimbabwe Annual General Meeting held in Victoria Falls where he pronounced some positive policy changes. He clarified on the contentious policy that required mining companies to list on the local stock exchange. The policy, which had caused panic in the mining industry, has been removed. The policy stems from provisions that were proposed in the amendments to the Mines and Mining Development Bill, and is considered to be one of the unfriendly strategies of the previous regime. Listing on the Zimbabwe Stock Exchange is now voluntary.

All these undertakings have started to pay dividends with several multimillion dollar deals being signed as investor interest in Zimbabwe is being driven by recovery in confidence, following 37 years of isolation from global partners. Billions of dollars in pledges have already been received by the government from across the globe.

However, while the country continues to receive positive appraisals and promises, a number of investors remain sitting on the fence, occasionally sending emissaries to watch developments, as they wait for the country to deliver free and fair elections as promised. Many companies have expressed interest in Zimbabwe, but appear to be waiting for policy certainty and the simplification of various bureaucratic processes.

The following developments bear testimony to the confidence being shown by the mining industry to the trajectory being pursued by the 'new dispensation'.

Karo Resources – Tharisa investment deals

An immediate response to the slogan 'Zimbabwe is open for business' was a deal signed by a Cypriot investor, Karo Resources, worth \$4.2 billion to develop a platinum mine and refinery in Zimbabwe. Work is projected to commence in July over 23,903 hectares of land on the Great Dyke. The land was the subject of a dispute between government and Zimbabwe Platinum Mines (Zimplats) following acquisition of the ground by the State. The first output of platinum group metals is expected in 2020, aiming to reach 1.4 million ounces annually within three years.

Meanwhile, Zimplats has now agreed to end the long standing dispute with government over the land by voluntarily releasing the 23,903 hectares in exchange for the Zimbabwean government issuing two leases valid for life to replace a special mining lease the company had been granted earlier, which was due for renewal in August 2019. The agreement leaves Zimplats owning two separate pieces of ground: south of the

granted land comprising its Ngezi operations, and another package on which the Hartley mining area and Selous Metallurgical Complex is hosted. This development supports the government's efforts to enable participation by other investors in the platinum mining industry.

Encouraged by the amicable end to the land dispute, South African Chrome producer Tharisa has acquired 26.8% stake in Karo Mining for \$4.5 million, gaining access to the 23,903 hectares under claim. The ground has a potential for 96 million ounces of platinum and palladium. Tharisa has provided Karo with an \$8 million repayable debt facility to finance initial geological exploration and sampling work in the area to determine a compliant mineral resource, which would enhance the value of the investment. Karo Resources, which is a joint venture with the Zimbabwean government, plans to produce 1.4 million ounces a year of platinum at full output by 2023.

Acadia Lithium Project

Paul Chimbodza, director at Prospect Lithium Zimbabwe, reported that the project is expected to attract more than \$55 million for the funding of the first phase of development to produce concentrates in the next 14 months. China's Shenzhen-listed Sinomine bought equity into Prospect valued at \$10 million and will advance another \$10 million in payment for lithium concentrates. Financing offers have also come from North America, Asia and Zimbabwe. Meanwhile a contractor has been appointed to start work on the mining site immediately.

Prospect is currently producing 100kg of lithium carbonate per month at a pilot plant, the first time this has been done in Africa. The feasibility study to build the lithium carbonate plant is nearing completion. However, the leap from concentrates to battery-grade lithium carbonate is technologically great, and requires finances to the tune of \$150 to \$250 million.

Kamativi Tailings

John McTaggart, Kamativi Tailings Company managing director, informed parliament that his company is negotiating with RioZim to upgrade the Empress Nickel Refinery so that it can produce lithium carbonate. Alternatively they will build a new lithium carbonate plant at a cost of up to \$150 million. Kamativi is a 60-40 percent venture between privately-owned Jimbala and state mining firm Zimbabwe Mining Development Corporation that is processing a tailings dump at Kamativi Mine. The tailings were accumulated between 1936 and 1994 during the mining and processing of tin-bearing minerals. Construction of a concentrator that will produce up to 19,000 tonnes of concentrate of lithium-bearing spodumene is scheduled for completion by December 2018 at a cost of \$25 million.

The Moti Group deals

Encouraged by the reformist directions of the new administration, the Moti Group of South Africa is preparing to double its investments in Zimbabwe to \$500 million. In partnership with a local company, Sakunda Holdings, Moti plans to spend \$250 million over the next four years in projects ranging from chrome-ore mining, fertilizer manufacturing, diamond polishing to pharmaceuticals. The group has already invested about \$250 million, mainly in mining. The company's strategy is to invest before elections scheduled for the end of July ahead of the expected influx of more investors who may cause asset prices to rise.

Moti Group has recently taken on British politician Peter Hain as an adviser to connect the company to “the right people” in Europe, and more specifically the U.K.

The company is now planning to boost chrome production at its African Chrome Fields properties through the use of small-scale artisanal miners by providing them with equipment, safety gear and transport for the product. In early June government signed a \$50 million deal with the Group and its local partner, Sakunda Holdings, targeted at assisting small-scale miners. Disbursement of funds under the 20-year financing facility will begin in July, whereby small-scale miners will receive loans at zero percent interest.

African Chrome Fields currently mines about 30,000 metric tonnes of chrome ore a month, which it sends to its smelter in South Africa.

Premier African Minerals projects

Premier African Minerals has entered into a loan agreement for a gross value of \$300,000. The loan will provide additional working capital, while the company is bringing to finality negotiations currently under way at the Zulu lithium and RHA tungsten projects. Premier has a diverse portfolio of projects, which include tungsten, rare-earth elements, lithium and tantalum in Zimbabwe.

Progress at Pickstone –Peerless

Vast Resources achieved a record first-quarter gold production of 6326oz at its 25%-owned Pickstone-Peerless goldmine. Gold production was 4% higher quarter-on-quarter. The milled gold grade improved by 13% quarter-on-quarter to 2.78 g/t.

The grades continue to increase at depth and are expected to continue to do so until the sulphide orebody is reached.

The Geological Society of Zimbabwe was privileged to visit this exciting mine on 16 June 2018.

Great Dyke Investments

As the country opens up to international business, Great Dyke Investments, a joint venture company between Russia's Afromet and Zimbabwe's Pen East, has announced that it will invest around \$400 million to build a precious metals mine and smelter in Zimbabwe. The company expects to produce up to 855,000oz (27t) of platinum group metals and gold per year from the Darwendale PGM project.

Stainless steel project

Minister Winston Chitando informed the World that Zimbabwe has begun feasibility studies for stainless steel production. Agreements to pave the way for this project will soon be signed. The investor has not yet been identified, but is believed to be an associate company of Afrochine Smelting, the ferrochrome producer with operations west of Selous. Afrochine Smelting has expressed interests in setting up a stainless steel plant, with preliminary indications that the project could cost as much as \$1 billion. The \$1 billion excludes other investments in related sectors earmarked to support the facility.

Resuscitation of Eureka Gold Mine

Another endorsement of the investment climate created by the new government is the re-opening of Eureka gold mine in Guruve. The mine that closed down in 2000 at the height

of economic problems in Zimbabwe is being resuscitated at a cost of US\$60 million. President Emmerson Mnangagwa took advantage of the opening ceremony to assure investors that their business is guaranteed in Zimbabwe under the new dispensation.

Eureka is being resuscitated following the acquisition of a 95% interest by AIM-listed Vast Resources. Eureka is originally designed to produce up to 70,000oz of gold per annum from an open pit operation. The historic investment of US\$30 million by Delta in a 1.8-Mtpa processing plant with associated infrastructure remains intact and in a serviceable condition. Resource Compliant information dated 2012 shows 22.3Mt of ore at an average grade of 1.90g/t Au.

Chitando's ambitious mining vision

Mines Minister, Winston Chitando, has announced that a gold-sector policy that is targeted at an increased gold production to 100 tonnes per year, will be unveiled in July of 2018. This is premised on improved performance of the small-scale mining sector due to increased support from government and the private sector, and the re-opening of dormant mines. A new diamond policy that would see the unbundling of the Zimbabwe Consolidated Diamond Mining Company in order to open the diamond sector to private players will also be launched in July 2018. It is expected to see greater investment in the sector. In addition, Zimbabwe will apply the amendments to its mines act that have been in abeyance for 17 years as part of government's drive to create regulatory certainty and attract mining investment.

A barely functional Geological Survey

It is contradictory that while the efforts of the President, and Minister of Mines and Mining Development to attract investment in the mining industry is applauded, a critical government department in the mineral value chain, the Geological Survey, has literally been decimated by the restructuring of the Ministry. The few remaining experienced staff have been moved to provinces.

The Geological Survey is normally the first station to be visited by any serious investor. It contains vast amounts of geological and mineral resource information generated by world-class geologists and engineers during a period that exceeds 100 years. Potential investors do not only get information, but also professional advice about the geology and mineral potential of the country. Today the department is in a sorry state. Apart from being unable to effectively articulate issues to do with the country's geological environment to potential investors, the inexperienced geologists now running the department are not generating any new information.

Diamond Glitter and Gloom

Following on De Beers' announcement that it was considering resuming diamond exploration in the country, which we reported in the last issue of the Newsletter, Alrosa, the world's largest diamond producer by output, has also announced plans to invest in the country's exploration and mining sectors. Alrosa CEO, Mr Sergey Ivanov, met with President Mnangagwa and Minister Chitando in April 2018, and expressed interest to participate in the development of various mineral deposits and committed readiness to transfer technologies and experience for the development of the diamond industry in Zimbabwe. A delegation from Russia was in the country for negotiations and consultations to identify possible areas of co-operation.

Although local newspaper stories suggest a bright future for diamond mining in Marange, with the CEO of ZCDC exuding confidence that the production target of 3 million carats for 2018 will be achieved, a recent judgement by the Supreme Court might derail these plans. The ZCDC has a target of producing 10 million carats by 2023 from 1.8 million produced in 2017. The Supreme Court ruled that Mbada Diamonds be given back its licence, as it was evicted from the area illegally. All the other companies evicted from the area are expected to get their licences back. The judgement is likely to affect plans that the ZCDC had on Marange. The company has recently been on a massive recruitment drive.

ZMDC and ZCDC Boards appointed

Government appointed new board members for the Zimbabwe Consolidated Diamond Company (ZCDC) and the Zimbabwe Mining Development Company (ZMDC) on 1 June 2018. Killiam Ukama will chair the ZCDC board while Mimosa executive director Mr Peter Chimboza will chair the ZMDC board. Ellah Muchemwa, Elizabeth Nerwande Chibanda, Ambassador Zenzo Nsimbi, Colonel Esau Chiadzwa, Alexander Mukwekweze and Rtd Colonel Niya Mtombeni are the other members the ZCDC Board. Congratulations to Ellah, a fellow geologist and current committee member of the Geological Society of Zimbabwe.

Other Board members of the ZMDC are Wellington Pasipamire, Richard Jaure, Charles Tahwa, Reason Mandimika, Slava Chella, and David Murangari, past Chairman. We also congratulate David, a fellow geologist and honorary member of our Society.

The two boards have tall orders given expectations spelt out by Minister Chitando. With regards to ZCDC, the board will obviously have to grapple with how to meet production targets given the dwindling eluvial reserves and the recent Supreme Court Judgement that favoured the previous occupiers of the mining areas. For the ZMDC, the board will have to deal with the appointment of a substantive CEO and the resuscitation of so many dysfunctional properties.

The Chamber of Mines Annual General Meeting

The Chamber of Mines held its Annual General meeting at Elephant Hills, Victoria Falls, from 17 to 19 May 2018 under the theme “Growth Perspectives for Zimbabwe Minerals Resource Sector”. This year’s meeting was a resounding success, judging from the large number of delegates attending, including at the sold-out inaugural lithium producers conference. Apart from the huge turnout of both local and foreign investors, nearly all financial institutions were represented. The government promised to address the concerns of miners, which include high tax thresholds, high royalties, the non-deductibility of royalties for tax computation, beneficiation taxes and the fragmented fiscal regime. In his address, the president of the Chamber of Mines of Zimbabwe, Batirai Manhandu, indicated that Zimbabwe needs up to \$11 billion to modernise its mines and boost production to maximum capacity over the next five years. The figure that stood at \$7 billion for both ramp-up and sustainable capital has been revised upwards following renewed interest in the sector. With the exception of platinum producers, all other mines were operating below their installed capacity.

New Leadership at the Zimbabwe Miners Federation

Former Zifa chief executive officer Henrietta Rushwaya was elected unopposed to become the new president of the Zimbabwe Miners’ Federation (ZMF), an umbrella body

representing several small-scale mining associations. Members of the ZMF now account for about half the country's gold deliveries.

Rushwaya trained as a teacher at Morgenster Teachers College in Masvingo and practised for a couple of years before joining the Sports and Recreation Commission. She studied sports management in Norway. Rushwaya held the post of director of sport in Vice-President Joseph Musika's office, before being appointed Zifa Chief Executive Officer on 1 March 2007.

Premier African Minerals

Premier African Minerals has entered into a loan agreement with a gross value of \$300,000. The loan will provide additional working capital, while the company is bringing to finality negotiations currently under way at the Zulu lithium and RHA tungsten projects.



SEG Timothy Nutt Memorial Fund (Up to US\$1500.00 available for 2018)

This fund will be available to provide financial support for geology students and young economic geologists located in Zimbabwe or in southern Africa with ties to Zimbabwe. The fund may be used to support SEG student chapter activities, travel to meetings, field trips, for research or study grants, technical lectures or any other activities approved by the SEG Regional Vice President for Africa.

Strong preference will be given to those applicants who are SEG Student Members.

To become an SEG Student member visit www.segweb.org/join

Applicants must describe what the project is, why the research is important and how it is to be done.

An estimate of expenses for the project must be included with the application.

Grants are expected to be fully utilized by April 30 following the calendar year in which they are awarded / dispersed. .

Grant recipients are required to provide a year-end accounting of how the money was spent together with a suitable progress report or final abstract.

**A 2018 Research Grant application form may be downloaded from
www.segweb.org/StudentResearchGrants**

Student Research Grants Committee c/o Assistant for Student Affairs, Society of Economic Geologists Foundation 7811 Shaffer Parkway, Littleton, CO 80127-3732 USA

Phone: +1.720.981.7882/Fax: +1.720.981.7874

Conferences

The 13th International Platinum Symposium will take place at the Ranch Hotel near Polokwane, South Africa from 30th June to 6th July 2018. There will also be a two day layered igneous rocks symposium immediately before organized by Steve Barnes and Rais Latypov. Field trips will be integrated with the event and post-conference. Contact Prof. Judith Kinnaird, Director EGRI, University of the Witwatersrand, 2050 WITS, South Africa. Tel: +27 (0)11 7176583

Geocongress 18th-20th July 2018 organized by the University of Johannesburg and the Geological Society of South Africa at the Auckland Park Kingsway Campus, Johannesburg. **“Bringing the Geosciences Together”** including Workshops (16-17 July) and local field trips (21 and 22 July).

Registration: Lyntina Benjamin lyntina@soafrica.com

27th Colloquium of African Geology cag27 incorporating the 17th Conference of the Geological Society of Africa

Aveiro, Portugal 21st to 28th July 2018

On behalf of the 27th Colloquium of African Geology (27 CAG) and 17th Conference of the Geological Society of Africa (GSAf17), we would like to extend a warm welcome and invite you to join us at the University of Aveiro, Aveiro, Portugal, for the CAG27. The Colloquium of African Geology (CAG) is a major biennial meeting organized under the auspices of the Geological Society of Africa (GSAf).

Website: <http://cag27.web.ua.pt/>

The **20th International Sedimentological Congress** will take place in **Quebec City** (Canada) on **13-17 August 2018**. Check the conference website: <http://www.isc2018.org/>

Summer Symposium 2018

Thursday 6th September 2018

Department of Geology, UZ

The summer symposium will be held early this year.

So far the key speakers that we have lined up include:-

The 2018 Alex du Toit Memorial Lecture by Lewis D Ashwal
Wandering continents of the Indian Ocean

Thomas Blenkinsop and Andy Moore - *Mantle Plumes: Fable, Fiction or Fact?*

Sharad Master
How the Magondi Belt lost its length: Chemostratigraphic approach to correlation in Precambrian metamorphic belts.

There are still a few speaking slots. If you would like to present, please let us know (andrewdutoitzim@gmail.com). We welcome presentations on a broad range of subjects of general interest to Geologists.

Please put this date in you diary now

Geological Society of Zimbabwe

Summer Symposium Trip 2018

Chewore Ophiolite and Dinosaur Tracksite

Friday 7th to Monday 10th September 2018

Part of the reason for summer symposium being held early this year is that this is a better time of year for field trips than early December.

Trip Plan

Friday 7th September - Drive into the Dande area of the Zambezi Valley and set up camp

Saturday 8th September - Walk into the Ophiolite Terrain in the Chewore identified by Johnson and Oliver in 2000, visiting coal outcrops on the way

Sunday 9th September - Visit the Ntumbe dinosaur footprint locality

Monday 10th September - Return to Harare

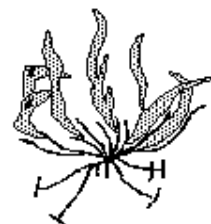
Nights will be spent 'wild camping' so participants will need to be adequately equipped with vehicles and camping equipment and will need to carry water etc.

Please let us know if you are interested in participating (andrewdutoitzim@gmail.com)



Geological Society of Zimbabwe

PO Box 1719
Causeway, Harare
Zimbabwe



Zimbabwe Mineral Resource Conference

HARARE - 2019

Dates: Thursday 6th and Friday 7th June 2019

The Zimbabwe Mineral Resource Conference – 2019, which will be preceded and followed by geological fieldtrips, will be sub-divided into two morning and two afternoon sessions. It will focus on highlighting the exploration and mining potential in the country.

The four Conference sessions planned are:

- Base Metals and IRMs: Moderators - Drs Tony Martin & Sharad Master
- Chrome and Platinum: Moderators – Drs Martin Prendergast & Allan Wilson
- Gold: Moderators – Drs Paul Dirks & Mark Tsomondo
- Carbon – Diamonds + Fossil Fuels: Moderators - Drs Rosemary Falcon & Hielke Jelsma

Keynote speakers will include Allan Wilson, Hilke Jelsma, Mark Tsomondo, Martin Prendergast, Paul Dirks, Rosemary Falcon, Sharad Master and others.

Interested contributors are requested to submit abstracts of their proposed papers to: barber.brent@gmail.com

GEOLOGICAL SOCIETY OF ZIMBABWE: CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE COMMITTEE FOR 2018		
NAME	PORTFOLIO	EMAIL
Duma, Steven	Chairman	steven.duma@zimplats.com
Chikandiwa, Nevison	Vice Chairman & Mennell Society	wchikandiwa@yahoo.co.uk
Musiwa, Kudzai	Hon. Secretary	kudzimusi@gmail.com
Kuhn, Julie	Administrator	geol.soc.zimbabwe@gmail.com
Mwatahwa, Collins	Hon. Treasurer	collinsm885@gmail.com
Ait Kaci Ahmed, Ali	Newsletter & National Heritage Sites	ali_aitkaci@yahoo.fr
Barber, Brent	International Conference	barber.brent@gmail.com
Bouammar, Houda	Talks & Field Trips	houda.bouammar@gmail.com
du Toit, Andrew	Summer Symposium	andrewdutoitzim@gmail.com
Fawcett, Alister	Membership	alistairfawcett@gmail.com
Meck, Maideyi	GSA Representative	maideyimeck@yahoo.com
Muchemwa, Ellah	International Conference	ellah.muchemwa@outlook.com
Mugumbate, Forbes	Regional Representatives	fmugumbate@gmail.com
Mugandani, Ernest	ZGS Representative	etmugandani@gmail.com

Institutional Membership, 2018

Bruker RSA
 Chamber of Mines of Zimbabwe
 Freda Rebecca Mine
 Goldsearch Technical Services
 Metallon Gold
 Mimosa
 Murowa Diamonds (Pvt) Limited
 New Dawn Mining
 RioZim Limited
 Samrec Vermiculite Zimbabwe (Pvt) Limited
 Sandvik
 SMC Drilling
 Trojan Nickel Mine
 University of Zimbabwe Geology Department
 Unki Mines (Pvt) Limited
 Vast Resources
 Zimbabwe Geological Survey
 Zimbabwe Mining Development Corporation
 Zimbabwe Mining Investments
 Zimbabwe Platinum Mines Limited