

Geological Society of Zimbabwe



Newsletter

October 2016

No. 3 of 3 of 2016



Mesas and Buttes of the North Dyke, Horseshoe Block.

Photo: Martin Prendergast



Photo: Andrew du Toit



Photo: Tony Martin

Dr Martin Prendergast gave the AM Macgregor Lecture on Friday 5th August 2016 and then led a two-day field trip to the “Nickel laterite deposits of the Northern part of the Great Dyke”

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

Contents

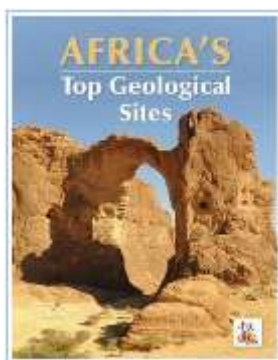
EDITORIAL	3
CHAIRMAN'S CHAT	7
Letter – Recommendations – Mineral Exploration and Minerals Marketing Corporation Bill	8
ARTICLES AND REPORTS	
The Snake's Head Platinum Project – layering, PGE mineralisation and deformation in the Musengezi Subchamber of the Great Dyke, Zimbabwe ...	11
A brief overview of a field trip to the Pongola Supergroup in northern Kwazulu-Natal	13
Impressions of the 35 th International Geological Congress, Cape Town	15
The Herald 23/08/2016 50 years ago	16
Obituary – Keith Allan Viewing, 1931-2016	17
Obituary – Andrew Osmund Thompson, 1920-2016	20
NEWS	
Geology Department, University of Zimbabwe – Maideyi Meck	23
The Professor Tom Blenkinsop UZ Geology Field Trip Fund	24
Zimbabwe School of Mines News to the Geological Society	24
Geological Survey Department – Ernest Mugandani	26
Mining Industry News – Forbes Mugumbate	28
CONFERENCES	7
GEOLOGICAL SOCIETY OF ZIMBABWE SUMMER SYMPOSIUM	30
RESEARCH FUNDING OPPORTUNITIES	
GSZ Research and Development Fund	31
SEG Timothy Nutt Scholarship Memorial Fund	31
CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE COMMITTEE	32
INSTITUTIONAL MEMBERS, 2016	32

Editorial

Our Society highlight in August was Martin Prendergast's presentation of the A.M. Macgregor Memorial Lecture followed by his leading a field trip to the North Dyke and Horseshoe Block to see the nickel laterite deposits associated with African Surface remnants preserved as buttes and mesas over silicified ultramafic rocks. See our cover photos and refer to our website for further details of both the lecture and the field trip. Further to this Martin provides his abstract for his recent publication on the Snake's Head geology and platinum mineralization for this issue of the Newsletter.

The highlight for the 'geological world' was the 35th International Geological Congress staged between 27th August and 4th September in Cape Town. Under the auspices of the International Union of Geological Sciences, the main organizers in South Africa came from the Geological Society of South Africa and the Council for Geosciences. Pre- and post-Congress field trips were organized to geological superlatives across South Africa, the region and elsewhere in Africa. Temba Hawadi represented Zimbabwe and the Geological Survey in Cape Town. Maideyi Meck represented the UZ Geology Department, and she reports on her impressions in this Newsletter. Tony Martin attended and then accompanied Allan Wilson and others to the Archaean Pongola terrane of northern KwaZulu-Natal. He reports on his impressions and will give a detailed account of the Pongola at the Summer Symposium in November.

Andy Moore, Sharad Masters, Forbes Mugumbate and Tim Broderick with Paul Hubbard wrote respective articles on the Victoria Falls, Chimanimani Mountains, Domboshawa and Matobo Hills to grace Struik Nature's flagship publication at the Geological Congress – *Africa's Top Geological Sites* as edited by Richard and Morris Viljoen and Carl Anhaeuser (ISBN 9781775844488). The subject matter covers some 44 of the continent's most spectacular 'geosites' from the Hoggar Mountains of Algeria to Table Mountain in the Cape, and has the intent of bringing the wonders of geology into the general public view.



Also available for Kindle



The last time the IGC was held in southern Africa was in 1929 in Pretoria. Then the field trip through Bechuanaland to Bulawayo, Matopos, Shurugwi, the Globe and Phoenix Gold Mine, Hwange and the Victoria Falls was entirely by rail. The 1929 participants are here pictured with the Mayor of Bulawayo. Being hard to recognize individuals, the

participants and organizers included A.M. Macgregor, A.L. du Toit, Frank Dixey and S.H. Haughton, who produced a comprehensive field guide for the delegates.

The 1929 IGC train tour to Southern Rhodesia



The 2016 IGC great train Geotraverse from Cape Town to Victoria Falls



A premier post-Congress tour for 70 delegates, many with their spouses was the *Great Southern African Train Geosafari* run by JB Train Tours with Rovos Rail from 4th to 13th September between Cape Town and Victoria Falls. Mike Watkeys, with assistance from Johan Krynauw, Terrance McCarthy, Grant Cawthorn and Francis Thackeray representing the Geological Society of South Africa led the delegates on 'roll-on roll-off' minibuses variously to the Swartberg and Meirings Poort passes through the Cape Supergroup to and from Oudsthoorn, the Kimberley and Barkly West diamond fields, the Witwatersrand, the Cradle of Human Kind, Magaliesburg and then to Mapungubwe and the Shashi-Limpopo confluence in South Africa. Crossing the border at Beitbridge the train stopped at Rutenga. Delegates traversed the Northern Marginal Zone of the Limpopo Belt onto the Zimbabwe Craton at Masvingo. Tim Broderick, representing our

Society, met the international group with Mike Watkeys at Great Zimbabwe and returned with them by way of minibus to the train, which was parked somewhere within the depths of the Belingwe Greenstone Belt. A disappointment to many was that the Great Dyke was traversed at night, for we found ourselves at Bulawayo Station the next morning. Following a 5-Star breakfast we transferred to safari vehicles to visit the Matobo Hills, including *Malindidzimu* the site of Rhodes' grave where Tim helped to present the geological picture. Overnight brought us to Thompson Junction at Hwange, where force of circumstance required us all to proceed to Victoria Falls by minibus, there to meet stalwarts Andy Moore and Fenton 'Woody' Cotterill who in turn helped to guide delegates with respect to the finer geological and geomorphological aspects of the area. A final adventure was a minibus transfer to visit the Chobe National Park near Kasane in Botswana. For me this was a chance to appreciate a small section of this great wetland and to see the red lechwe for the first time.

Delegates were an international miscellany including Prof. Roland Oberhansli, Chairman of the IUGS based in Potsdam, Germany and others from Australia, New Zealand, the USA, Poland, Russia, China, Taiwan, Columbia, Croatia, Austria, the Czech Republic, Sweden, Switzerland/Iceland, Armenia the UK and South Africa. It was a truly stimulating experience to meet so many people with varying geoscience interests and experience, and also to be able to share with them aspects of our own geological and scenic wonders.

Our final evening involved an 'Out of Africa' bush experience involving '*sadza ne nyama*', dancing and fun for all. Mike Watkeys, in his inimitable way introduced a light-hearted note to the trip by acquiring a woolly satchel with a sheep motif. This he presented to a deserving delegate on a daily basis when it had to be worn in recognition until the presentation changed. On the last evening Mike 'auctioned' the bag with the intent of raising money for a local orphanage. The choice, with help from Lucy Broderick, was the *Tariro House of Hope* (THH) in Epworth. This is a small organization that takes in orphans, some of whom have also lost their legal guardians, feeds them on a daily basis, gives them stability and helps to cover their school fees. The train trip participants accrued a total of US\$635.00 in the bag, which was presented on the day of THH's 14th Anniversary, the 22nd October 2016.



Orphans from the Tariro House of Hope in Epworth receive a donation from participants of the IGC Great Train Geosafari that ended in Victoria Falls. *Photo: Lucy Broderick*

Nick Locket advises that every year the publishers of *Paydirt Magazine* host a conference, *Africa Down Under*, aimed at investors and explorers in Africa and this event is attended by high-ranking representatives from potential host country governments. It is pleasing

to note that both Zimbabwe's Deputy Minister of Mines and Mineral Resources, Hon. Fred Moyo, and the Australian Ambassador to Zimbabwe, Suzanne McCourt, were present in Perth, Australia for both the 2015 and 2016 three-day events, as was Director of Geological Survey, Temba Hawadi following his attendance at the IGC. A full programme of project reporting, investment opportunities, company profiling and panel discussions ensues. Most countries in Africa are represented. Is a Zimbabwe destination competitive, and can we attract our fair share of the investment on offer? We should do. <https://www.africadownunderconference.com/>

The Chairman's message and the following list of the Society's recommendations to the Minister relating to headings for the public hearing on the *Mineral Exploration and Minerals Marketing Corporation Bill* may underscore the dire need to create confidence in our industry as a means to attract this much needed risk capital. These notions are highlighted in our news from the Mining Industry feature.

We have been active on the talks stage this past quarter. On 18th September Tony Martin presented a well-attended talk to the History Society of Zimbabwe on *The History of Coal in Zimbabwe*, to which our Membership was invited. Following his presentation to the Astronomical Society, Al Ait Kaci adapted his talk on *Meteoroids, Meteorites and Impact Craters* for the Society on 23rd September whilst on 7th October Addmore Mupandasekwa, Assay Section Manager for SGS Laboratory presented on *Fire Assay and Analytical Techniques in Gold Determination*. Finally Brent Barber reviewed *Tantalum & Niobium Mineralisation in Zimbabwe* on 21st October. It now remains for all of us to gather for the Summer Symposium on Friday 25th November followed by the trip to the Murehwa Batholith on the Saturday. The programme is included in this issue – we look forward to the meeting.

The field trip to visit the Freda-Rebecca Gold Mine in Bindura took place on 16th July.



On Saturday 16 July 2016, 20 members met at Freda Rebecca for an interesting and informative underground visit.

In this issue we record the lives of two earth scientists who, in their own ways have contributed hugely to geology in Zimbabwe and Africa – Professor Keith Viewing and Andrew Thompson. We also record with sorrow the passing in the UK of Dave Bowen late in June this year. Dave will have taught many of us and latterly would have been a colleague in RioZim. Our condolences extend to all the families.

Tim Broderick



Chairperson's Chat

Brent Barber

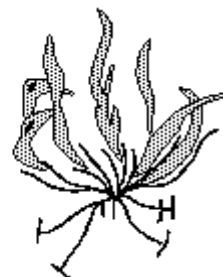
On Friday 30th September 2016 a meeting between the Minister of Mines and Mining Development, the Honourable W. Chidakwa, and the geological community was hosted at the Offices of the Chamber of Mines of Zimbabwe. Here the Minister requested that the Geological Society of Zimbabwe respond to points he raised concerning the *Mineral Exploration and Minerals Marketing Corporation Bill*, which was then scheduled to again go before Parliament on 4th October 2016. The recommendations made by the Committee of the Society to these points were hand delivered to the Office of the Minister on 10th October 2016 and are reproduced below. To date, while anticipated, no response or acknowledgement has been received from either the Honourable Minister or the Ministry.

This meeting served to highlight the conundrum that has been facing your Society for a long time. That is the question of geoscientists potentially becoming more intimately involved in the mining sector in Zimbabwe and, if desired by our Membership, a definition of the mechanisms by which this involvement should best be achieved. In the New Year it is intended to convene a meeting in order that the issue may be discussed in detail.

Another issue that your Society needs to address is that of the assistance we as a Society provide to the tertiary geological teaching establishments in the country. For years this has primarily been directed by way of grants to the Mennell Society as a means of supporting those studying at the University of Zimbabwe. Taking into consideration the growing number of institutions providing courses in earth science-related topics in Zimbabwe the way in which this support is granted needs to be re-evaluated. Perhaps the Geology Department could help by creating an alumni society with goals directed at supporting both the department and its students. The upcoming Summer Symposium, which many of you will attend, could form an ideal venue for discussing this concept whilst formulating points for further discussion.

Conference

11th International Kimberlite Conference, Gaborone, Botswana 18-22 September 2017.
50 years of Diamonds in Botswana

**Geological Society of Zimbabwe**PO Box 1719
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Zimbabwe

RECOMMENDATIONS

MINERAL EXPLORATION & MARKETING CORPORATION BILL

The points listed below, compiled following perusal of the draft Bill and comments made by the Minister of Mines and Mines Development (M&MD), at the meeting held with the geological community on Friday 30th September at the Offices of the Chamber of Mines of Zimbabwe, seeking the input of the Geological Society of Zimbabwe.

Succinctly, the 0.875% export levy paid to the Minerals Marketing Corporation of Zimbabwe is statedly underutilised as most mining companies source and negotiate sales. Consequently, it is proposed that a large proportion of this revenue, which cannot be transferred to any particular Government entity, such as the Zimbabwe Geological Survey, be utilised for mineral exploration through the creation of the Minerals Exploration And Marketing Corporation.

The sum that it is envisaged to become available annually is some US\$8 – 9 million. *Although substantial, the potential annual sum available is totally insufficient to fund significant exploration, conducted to international industry standard, nationwide.*

Areas that the Minister requested that the Geological Society of Zimbabwe make suggestions and recommendations include the:

Development of a National Geological Data Bank To Facilitate and Stimulate Mineral Exploration

Recommendation: The funding of the creation of a National Geological Data Bank would provide an enormous stimulus to mineral exploration and the possible discovery of deposits with significant economic mining potential. Such development would benefit both small and large participants in the mining sector, potentially creating significant employment opportunities throughout the country from the relatively unskilled to graduate levels.

It is envisaged that the development of a national geological data bank, which would necessitate the involvement of the Zimbabwe Geological Survey, would commence with the:

- Collation, updating including possibly reformatting and finally re-interpretation of existing material including geological maps, and the

- Acquisition of additional information sources such as close-space aerial geophysics and ground geochemistry, etc.

The Geological Society of Zimbabwe recommends that the development of a National Geological Data Bank, which could be funded by the present minerals export levy and possibly benefit from international assistance, becomes a point of focus.

Government Participation In Mineral Exploration

Recommendation: The participation of the Government in mineral exploration activities in direct competition with the private sector will, *irrespective of any assurances offered on impartiality and transparency*, actively discourage investment in the mining sector. Alternatively, instead of potentially deterring mineral exploration taking [into account] that Zimbabwe is in direct competition for investment with countries globally, terms and conditions sufficiently attractive to encourage meaningful participation throughout the mining sector need be promulgated and promoted. However, should Government engage in the high risk venture of mineral exploration, the deleterious effect need be mitigated by ensuring that any discoveries are sold on the open market under the auspices of a creditable independent body.

Levy Used to Fund Exploration by Private Individuals or Entities

Recommendation: Mineral exploration is a costly and high risk enterprise with failure far more likely than success. It is doubtful that the provision of limited funding to recent graduates or similarly inexperienced geologists will yield significant positive results.

Award and Administration of Exploration Tenements

Recommendation: The backlog of tenement applications has become an issue of major detriment. Integral to its solution, besides security of tenure, is the objective and transparent:

- Vetting, by an independent expert panel, of whether or not applicants possess the technical and financial capability to undertake meaningful mineral exploration.
- Knowledgeable monitoring of mineral exploration campaign design, together with that of any requested amendments, to ensure that work is completed to international standard.
- Penalisation of companies failing to fulfil exploration commitments to international standards within the proposed timeframes without adequate justification.

Sale, Transferral or Disposal of Exploration Assets

Recommendation: The financing of mineral exploration has been revolutionised in recent decades. Traditionally it was the preserve of large mining companies

but, since the 1970s, that role has been largely usurped by entrepreneurial enterprises led by experienced exploration geoscientists. These 'juniors', who now undertake the majority of the mineral exploration completed worldwide in a more cost effective manner, have earned an effective discovery track record. The funding for the high risk work conducted is predominantly raised by stock market subscription. However, although success may yield high returns, investment in junior exploration companies is the preserve of speculative venture capital. Successful juniors commonly either sell their discoveries or are bought-out, often via joint venture agreements, by mining companies.

Creation or Adoption of Standards for the Estimation of Resources and Reserves Including the Accreditation of 'Competent Persons'

Recommendation: The generation of a Zimbabwean version, compiled by plagiarising existing standards and codes, would struggle to readily gain international acceptance. Considering this, together with the necessity of updating it in response to developments renders the adoption of an existing Code far more practical. It is recommended, noting its global acceptance and pragmatic approach, that the JORC Code be adopted for Zimbabwe.

Ongoing Training of Graduate Geologists

Recommendations: The active contribution of educational establishments and the support of employers, augmenting the efforts of the Geological Society of Zimbabwe and others, are required to ensure that geoscientists in country are provided with opportunities for continued training throughout their professional careers.

Formation of a Minerals Development Policy

Recommendation: The Geological Society of Zimbabwe would welcome assisting the Ministry, working together with other entities in the country, in the creation of a national Minerals Development Policy.

Signed on behalf of the Committee of the Geological Society of Zimbabwe:



Brent Barber
Chair: Geological Society of Zimbabwe
10th October 2016



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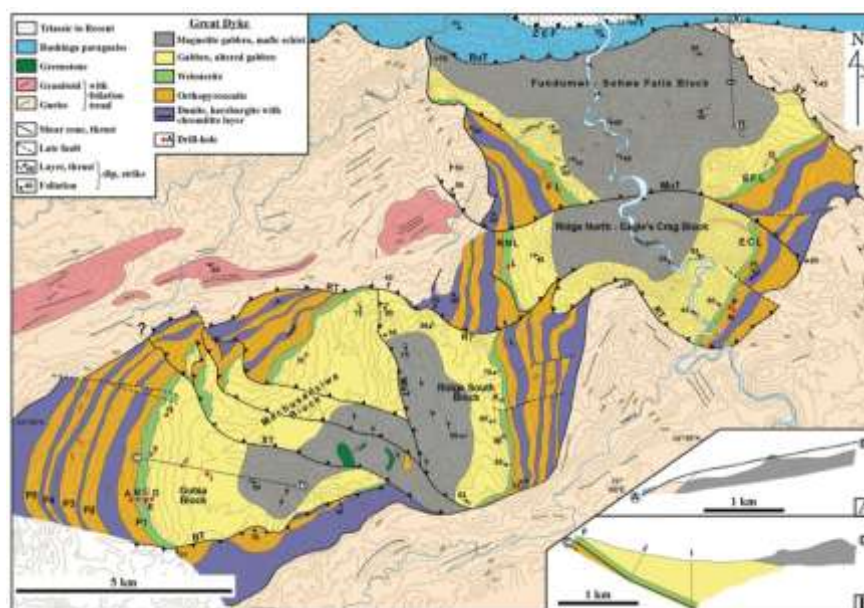
Articles and Reports

The Snake's Head Platinum Project – layering, PGE mineralisation and deformation in the Musengezi Subchamber of the Great Dyke, Zimbabwe

Martin Prendergast

Abstract

Set in ca. 74 km² of rugged terrain close to the Zambezi Escarpment, the Snake's Head Platinum Project covers the northeastern half of the Musengezi Subchamber in the northern part of the Great Dyke. Here, the linear Great Dyke straddles the boundary between the Zimbabwe Craton and the late Archaean Migmatitic Gneiss Terrain and is folded into a prominent S-shape adjacent to the Neoproterozoic-Phanerozoic Zambezi orogenic belt. Snake's Head contains the northernmost remnant of the Great Dyke's P1 Pyroxenite Layer, which hosts the economically-important, stratabound, PGE-rich Main Sulphide Zone (MSZ), as well as the lower grade (but petrogenetically very similar) Lower Sulphide Zone (LSZ), together containing one of the Great Dyke's last undeveloped platinum resources (>80 m oz).



Simplified geological map of the Snake's Head Platinum Project area after M D Prendergast

The original, gently-plunging, synclinal layered structure of the Musengezi Subchamber is preserved in the western part of Snake's Head but is replaced in the east and north by several, contiguous, kilometre-scale structural blocks in different orientations and separated by curvilinear, brittle-ductile thrust zones suggestive of sequential stacking towards the west. Shearing and associated metasomatism increase from the generally pristine western blocks to the northern and eastern blocks where the structure is overlain above another major, south-directed thrust by the Marginal Gneiss Terrain of the Zambezi Belt and the underlying, well-developed magnetite gabbro unit at the top of the Great Dyke sequence is mostly converted to mafic schist.

The P1 Pyroxenite displays layer-thicknesses, mineral associations and textures, and other layering features, and the MSZ shows slight systematic variations in thickness, and in sulphide and metals contents, that all indicate (1) primary magma chamber locations varying from the axis (in the case of the western blocks) to midway between the axis and margins (eastern/northern blocks), and (2) an original magma chamber width that varied along its length but was significantly greater than in other parts of the Great Dyke. The MSZ and LSZ preserved at Snake's Head are, unlike their correlatives elsewhere in the Great Dyke, broadly similar in thickness and metals content, probably because they formed along the axial to mid-axial/marginal facies of a very wide magma chamber where the horizontal rather than the vertical gradient dominated the cooling regime to a far greater extent than elsewhere in the Great Dyke.

Emplacement of the 2.58 Ga year-old Great Dyke took place towards the end of late Archaean greenstone formation, granite intrusion and deformation along the northern edge of the Zimbabwe Craton at ca. 2.57 to 2.62 Ga. Thrust deformation at Snake's Head fits only the earliest (late Archaean) stage of deformation along the northern margin of the craton and so may have occurred soon after Great Dyke emplacement during the waning phase of Migmatitic Gneiss Terrain development and the final stabilization of the craton. Folding of the Snake's Head thrusts and thrust blocks may reflect cross-folding during extension of the Marginal Gneiss Terrain during the earliest stage of Zambezi Belt orogenesis at 0.75 to 0.85 Ma. The marked north-south shortening of the northernmost

part of the Great Dyke is likely the product of south-directed thrust movements during Zambezi contractional events at 0.85 to 1.10 Ga and/or 0.50 to 0.60 Ga.

S. Afr. J. Sci., 2016. Vol. 119 (2), pp. 305-328.

A brief overview of a field trip to the Pongola Supergroup in northern Kwazulu-Natal

Tony Martin

Northeastern Kwazulu-Natal was the venue for a field trip to view the Pongola Supergroup as part of the International Geological Congress held in Cape Town from 29 August to 2 September.

Allan Wilson and Digby Gold



The party consisted of five people: led by Allan Wilson (Wits University) and Digby Gold (Consultant), with Wouter Bleeker (Ontario Geological Survey), Casey Laskin (University of Johannesburg) and Tony Martin (retired), all with an interest in conversing with the rocks and at times with each other when differences in interpretation arose. The outcrops are spectacular and there was much to discuss.

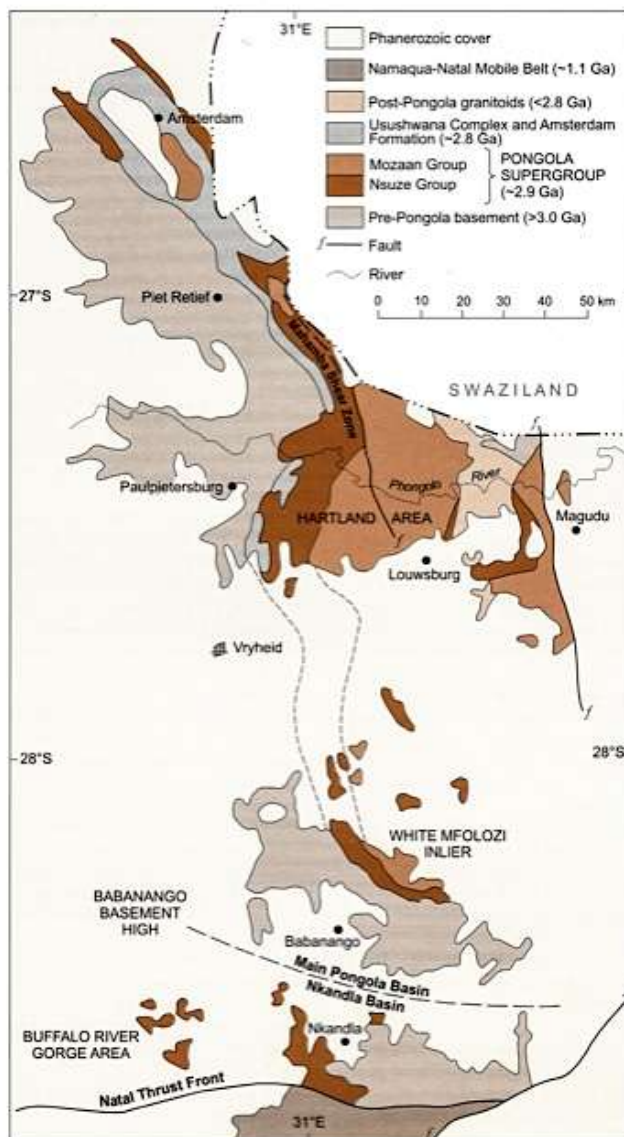
Incised meanders



The Pongola Supergroup is exposed as inliers surrounded by Karoo strata. The land surface is cut by superimposed, meandering drainage with deeply incised rivers as a result of recent uplift along the eastern coast of South Africa. It is divided into a lower, volcanic, succession known as the Nsuze Group, and the upper sedimentary Mozaan Group, but both contain minor sedimentary and volcanic components.

These are all Mesoarchaeon (2.9 – 3.3 Ga) and represent one of the earliest and largest intracratonic assemblages in the world and along with the Dominion Reef Group, Witwatersrand and Ventersdorp supergroups, provide evidence of a large, stable craton at a time when supracrustal greenstone belts were forming elsewhere – such as the Bulawayan in Zimbabwe.

There are three main areas of exposed Pongola stretching over 270 km: the Nkandla Basin in the south, the central White Mfolozi Inlier and the much larger Hartland Area in the north.



Distribution of the Pongola Supergroup, Kwazulu-Natal

An extraordinary feature of the Pongola is the state of preservation of the rock units. From rhyolitic pillows and lava domes to pahoehoe, pillowed and pyroclastic flows. The sedimentary units show a variety of structures including stromatolites, desiccation cracks, ripple marks, dewatering structures and the earliest known glacial diamictites – all beautifully preserved.

And then there are some controversial field relationships. Both the Nsuzi and Mozaan have terrestrial sediments at their bases and locally there are exposed unconformities. However, at least one of these is an intrusive contact, despite a recent paper to the contrary.

The rocks are all deformed but with large areas displaying shallow dips with open anticlines and synclines evident, quite unlike the syncline-dominated greenstone belts of the same and earlier ages seen elsewhere.

The “Pongola Team” has requested a trip to Zimbabwe to further the discussion on how the world was made. This will take place next year.

Wrinkling of an andesitic flow-top in a sequence with typical pahoehoe texture



These and other pictures will be explained in more detail at the Summer Symposium on 25 November 2016 at the University of Zimbabwe.



Impressions of the 35th International Geological Congress Cape Town

Maideyi Meck

This was a very memorable event for those of us who attended. The organising committee arranged several field trips for delegates to see the geology of South Africa and neighbouring countries - Table Mountain, the Cape Winelands, Robben Island where

Nelson Mandela was imprisoned, Cape Point where the Atlantic and Indian oceans meet, the V&A Waterfront where the Congress was held, and the great trans-continental train geosafari from Cape Town to Victoria Falls. Some intrepid people even visited Africa's highest mountain, Kilimanjaro, and the continent's lowest point four kilometres below ground level on a Witwatersrand gold mine. In addition there were field trips to Namibia, Botswana, Tanzania, Mali, and Ghana. Forty pre- and post-Congress field excursions covered South African geological attractions.

There was a comprehensive scientific programme covering a wide range of geoscientific disciplines. In going through the programme, more than 20 papers were presented on aspects of Zimbabwe geology whilst Zimbabweans presented details on the geology of other countries too. The congress exposed all to the international geoscientific community and allowed for a great networking experience. For myself I had a good time interacting with former colleagues from the department including Prof Tom Blenkinsop, Prof Ben Mapani, Hilke Jelsma, Prof Theo Davies and hundreds of former Geology Department students.

The GeoExpo "core and or poster display stands" enabled universities and non-profit organisations to display their research and services at a reasonable cost. Hundreds of mining and mineral exploration companies exhibited posters on their assets, services and identity to the large international audience. Just by visiting the stands I gained a wealth of very high calibre information. African geological surveys and universities also benefitted from the free pop-up poster display stands from which they were able to attract interest in their respective institutional functions. This made it easy to compare other institutions of higher learning in Africa with our own. The information and experience obtained far outweighed the cost of attending the conference.

The following link to the IGC website will bring you to the October Newsletter to delegates and represents a good summary of events and achievements at this momentous congress.

http://www.35igc.org/Uploads/Images/mailler/14641_IGC_MAILER_September2016_FINAL.pdf

The Herald 23/08/2016 50 years ago

Salisbury, 23 August 1966 – It will take at least two months to prepare a report for the Government on the possibility of establishing a geological research unit in Rhodesia, the manager of the Chamber of Mines of Rhodesia, Mr K.A. van der Plank, said in Salisbury yesterday.

The chamber has been asked by the Government to investigate the establishment of a unit which would boost the search for new mineral deposits in the country.

The project was initiated by the Rhodesian Branch of the Geological Society of South Africa. It prepared a memorandum last month for the Ministry of Mines on the setting up financing of a unit similar to the Economic Geology Research Unit in South Africa.

The Government supports the project and is prepared to give financial backing. But it has passed the matter on to the chamber to find out what support can be expected from the mining companies.

The origin of the Institute of Mining Research as UZ – an initiative spawned by our Society.

Keith Alan Viewing, 1931 – 2016

PhD, DIC, C.Eng., Hon. FIMM, FGS, FSAZ



Photo: Seabury Viewing, 2015

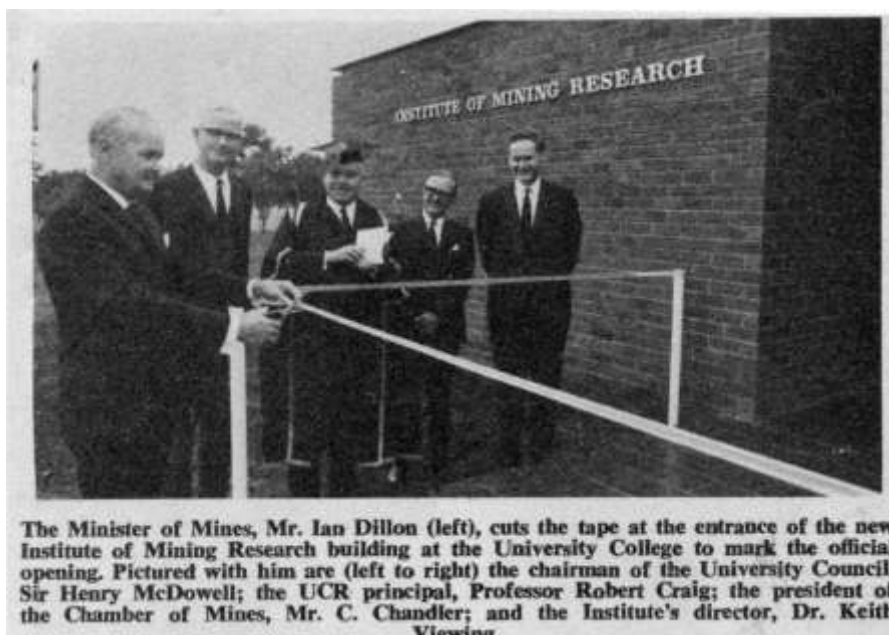
Born on 20th June 1931 at Little Bookham, Surrey, England, Professor Keith Viewing died in Rome, Italy on Saturday 3rd September 2016 aged 85. He leaves his wife, Frouwke (née Bierling), son, Seabury and daughter, Pia to whom sincere condolences are extended.

Keith went to Tiffin Boy's School at Kingston-on-Thames and Chelsea Polytechnic before proceeding in 1949 to King's College, Durham University where at age 21 he obtained his BSc (Honours) degree in geology in 1952. At Chelsea it was Dr W.F. Fleet who noticed Keith's absorbing interest in geology, and it was he who imparted on Keith his enduring sense of enthusiasm.

In 1952 Keith joined the Selection Trust Group and proceeded to Northern Rhodesia as a junior geologist where, based at Mufulira Mine, he spent the next two years prospecting for copper over large parts of what was known as the Big Concession. Claustrophobic logging in deep, inter-joined pits was rewarded by the discovery of the Baluba West copper ore-body. His training in mine geology was at the Chibalumna copper-cobalt mine, and in mid-1955 he was transferred to the Roan Antelope Mine as acting chief geologist. To widen his experience relating to a variety of ore deposits Keith opted to be moved with RST Exploration to a new unit in Southern Rhodesia. Following the discovery of the Perseverance nickel deposit he resigned in 1960 to join the Applied Geochemistry Research Group under the influence of John Webb at the Royal School of Mines, Imperial College following which he was awarded a Beit Trust Fellowship in 1961. However, Keith had met Frouwke, an analyst in the Geochemistry Department, and they were married on 6th August 1960. With 10 months of camping and field analysis in the remote Sula Mountains and Kangari Hills of Sierra Leone behind him, Keith's PhD thesis on the *Regional geochemical patterns related to mineralisation in central Sierra Leone*

described the first effective regional multi-element geochemical map in that tropical rainforest environment. Consistent with the Beit Trust terms Keith and Frouwke returned to RST in Southern Rhodesia in October 1963, and he remained with the group for a further four years, working on prospects such as the Kanyemba gold mine, Lutope tin and Prylin kyanite claims before disbandment followed the nationalization of Zambian copper mines.

Declining a transfer to Botswana, Keith entered into a three-year contract with the Ministry of Mines in Salisbury as Special Projects Officer in Head Office. Responsibility was to recommend the exploitation of dormant, high-risk mines. A feasibility exercise of the Shamrocke copper deposit was successful and the mine was developed and operated by Lonrho until closed after 1972.



Chamber of Mines Journal

In 1969 Keith resigned with permission to be appointed as the inaugural Director of the Institute of Mining Research, a new R & D department supported by the Ministry of Mines and by the mining industry through the Chamber of Mines, but administered by the University College of Rhodesia. This post was held for 20 years, ten prior to independence in 1980, and ten subsequently. The Institute was unique for a multidisciplinary group of 14 research staff supported by 23 technicians, secretaries and librarians, carried out contract investigations in several geological, mining and metallurgical-related disciplines. There was considerable flexibility and at first work concentrated on ferrochromium alloys and the smelting of nickel and platinum group metal concentrates. Depending on the background and experience of research staff, geological work mainly concerned gold mineralization and industrial mineral development, but included base metals and coal analysis in a specially adapted laboratory. As time progressed the team had the support of two mineralogists with access to electron-microprobe, energy dispersive analysis and X-ray diffraction facilities, and of a very effective chemical analysis laboratory equipped with atomic absorption spectrophotometry and X-ray fluorescence capabilities. Multi-element geochemical mapping became a mainstream activity as experience gained from Sierra Leone was applied to three large-scale areas in the country and then to high-density urban situations where

levels of metal pollution could be bench-marked. A dedicated flotation laboratory provided key support for defining the most appropriate methods of mineral processing for many large and small mining companies and a study in geo-mechanics earned the award of a Silver Medal from the Institution of Mining and Metallurgy. Towards the end of Keith's tenure studies in Minerals Economics gained emphasis to address policy issues for Zimbabwe and to review the mining industries established elsewhere in the region. In addition to industry-directed research, Keith and his team mentored a number of Masters and PhD students, all of whom went on to make significant contributions to Zimbabwe's mining industry. Many ultimately reached senior management levels in major mining companies and government departments.

Keith researched the effect of the Draft Law of the Sea on the nickel mining industry of Zimbabwe, and in 1980 he chaired the Mineral Resources section of the International Economic Resources Conference on Zimbabwe at a time when he also chaired the Zimbabwe Branch of the Institute of Mining and Metallurgy. His geochemical orientation survey across granites of the Chinamora Batholith north of Harare was an important aspect of the Granite '71 symposium whilst in 1982 Keith contributed substantially by availing his institute and its personnel to the success of the major international conference GOLD '82, events that showcased Zimbabwe as an important investment destination. In 1987 the IMM-sponsored African Mining conference in Harare involved Keith greatly and allowed a review of Zimbabwe's mining industry to be aired.

For many years Keith gave a two-week course on applied geochemistry to MSc students in Mineral Exploration at Rhodes University in Grahamstown. He served on the Scientific Council of Zimbabwe and became Chairman for the National Committee on Remote Sensing. Keith was on the Natural Resources Board for 14 years from 1970 during which time his suggestion was accepted that an annual mine dump competition be judged for conservation at large and small mines alike.

In 1989 Keith joined Anglo American Corporation Zimbabwe as Consulting Geologist, retiring in 1993, aged 62. His responsibilities included the mineral reserves and geo-mechanics at four separate nickel mines, three chromite-mining centres, in the investigation of smelter fluxes and at a gold mine, and he directed the prospecting operations of Prospecting Ventures Limited.

From 1993 to 2008, through his company Cerminco, he was a minerals consultant in sub-Saharan Africa. He also assisted his son in the export of industrial minerals for the ceramics industry in Europe and he developed clays and glazes that helped to make his and Frouwke's personal interest in pottery unique. Later he was a director of G&W Industrial Minerals, a subsidiary of the Industrial Development Corporation. The mineral reserves for three important commodities, high-grade glass sand from Somabhula, pure limestone, and phosphate from Dorowa were severely depleted, but significant improvements were made and these operations continued. An unusual consultancy was to visit and advise on the degassing of Lake Nyos in Cameroon following the 1986 disaster brought about by the overnight escape of accumulated CO₂ to the surrounding environment.

Keith had a lifelong interest in sailing and he built in all 14 wooden craft of various size and design, the biggest being a 10 metre-long Warham catamaran, which he and Frouwke

sailed on Lake Kariba, and the smallest being two optimists, in which his son and daughter learnt to sail. In 1995 Keith bought a 26ft wooden boat and trailer, which he kept at Rossiter Yachts yard in Christchurch on the south coast of England. This was used as summer accommodation in the UK, but Keith also sallied forth to the Channel Islands, accompanied tall ships in the Brest 2000 Parade, and sailed the Mediterranean, which included a visit to the caldera harbour of Santorini in the southern Aegean Sea.

In 2008 Keith and Frouwke moved in retirement to the small village of Sacrofano north of Rome in Italy. Just to the west of the town is the circular caldera *lago de Bracciano*, so Keith took with him to Italy his home-built Scilly Island boat so as not to lose his hand to sailing. Whilst in Italy earthquakes were experienced, Keith found time to witness an eruption of Mount Etna and he wrote copiously on the history of mining in Zimbabwe.

Following 19 years on the Council for Science and Technology, Keith became a founder Fellow of the Academy of Sciences of Zimbabwe. He was either Secretary or Chairman of the Institute of Mining and Metallurgy, Zimbabwe Section for 14 years, was an Overseas Member of Council for 6 years and Senior Vice-President IMM London for 3 years, being made an Honorary Fellow of that institution in 1984. He served as a Council Member of the Geological Society of South Africa, was Chairman to the Branch in Rhodesia, and he became a Founder Member of the Geological Society of Zimbabwe in 1981, an institution with which he enjoyed Honorary Membership coincident with that of the student's Mennell Society. In recognition of his involvement in so many ways Keith was awarded full Professorship by the University of Zimbabwe. The Keith Viewing Award is for the best adjudged presentation given at the Annual Summer Symposium of the Geological Society of Zimbabwe and is conferred at the society's AGM in the February following. As such the contribution that Keith Viewing made to applied geology in Zimbabwe and elsewhere is remembered and appreciated as is the support and encouragement he gave to all he thought were worth their salt.

Compiled by Tim Broderick from notes left by Keith Viewing, and contributions from Pia Viewing, Bob Foster, Rei Fernandes, Martin Prendergast, John Hollaway, Brent Barber and Tim Broderick.

Andrew Osmund Thompson 1920-2016



Veronica van Zyl, with contributions from Tim Broderick, Pat Stidolph and Peter Fey

Born in Bizana, Pondoland, South Africa on 16th February 1920, Andrew was the 11th child in a family of 12 born to his mother, Lizzie Lundie, and his father, Dr George Batchin Thompson, District Surgeon.

Andrew and his siblings were brought up in the strict Presbyterian way of their ancestors. Schooling started at home before Andrew attended the local one-room school in Bizana, followed by boarding at school in Kokstad. He followed several of his older siblings to attend university in Pietermaritzburg, where he attained his Bachelor's degree in 1939, followed by his Master's degree on the coastal dune terraces of Pondoland in 1940 under the supervision of Dr Lester C. King. His studies towards a PhD were terminated in February 1942 when he volunteered for the Union Defence Force and was assigned to the Engineering Corp. With the rank of Lieutenant he was dispatched to the Middle East in January 1944 within the 43rd Water Treatment Section, a multinational group that included Louis Dubertret of the Free French. He was fondly referred to as "Papa Louis" by Andrew, their task being to assess water resources with an eye to these being sufficient to sustain an Allied invasion through the Middle East into Europe.

When he was demobilized in January 1946 Andrew, with civilian clothing and £30 in his pocket, joined the Hydraulic Branch of the Public Works Department in Nairobi, Kenya. He transferred to the Mines and Geological Department in Nairobi in March 1950 where he was mostly engaged in regional geological mapping published as the Malindi (1954), Derkali-Melka Murri (1958), Bur Mayo-Tarabaj (1960) and Naivasha (1963) sheets. For the last three of these he was assisted by R.G. Dodson. In 1964 the geological map of the Kijabe area east of Naivasha was published. During his long leave in 1957 Andrew accompanied his mentor, Lester King, on a trip through South West Africa (Namibia). Before leaving Kenya he joined a group of friends that included Piet Joubert (later professor at UCT) to climb snow-topped Mount Kilimanjaro in his geologist's boots, a hand knitted sweater and, to break the wind, his wife's plastic raincoat! They made men tough in those days.

In January 1959 Andrew became the Deputy Director to the Northern Rhodesia Geological Survey in Lusaka. There he met up with his old friend, Dr Louis Dubertret*, who was the geological consultant to consulting engineers Gibb, Coyne & Sogei during the entire construction period of Kariba Dam.

Andrew left the Northern Rhodesian Geological Survey in October 1964 to join the South African Geological Survey, being based in Bloemfontein through to 1969. During this period he was seconded to undertake geological mapping of the Mokhotlong area in Basutoland where he took his caravan to the top of the Sani Pass. Beyond there the survey transportation was by Basuto pony, a painful process for a bony man. Subsequently he wrote an internal report on the geology of part of the Rouxville area in the Free State.

Andrew then joined the Rhodesia Geological Survey on 7th January 1970 and was based in Bulawayo until his retirement on 31st May 1980. From there Andrew was to cover 6825 km² of reconnaissance geological mapping of Karoo sediments and lavas during the 1971 and 1972 field seasons. This effort resulted in the publication in 1975 of a Short Report and three 1:100 000-scale maps covering the expanse of country between the Tuli Circle and the Bulye River. Following compilation of this report in 1973 Andrew reconnoitred a further 1200 km² of ground in the Mateke Hills region. He then switched

to assisting the Industrial Development Corporation (IDC) with geological mapping and the logging of drill core from across the Lubimbi, Dahlia and Hankano coal areas between the Gwaai and Shangani rivers. This effort related to IDC's quest to establish an oil-from-coal facility under sanction conditions between 1974 and 1978, the edited work being published as a bulletin of the Zimbabwe Geological Survey in 1981. An intervening distraction was Andrew's logging of what became the 853 metre-deep Insuza borehole, drilled following a divined assumption that oil might be found. The core provided a 429-metre record of Karoo stratigraphy above an unexpected interception of Proterozoic-aged Lomagundi dolomite, giving an important insight to the extent of this sequence. During 1978 and 1979, at the height of the Bush War, Andrew reviewed all available information on the 13 known coal localities within the Wankie and Sebungwe regions of the mid-Zambezi Valley, which were published informally as "Records of Rhodesian Coalfields" and included a confidential summary of Rio Tinto's exploration of the Sengwa Coalfield. His work on the Western Areas and Entuba coal localities near Hwange was subsequently reviewed and published in 1982.

Andrew married Diana "Billy" Wilkins in Johannesburg on 30th June 1945 and together they had three children, Derrick, Veronica and Donna, all of whom were born in Nairobi. Billy died in July 1981, following which Andrew married Barbara "Babs" Mitchell in July 1982. On retirement Billy and Andrew moved to Shelly Beach on the Natal South Coast, where Andrew remained until 2003 when he and Babs moved to the Margate Retirement Village. Never a man to keep still Andrew became involved in the Gardening Club, serving as secretary for many years. He joined a group of walkers with whom he visited and camped at many of the areas in the Transkei that he had surveyed for his Master's thesis. To keep his hands busy Andrew discovered a love of weaving, and he joined the Weaver's Guild. He continued to weave until the time of the fall that led to his death on 28th June 2016. A scientist through and through, he kept records of rainfall, temperature and wind direction during the entire 36 years of his retirement, also made copious notes in his *Robert's Books of South African Birds*, and he gave his body to medical science.

Pat Stidolph, a colleague of Andrew's in Bulawayo, and his wife Marie remember him as one of nature's true gentlemen. "There are many nice people in this world, but every now and then one comes along who rises above the norm – Andrew was one of those. He was kind and caring and welcomed us into his home when we moved to the Bulawayo office of the Geological Survey. He was always interested in our lives and keen to know what he had been up to. One can't imagine he had any enemies because he was always approachable, interested and involved in so many different aspects of life. We were fortunate to remain friends well after we all left the Survey. We had interests in common, including ornithology and the outdoors, and we would often compare the garden birds found respectively in Australia and South Africa. His really was a life well lived, and one which seemed to go on forever. We will miss his Christmas letters and we will miss his presence".

* The URL will lead you to an obituary on the life of Dr Louis Dubertret who was consulting engineering geologist during the design and construction phases of Kariba Dam.

<ftp://rock.geosociety.org/pub/Memorials/v15/Dubertret-L.pdf>

News



Geology Department, University of Zimbabwe

Maideyi Meck

The Geology Department is doing well. The 2016 contracts for all staff were renewed except that for Ms Mudimbu. We have had a boost to our teaching staff through the appointment of Dr Anthony Martin, Fadzanayi Mupaya, Takashaya Marova and Demand Gwatinetsa. Teaching progressed well and the department managed to carry out the part 1 and part 2 field trips to the Harare-Shamva Greenstone Belt and to the Mberengwa Greenstone Belt under the leadership of Dr Tony Martin.

All of our Part 3 students have been attached by various mining houses. The academic staff undertook visits to assess the performance of those students on attachment. Most are doing well and the field supervisors seem to concur. We are hoping the mining industry will once again accommodate our students for their crucial time of experience this coming year.

Our greatest news is that 2016 marks the graduation of the first group of straight honours students. The department witnessed and celebrated the graduation of 12 students on 29th September. The only issue that continues to irk are the lack of resources required to run the department.

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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

June 2014

ZIMBABWE SCHOOL OF MINES NEWS TO THE GEOLOGICAL SOCIETY

The Zimbabwe School of Mines (ZSM), attached to the NUST Campus in Bulawayo, currently has a staff compliment of 70 and an enrolment of 388 registered students with 74 in Geology, 95 in Mining, 64 in Survey, 100 in Metallurgy, 21 in Metallurgical Assaying and 34 in Mine Ventilation & Environmental Engineering. Female students account for 26% of the enrolment and there are 21 foreign students from Namibia, Botswana, Equatorial Guinea and Angola.

Noticing that most prospective students from the region do not have adequate grades in mathematics, english or science subjects, the School will introduce a bridging course for 2017 that will enhance the comprehensive ability of applicants in 2018. The School has reviewed the running of its Higher National Diploma (HND) to attract more students. Within a set time limit the students can now complete the HND by completing modules at their convenience. An annual calendar for all HND courses with clear dates for module will be run is now available. Individual module certificates for each attended will be issued by the ZSM. The school plans on introducing a full Distance Learning programme for all HND courses. All scheduled trips mandated for Field Based Assignments, currently the Higher Education Examinations Council (HEXCO) requirement in all subjects, have been conducted. In May the School, in collaboration with Harvest Way Diamond Jewellery P/L, sent 25 students to China for a diamond cutting and polishing course at the Zheng Jingyi Vocational Technology School. The school has also reviewed the pricing model for hostel accommodation so as to be competitive.

The graduation ceremony was held on 7th October 2016 when the ZSM saw 172 students receiving national diplomas. These comprised 42 in Geology, 33 in Mining, 34 in Mine Survey, 42 in Metallurgy and 7 in Metallurgical Assay whilst 2 HND students graduated, 1 in Mining and 1 in Metallurgy.

The School has run a Mineral Resource Valuation course in Bulawayo. The Harare-based block will be from 28 November to 12 December 2016. The ZSM has also run the following courses this calendar year:

- ✓ Certificate in the Fundamentals of Mining
- ✓ Advanced Certificate in the Fundamentals of Mining: Drilling and Blasting
- ✓ Mineral Processing (Gold) - Certificate of Competency, which is a new course developed for plant supervisors
- ✓ Mine Captain's Certificate of Competency (Underground Mining)
- ✓ Mine Captain's Certificate of Competency (Surface Mining)

This year the School of Mines participated at career fairs in all 10 provinces and at all national exhibitions including agricultural shows held in Gwanda, Chiredzi and Manicaland, and at Mine Expo. The ZSM competed at the 2016 TESAZ games held in Bulawayo and achieved 6 gold medals, 4 silver and 3 bronze. At the ZITISU games Team ZSM achieved 2 gold medals, 1 silver and 4 bronze. The 2 gold medallists proceeded to represent Zimbabwe in the regional competitions, which were also held in Bulawayo. ZSM won a bronze medal in the girl's shot-put.

The school is working on constructing an Artisanal Small Scale Miners Laboratory, a Gemmology Centre and a Mine Rescue Centre. Mimosa Mining Company has taken up the costs for construction and equipping the Artisanal Small Scale Miners Laboratory, scheduled to start in 2017.

Maideyi Meck

GSZ representative on the ZSM Board

**ZIMBABWE**

Geological Survey Department

Ernest T. Mugandani
etmugandani@gmail.com

Staffing

Director, **Mabasa Temba Hawadi**, attended the 9th Annual General Meeting of the Organization of African Geological Surveys (OAGS) held on 25th August 2016 in Cape Town, South Africa. Following this he also attended the 35th International Geological Congress (IGC). He then accompanied the Deputy Minister of Mines and Mining Development, Fred Moyo, to Perth where he was a delegate at the Annual *Africa Down Under Conference* from 7th to 9th September.

The OAGS mission is to provide comprehensive information, support and means for capacity building to Geological Surveys across Africa, and to assist member countries in their development through the establishment of information sources and means for technology transfer. The Organization works towards the establishment of a greater public and government understanding relating to the strategic importance and functions of a national Geological Survey. In pursuance of the reconfiguration of the Zimbabwe Geological Survey agenda, the Zimbabwe Economic Policy Analysis Research Unit (ZEPARU) conducted a 2-day study tour of the Council for Geosciences in South Africa from the 24th October 2016. The Director was present.

Sokesimbone Lunga, **Frank Muzanenhama** and **Ms Sibongubuhle Mpindiwa**, all Principal Geologists, continue to act respectively as Provincial Mining Directors for Matabeleland South, Mashonaland West and Masvingo mining districts.

Ernest T. Mugandani continues as Acting Deputy Director. From 13th to 17th June he participated in the *Invest in Zimbabwe Workshop* that was held at the Golden Peacock Hotel in Mutare. The workshop objective was to develop a draft for the *Invest in Zimbabwe Handbook*.

Two ZGS geology Cadets, **Robert Mashambanhaka** and **Ms Evelyn Marumisa**, have completed their third-year Industrial Attachment at Trojan Nickel Mine courtesy of the

Bindura Nickel Corporation (BNC). Their association commenced on 1st September 2015 and thanks are extended to BNC for having hosted them for the past year. They both recommenced their fourth year of study at the University of Zimbabwe in August this year.

Ms Vimbai Takawira, a former Cadet at the Zimbabwe Geological Survey, graduated with her Bachelor of Science Honours Degree in Geology at the University of Zimbabwe this September. She has joined the Department as a geologist with effect from 26th October 2016. Cadet **Amicable Hove** is still to complete his studies at the University of Zimbabwe.

Denis Bob, Senior Laboratory Hand, had rejoined the Department on a six-month contract on 1st April 2016. Expiring on 30th September, his contract has been renewed for a further six months effective from 1st January 2017. Currently the Department is attempting to source thin section making consumables and to repair the rock cutting apparatus to ensure an uninterrupted training of our geological technicians from January.

Brian Muteta, a geologist, is in Japan pursuing a three-year Masters Degree in International Resources. Starting on 1st September 2016, his manpower development leave extends to 30th September 2019.

Geologist **Two Kufahakurambwi** has resigned with effect from 1st August 2016 having served the Department for about two years. He has joined RioZim Limited.

Benedict Ncube, a geologist, is the latest beneficiary of the Japan International Cooperation Agency (JICA)-sponsored training programme. In October he spent four weeks in Japan on a course on relating to Metal Mining and Administration.

Editing of Bulletins

More than 10 draft-bulletins and reports with maps and diagrams are currently being edited through a contracting company courtesy of African Development Bank (AfDB) funding as part of the Governance Institutional Strengthening Programme (GISP).

Significant progress is reported on this project despite a number of challenges being faced by the editors. The authors of some of these publications left the Department a long time ago resulting in some materials being difficult to locate. Numerous diagrams and figures require to be drawn or updated through the Drawing Office. Despite these challenges most texts are said to be edited and available for page making. Maps require to be digitized to publication standard.

XRF Analyser

The hand held XRF analyser that had developed a technical fault in 2015 was finally repaired in July 2016 and is now in use. Thanks are due to the African Development Bank (AfDB) who sponsored its initial acquisition and continued to fund the shipping costs for its repair in South Africa.

MINING INDUSTRY NEWS

Forbes Mugumbate
fmugumbate@gmail.com

A beggar on a beach of gold

With its famed mineral potential based on a highly heterogeneous geological environment, Zimbabwe is like the proverbial beggar dying of thirst when he is standing in water. This is whilst countries with similar geology and mineral potential to ours are benefitting tremendously from the availability of exploration dollars together with the advantages that these dollars provide. For instance, while in country such as Western Australia with over 40,000 active exploration projects, mineral exploration is a multi-million dollar industry. In Zimbabwe we have only three current EPO's belonging to a single company, basic exploration can be said to have virtually ceased. This is information that is infuriating. The future of the mining industry in this country is in jeopardy. Questions will always arise as to why Zimbabwe is not benefitting much from its projected mineral potential. The answer appears to lie in unfriendly policies, and the need to adapt them.

Regarding policies affecting mineral exploration, the government gazetted the *Mineral Marketing and Exploration Bill* that seeks to merge the Minerals Marketing Corporation of Zimbabwe and the Mining Promotion Corporation. In a gesture of goodwill, the Minister of Mines and Mining Development invited the geological community to a meeting to discuss this bill. The chairperson of the Geological Society of Zimbabwe prepared a response to the bill, published in this Newsletter, based on contributions from our membership. We can only hope that the concerns raised by the geological and other communities will be captured in the new law.

Mines and Minerals Amendment Bill

A draft of Zimbabwe's long-awaited *Mines and Minerals Bill* has been published. The bill, which has been more than a decade in the making, covers wide-ranging proposals on indigenization, land rights, local content, licensing and beneficiation. It also includes a provision that requires all mining companies to be listed on the Zimbabwe stock exchange. None of the major miners operating in the country are currently listed in Harare. Foreign companies are also required to sell at least 51% to local investors under the country's indigenization laws. The Parliamentary Committee on Mines and Energy went around the country for public consultations ahead of tabling the bill in Parliament.

Small-scale Mining

Small-scale miners are now producing over 30% of gold in the country. The sector has however deteriorated, with most of the production coming from custom milling centres. Few miners have the capacity to run their own processing plant. The deterioration of the small-scale mining sector is being highlighted in the number and nature of accidents being recorded. For instance, Mashonaland Central Province will probably take top position this year for the number of fatal accidents recorded. In one accident in September 2016 eight miners perished when a narrow pit in which they were working collapsed. Fifteen miners have already lost their lives in the province. The small-scale mining sector holds so much potential as shown by the production statistics, but activities need urgently to be made safe if it is to be the mainstay of our mining industry.

Gache Gache alluvial deposit

The euphoria that emanated from announcements of a huge alluvial gold and platinum deposit discovered in the Gache Gache estuary on Lake Kariba has vanished. Although full information on the nature of the deposit is still to be assessed and released, initial reports suggest exaggeration of the potential. Meanwhile the Zimbabwe Consolidated Diamond Company that was tasked to develop the deposit has been asked to suspend operations pending approval of an Environmental Impact Study (EIA).

ZMDC fires top management

Just over a year after being appointed General Manager of the Zimbabwe Mining Development Corporation (ZMDC), fellow geologist Sydney Simango has been dismissed together with the chief operating officer Caesar Zishumba and chief finance officer Wilson Chinzou. The ZMDC board made a resolution that the current top management had failed to drive the corporation forward. Meanwhile Dr Farai Karonga, a member of the board is the acting General Manager.

The after effects of the diamond mine consolidation exercise

Following implementation of a policy to consolidate all diamond companies operating in the Marange area into a single entity, the Zimbabwe Consolidated Diamond Company, those companies that resisted the move through court action are now swamped with huge debts. The companies have stopped working pending the resolution of the dispute and are no longer able to service these debts. Mbada Diamonds lost a 12-seater Cessna aircraft to offset a debt to a service provider. The future of several former employees is uncertain.

Bond Notes

As the country braces for the impending introduction of bond notes, small-scale miners have aired their concerns following the gazetting of Statutory Instrument 133 of 2016, which provides a legal framework (under Temporary Measures) for the introduction of bond notes as acceptable legal tender in Zimbabwe. The miners have threatened to hold on to their gold if the payment for the gold will be in bond notes.

Lithium minerals shine

Sam Siziba's talk on lithium at the forthcoming Geological Society Summer Symposium will be timely as there have been a lot of enquiries relating to the country's lithium resources. There are projections that the commodity will continue to do well for some time. The result is that a number of known lithium deposits have been taken up, and a few disputes have already surfaced. AIM-listed Premier African Minerals has already drilled the first two diamond holes at its Zulu lithium prospect near Fort Rixon. A series of 20 diamond drill holes are designed to test strike and depth extensions at the prospect, which currently has a strike length of 3.5 km. Initial test results of samples have yielded grades of 1.55% lithium oxide (Li₂O) taken from the exploration results. Meanwhile Prospect Resources Ltd is rapidly evaluating a highly potential lithium prospect at Arcadia near Harare.

Kamativi

Beijing Pinchang, a Chinese investor, is negotiating with the ZMDC and the Zimbabwe Government to invest up to \$100 million to revive the Kamativi Tin Mine. The mine, which has been closed for 21 years, has around 40 million tonnes of opencastable tin ore reserves and is considered one of the best tin prospects in the world.

Geological Society of Zimbabwe Summer Symposium 2016	
25th November 2016, Department of Geology, University of Zimbabwe	
Registration (incl. teas and lunch) \$20 for members (non-members should join)	
Topic	Speaker
Official Opening	Isaac Kwesu - CEO of Chamber of Mines
Adrift again: recent geochronology and paleomagnetism undermine a Neoarchean collision model for the Limpopo Belt	Jan Kramers (Keynote Speaker)
Geology of the Pongola Greenstone Belt	Tony Martin
Framing Himalayan-Tibetan style indenter-escape style collision for a Neoarchean Limpopo orogen and Zimbabwe Craton since 2.75-2.74Ga	Mark Tsomondo
On the distribution, morphology, chemistry and mineralogy of global laterites: Cuban and Zimbabwean scenarios	Tendai Njila
Lithium Minerals in Zimbabwe...An Exploration and Investment Opportunity	Sam Siziba
Mineral Resource estimation techniques for shallow dipping ore bodies – a case on the Great Dyke	Farirai Kambanje
Geomythology: Zimbabwean examples	Forbes Mugumbate
Recent ground magnetics survey of Mazowe mine environs; toward a camp-scale structural model for reef-type gold mineralisation	Hilary Gumbo
Environmental Impact Assessment (EIA) prior to project development.	Mhanyarai Matare
The relevance of GIS techniques to resources evaluation - A project on archive data from Zimbabwe	Tenyears Gumede
Drones - the big picture for geology	Mike Kirstein
Condition driven operating and planning standards at medium sized gold mine	Renias Tirivabaya
What to Expect as an Exploration Geologist	Nhamo Manenji
Summary	Tony Martin

Field Trip - Saturday 26th November

The field trip to the western margin of the Murehwa batholith is intended to discuss alternative models of Chilimanzi granite emplacement, emphasizing regional tectonic controls versus vertical tectonics. For example, there are interesting results from Bekker (2000) on the formation of the adjacent Chinamora batholith as a NNW-directed lopolith in contrast to the widely publicised SW-directed nappe-tectonic transport of Dirks and Jelsma.

Please put these dates in you diary now. andrewdutoitzim@gmail.com

**GSZ Research and Development Fund**

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

**SEG Timothy Nutt Scholarship Memorial Fund**

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.

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 year-end.

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.

See the Society of Economic Geologists website for further details and the next call for applications.

GEOLOGICAL SOCIETY OF ZIMBABWE: CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE COMMITTEE FOR 2016

NAME	PORTFOLIO	EMAIL
Barber, Brent	Chairman	barber.brent@gmail.com
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Duma, Steven	Summer Symposium	Steven.duma@zimplats.com

Institutional Membership, 2016

Bruker RSA
 Chamber of Mines of Zimbabwe
 Freda Rebecca Mine
 Goldsearch Technical Services
 Marowa Diamonds (Pvt) Limited
 Metallon Gold
 Mimosa
 New Dawn Mining
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 Sandvik
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 Trojan Nickel Mine
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 Unki Mines (Pvt) Limited
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 Zimbabwe Mining Development Corporation
 Zimbabwe Mining Investments
 Zimbabwe Platinum Mines Limited