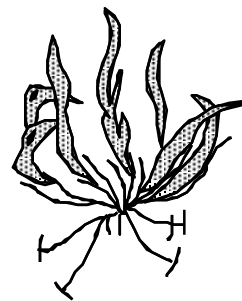


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## Geological Society of Zimbabwe



### Newsletter

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June 2008

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*Syntarsus* preparation at the BPI for Palaeontological Research. Is there a skull at the end of the vertebral column? Maxilla with teeth to right and lower left. Photo: Eric Roberts

**THE GEOLOGICAL SOCIETY OF ZIMBABWE, P.O. BOX CY 1719, CAUSEWAY, HARARE**

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## Editorial

How relevant to us in Zimbabwe is this quote from the Foreword to Raeburn and Milner's 1927 book, *Alluvial Prospecting*?

**'The glamour of the prospector's life still endures. To traverse countries old and new, to cross their plains and enter their valleys, to follow their streams and explore their mountains – these are things that appeal to many. But the appeal becomes more profound when the seeing-eye can look beneath the surface and estimate the possibilities of the soil, the forests, the rivers and the rocks. Prospecting in its widest sense means the recognition or discovery of the natural resources of a country, be they animal, mineral or vegetable. It means the opening of the gates of progress, the lighting of darkness, and the birth of hope. It stimulates the imagination, it lengthens the vision, it dips into the future and forecasts the trend of history. It calls for endurance, courage, knowledge and judgement. It is a man's work and men are needed for it of exceptional calibre and attainment.'**

In this, the first Newsletter under Collins Mwatahwa's Chairmanship, we see the continued exodus of our mining professionals to greener pastures, we sense the stagnation of our mining industry, the teetering upon the abyss of our learning institutions and the confirmation that grass roots mineral exploration is stifled. We are moribund and helpless as our drive and hope is being dashed. We know that if we do not actively look for those minerals, we will not find them and that their discovery is our future. New mines must replace the old as our known mineral store represents a finite resource, most deposits of which are heading towards being worked for a 100 years or more. This task of looking takes energy, vision and time in which to unfold, and we know as a nation that it can be achieved. It desperately needs an innovative policy review with leadership from the top. Come on – we have lost too much time and all that investment out there is waiting to happen. And we know that UZ graduates have the edge on most others, so you need to be the leaders in that investment.

Our thanks are again expressed to all contributors for their efforts towards the continuity of this Newsletter. Apart from our regular columnists, we continue with Keith Viewing's reminiscences on the development of geochemical prospecting on the Copperbelt of Zambia, I repeat the abstract by Ben Goscombe *et al* on the geology of the Chewore Inliers and give a preview of an abstract presenting the preliminary results of our work on *Syntarsus*. The specimens collected are being prepared at the BPI (Palaeontology) at Wits and exciting results are emerging with every chip at the block. Kudzi Musiwa's 2007 Chairman's Report to the AGM is presented as is the citation for Dr Zengeni's Honorary Membership and for the 2007 Phaup Award, given to Drs Prendergast and Wingate. The 2007 Accounts for the Society can be forwarded on request.

The quarterly subscription rates for June 2008 are: (I guess they cannot stand still)

|                                     |  |
|-------------------------------------|--|
| Individual and Associate Membership | <b>Z\$2,000,000,000.00</b>                     |
| Institutional Membership            | <b>Z\$5,000,000,000.00</b>                     |
| Extra-territorial Membership        | <b>\$US20.00</b> or Rand/Pound/Euro equivalent |

Please respond with your payments for this year. It is only you, the Member, who makes your Society viable. Paid up membership has reached a total of 68 individuals and we still aim for the figure of 101 that we reached in 2007. The Mennell Society has 28 members, who are affiliated as students to our Society. We are currently supported by 4 Institutional Members and they are listed on the last page. Invoices have been sent out to all other potential institutions.

Current advertising rates for this Newsletter are: **Full Page** \$5,000,000,000.00;  
**Half Page** \$2,500,000,000.00; **Cards** \$1,000,000,000.00.

*Tim Broderick*



## Chairman's Chat

Collins Mwatahwa

I would like to extend my appreciation to all Members of the Society for supporting activities organised by us in the year 2007 and for their continued membership. At the time of publishing this newsletter, over 60% of the membership had been renewed. The AGM held on 29th February was well organised and attended and we wish that this spirit of togetherness to continue. The committee for 2007, headed by Kudzi Musiwa, is acknowledged for a job well done in ensuring that the Geological Society will continue to carry out its mandate as enshrined in its constitution. Input by past chairpersons, which include Tim Broderick, Hillary Gumbo, Gayle Hanssen and Andrew du Toit, is greatly appreciated. I also express my thanks to the current executive committee members for their commitment and dedication that will ensure that it is business as usual for the Geological Society of Zimbabwe despite the difficult times prevailing in our country. I welcome our newest members to the committee, Daniel Chatora and Leo Passaportis, and wish them the best.

This year we intend to focus on the UZ Lecture Fund and on the Certification of Geologists, as a follow up to issues raised by our Honorary Member, Dr Keith Viewing at our Summer Symposium. We will continue to work with the Geological Survey as a partner in facilitating the publishing of the 1:1 000 000 Geological Map of Zimbabwe. The Society will render the Geological Survey any assistance they require to successfully implement this project.

A number of activities are being organised by this year's committee. Field trips are expected to kick off after the election re-run, and notices will be published in due course. Plans are underway for a Zambian Copperbelt visit and possibly one to assess the apparent meteorite impact structure in the south-east Lowveld. We hope that the Macgregor Memorial Lecture will be presented this year. The Summer Symposium will be held in Harare near the end of this year. All talks and field events will be advertised on our website, in the Newsletter and as circulars to Members.

It is pleasing to note that the Geology Department at UZ, which is seriously understaffed, has secured some part-time lecturers from Industry to assist them in running modules that remain for the part 2 and part 3 students. This initiative needs all of our support and, to those part-time lecturers and remaining staff at the Department, well done and keep up the spirit. As the Dean of Science, Prof. Teddy Zengeni, said at the AGM, "Aluta Continua Geology!" I would like to thank Zimplats and Canister Resources for respectively providing financial assistance and fuel to ensure that field trips are undertaken early this year. The Geological Society will continue to assist the Department in providing necessary support to ensure that Geology will continue to be taught and, at the same time, we require the Department to be pragmatic and be accountable for any assistance rendered.

Lastly, to our members, please feel free to contribute any news items to our Newsletter editor, Tim Broderick.

## Articles and Reports

### **The Applied Geochemistry Research Group of Imperial College London: MEMORIES IN THE MIST – 2**

*K.A. Viewing, Hon. FIMMM*  
AGRG 1960-1963. Roma, 7<sup>th</sup> February 2008

The story spans about 75 years since the copper deposits of Zambia were found hidden beneath the forest. But twenty-five years before that Robert Williams of Tanganyika Concessions had made the bold decision to finance and extend Rhode's Cape to Cairo railway. Rhodes had lost the race to the Katanga and the rail-head at the time was at Broken Hill Lead-Zinc Mine (Kabwe). Williams needed to haul copper and the track was extended to Sakania on the Congo border, close to the huge Mufulira copper deposit. That mine was covered by a deep mantle of soil and weathered rock and lay dormant and undiscovered for 20 years.

But the first discovery of the group was Bwana Mukubwa, a deposit of minor importance. The second, the huge Roan Antelope deposit, was found by William Collier about 1926 when a roan antelope was shot and collapsed upon a malachite-stained outcrop of argillite in the bank of a small stream. The other mines were also found from coloured stones, but in general these and other rock outcrops of any sort were rare, apart from dolomite and iron oxide hardpan that we called 'laterite'.

The country is almost flat but occasional hills comprising tumbled blocks of arkose rise above the endless sea of the forest canopy, broken only by basement exposure, normally expressed as two chert walls, about 50 m apart, that wrap around the granite domes. Gentle slopes meet in those areas now called 'wetlands' or 'dambos', but in fact are water-logged seasonal grass-swamps. These vary in extent, but many are about 10 km long and from 500 m to 1 km wide, with a central drainage channel. The channel is often ill-defined in the upper reaches, but down slope it may be deep and covered by a thick matt of grass that might not support your weight. The grass of the wetland is always fringed by huge leafy evergreen forest on clean-washed silica sand. The wetland gradually narrows down-stream until the forest closes in and a tiny waterfall reveals a diminutive rock outcrop, where the stream has cut down, and back.

Some 55 years ago a tall and agile man in a dark suit all capped by a silvery mop, was introduced to the new boy as Rupert Brooks. Years later we found that it was he who had organised the first phase of prospecting teams, of surveyor and mining engineer, and probably a geologist as an alternate. Their safaris may have started from Broken Hill, but at least one pair had crossed the Zambezi by dug-out and traversed to the Katanga watershed, about 1000 km distant. The search was for coloured stones - and these teams had found most of them. There was a small reward and the discovery of the famous Nchanga Mine had resulted in a prize of £250 for a 'good prospect', to be shared by the team of two. Jim Beaton, surveyor, had explained that his share was 'sufficient to be married and buy a small car'. No bronze bust was commissioned.

The second phase of exploration was systematic and led by Austin Bancroft, from McGill, whose account is published and whose technical writing was imprinted upon his team, and survives. Geological reconnaissance maps of the region were made by his Rhodesian Congo Border Concessions group (RCBC), in which the geologists worked by compass and bicycle wheel on traverses sufficient to establish continuity of the strike, say 300 to 500 m apart. The vegetation is almost diagnostic of the lithology, and defines the boundaries of basement to arkose, to argillite,

sandstone, shale and dolomite. Those old maps are good.

The monthly reports of these hero's were held in Ndola by Mr Austin, the resident representative of the British South Africa Company. These fellows were tough, for no outcrops might be found from one month to the next, and certainly no evidence of any mineralization. They were on their own in the forest and always on the move with little water, and one enjoyed one day a year 'in town' if you were single, or two if married. 'It was the Great Depression', they said, and 'you were lucky to find a job'.

The third phase of exploration started about 20 years later, in 1952, with an investment of £5 million. Some 15 young geologists were recruited from South Africa and Great Britain, led by Joe Brummer from the Roan, and W.G. Garlick, a survivor from RCBC, as consultant. Special Grants on the strike extensions of existing mines were re-investigated by traverses of pits spaced about 200 ft. apart, closed to 12.5 ft., and in a discovery, were connected by scary and unsupported cross-cuts in the deeply weathered and friable rock.

The huge mineral concessions beyond the Copperbelt were investigated by teams of 12, with about 100 labourers, and they relied upon controlled geological mapping and geophysical, self-potential surveys that had been used previously by Mark Malamphy and his team. For example; the prospecting team in the Kadola Concession to the south-west of Ndola, consisted of two geologists, a geophysicist and four self-potential instrument observers, a surveyor and two compass men supported by four 5-ton lorries and four 1-ton vanettes, or pick-up vehicles. A Party Chief was nominated and operated as a member of the team, at times a surveyor, geologist, or geophysicist. Canvas tents were shared and the fly-sheet extended to cover table-tops on either side, one for plotting the day's work and the other as a mess-table. Paraffin lamps provided light, a tin trunk for books, another for clothing, and split-cane mats for the floor. You kept the doors open for creepy-crawlies to escape.

The surveyor was to establish a base-line from any trigonometric beacons available, and these could extend for 25 km or more. They were arranged roughly on the strike of the sediments, or parallel to the axis of a major structure. Cut-lines through the forest were pegged as corner beacons at intervals of 11.2 km (5 miles). Other cut-lines were extended from the corner beacons at right angles and extended for 4.8 km (3 miles) in each direction. These were closed to form an oblong block.

The traverse lines were spaced at 1000 ft apart, and blazed and pegged at intervals of 200 ft, say 40 lines per block, except where the strike was oblique and then the traverses were 11.2 km (7 miles) long. Two traverses, out and back, were reckoned a hard day's work in the rain. Geological mapping on these traverses were by a team of 7; a headman and perhaps an assistant to watch for snakes (Paddy Hayes, geologist, you are not forgotten), name the vegetation and read the pegs, and three assistants spaced on either flank to cover 1000 ft of ground. Outcrops were mapped by compass and pace, and true thickness was measured by tape. The presence of copper sulphide minerals and pyrite would be identified from leached and stained cavities in the weathered rock and self-potential surveys would indicate deposits in the weathered rock below.

Each geologist was to complete 9.6 km (6 miles) of traverse each day, and a swathe 2000 ft wide. The minimum requirement was to map the geology and vegetation of 50 km<sup>2</sup> (21 sq miles) per month, per geologist. The maps were annotated daily, on canvas-backed cartridge paper at a scale of 1: 7 500. The early forms of drafting film were not available at the time, and when tested were certainly not satisfactory.

The self-potential survey teams were to establish a base-electrode at intervals of 1000 ft and extend the other electrode for observations spaced at 25 ft. apart. The top-soil had to be scraped clean and water carried each day, to ensure contact. Much depended upon the physical strength of the wire and the insulation.

All of this was an immense physical effort that continued throughout the year, although hampered by some 44 inches of rain, and of course, on bush tracks cut by the survey party. Tinned food was bought at intervals of about 6-weeks, to coincide with the delivery of the monthly report, statistical reports, and the manuscript maps. The paraffin refrigerator was either not invented or available at the time.

Air photographs were provided after two years, and these confirmed the visual assessment of the vegetation on the ground. The main purpose, however, was to confirm the structure and identify clearings in the forest that could be due to copper toxicity. Copper clearings could mirror content of 1000 ppm Cu in the soil and the first prize was the beautiful blue-coloured flower seen in clumps following a bush fire. But the copper flower was not ubiquitous and the reasons were unknown.

The recognisable weathered rock was at a depth of about 4m for siliceous sediments and about 13m for argillite. Cylindrical pits, about 70 cm in diameter, were sunk for lithology, structure and samples for assay. Tenorite, when you had seen it, was not confused with manganese oxide, or wad; red copper oxide was rare and malachite was seen only once, at 10m depth in the Baluba East discovery, now a mine.

For these reasons the self-potential surveys were the only rapid means of prospecting the deep weathered rock, but the theoretical maximum potential from an oxidising sulphide deposit was said to be about 250 millivolts. However, there was a charge actually at the surface so that at Kanga Hill the peak contour was 1 volt, and we could contour the hill from the geophysical data. Another spurious source was the capillary effect between adjacent weathered rocks of different porosity, as for example, weathered arkose and argillite. Complex, but high contrast anomalies might indicate the nose of a tight fold on the flanks of the major structure.

It was clear that the demonstration by John Webb at Mufulira held a tremendous potential, and the first results from John Tooms work of the dispersion of copper were very important indeed. The field teams knew little of his progress for there was no report back to the bush, but within two years Orwin John Arnett, geologist with a background in chemistry had joined us in Kadola Concession to build and operate a bush lab to analyse for copper.

We were full of enthusiasm in 1954; the chemicals and a torsion balance arrived and stainless-steel sinks designated for a new house at the Roan Antelope were requisitioned. The whole construction was covered by a tarpaulin and surrounded with thatch to waist height to keep the snakes out. Of course, it was a disaster; there was no fridge, the dithizone organic reagent oxidised to a uniform pink and we were not aware of the vagaries of benzene contaminated by water, or of chloroform that contained zinc. The Mine wished to complete the new house and where were the sinks? Naughty boys; it was a washout.

A laboratory to service the prospecting teams was built at Kalulushi, close to Chibaluma Mine by 1956, but the method used was based upon paper chromatography, so that copper and cobalt were determined simultaneously, and several samples were tested using a single sheet. The method was imprecise, subject to humidity, but remained in use until at least 1963.

Thirty years later, a visiting geologist with an interest in Zambian copper and the Kadola Concession brought a geochemical map to the office that illustrated a whole series of medium contrast copper anomalies. The entire exploration had been done all over again. Each of the anomalies, he said, had been investigated and revealed sparse disseminations of copper-sulphide at intervals, all of the way around the margin of the Kadola basin! I thought of an anxious few minutes trapped in a cross-cut at 12 m beneath the surface, the hard hat jammed on the roof, my chin on the floor, my hips held tight by a quartz vein, and the carbide lamp needed water; I thought of Paddy Hayes and the others long before. There certainly was a benefit in technology, but then you needed John Webb and his team to open the gates of progress.

## **Geology of the Chewore Inliers, Zimbabwe: Constraining the Mesoproterozoic to Palaeozoic Evolution of the Zambezi Belt**

*Ben Goscombe, R. Armstrong<sup>1</sup> and J.M. Barton<sup>2</sup>*

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*(2) Geology Dept. Rand Afrikaans University, P.O. Box 524, Auckland Park, 2006, Republic of South Africa*

Structural, metamorphic and geochronological studies of the Chewore Inliers of the Zambezi Belt within the Karoo-age Zambezi Rift allow recognition of a protracted multi-stage evolution from the Mesoproterozoic to culmination in the early Palaeozoic Pan-African Orogeny. Tectono-metamorphic events recognised in the Chewore Inliers occur throughout the Zambezi Belt and alternative models for the history of the Zambezi Belt are presented. Four terranes are recognised in the Chewore Inliers, and contacts between them are observed or inferred to be ductile thrusts, along which juxtaposition of the terranes occurred late in the Pan-African metamorphic cycle (M2, at 526 Ma). The oldest portion of the inliers is a metamorphosed sequence of mafic and ultramafic gneisses with an age of 1393 Ma (Johnson *et al.*, 1996). These constitute what is tentatively called the Ophiolite Terrane, which is closely associated with high-P/moderate-T schists and, together with this terrane possibly represents a suture. The other three terranes (Granulite, Zambezi and Quartzite terranes) experienced a common history of tectonothermal events but show variable degrees of reworking during the latest tectono-metamorphic event (M2). Concordant granitic orthogneisses were emplaced at 1087 Ma into supracrustal sequences. No Pan-African supracrustals are recognised in the Chewore Inliers, which are wholly basement gneisses and quartzites that have been reworked during successive orogenies including the Pan-African Orogeny.

A high-T/low-P metamorphic event (M1), of possibly 1068-1071 Ma, with a minimum age of 943 Ma, was responsible for totally recrystallizing the Granulite Terrane during south to north tectonic transport. M1 mineral parageneses are only preserved as inclusion phases and overgrown fabrics in the other terranes. These other terranes were pervasively recrystallized at high-P/moderate-T conditions accompanying a clockwise P-T path related to NE over SW tectonic transport and crustal over-thickening during the Pan-African metamorphic cycle (M2) at approximately 526 Ma. Reworking of the Granulite Terrane during M2 was minor, leaving M1 fabrics and mineral assemblages preserved with little recrystallization. M2 orogenesis culminated in the juxtaposition of the terranes, rapid uplift through the thermal peak and eventual slow cooling accompanying a multitude of post-tectonic intrusions; pegmatites at 480 Ma, the Chewore Ultramafic Complex and dolerite dykes. The 830 Ma tectonothermal event involving



pervasive syn-tectonic granitic orthogneisses in the south Zambezi Belt is not recognised in the Chewore Inliers, suggesting a localized, possibly extensional, regime restricted to the southern part of the Zambezi Belt at 830 Ma.

*Journal of African Earth Science*, Volume 30(3), 2000

## **Discovery of a Densely Packed “*Syntarsus rhodesiensis*” Bone Bed from the Late Triassic-Early Jurassic Forest Sandstone, Mana Pools Basin, Zimbabwe**

*Eric M Roberts*<sup>1</sup>, *Kudzanayi Mgodl*<sup>1</sup>, *Tim J Broderick*<sup>2</sup>, *Adam M Yates*<sup>3</sup>, *Patrick M O’Connor*<sup>1</sup>

(1) School of Geosciences, University of the Witwatersrand, Johannesburg, South Africa; (2) 19 Jenkinson Rd, Chisipite, Harare, Zimbabwe; (3) Department of Biomedical Sciences, Ohio University, Athens, Ohio, USA

In 2006, following extensive flooding in Mozambique and Zimbabwe, a spectacular new cliff-face exposure of hundreds of delicate “*Syntarsus rhodesiensis*” (*Megapnosaurus rhodesiensis*; *Coelophysus rhodesiensis*) bones was discovered in the Forest Sandstone along the Chitake River in Mana Pools National Park, Zimbabwe. A preliminary expedition was conducted to recover the most exposed portion of the bone bed and stabilize the rest. Careful mapping of the bone bed suggests a close stratigraphic and spatial association with Dr Mike Raath’s 1972 *Syntarsus* bone bed in the Chitake River, which yielded 26 associated to partially articulated individuals. Observations by Dr Raath over the last 30 years demonstrate that the original bone bed was completely devoid of bone by the 1980’s and that extensive erosion has occurred since then. We interpret the new *Syntarsus* bone bed to be a discrete extension to the 1972 bone bed, indicating that the bone bed accumulation is much larger than originally thought, and with many more individuals. Initial preparation of the new material demonstrates many similarities with the 1972 bone bed, including densely packed, mono-specific concentrations of exquisitely preserved, partially articulated to disarticulated bones from all portions of the skeleton, all exposed along a single 20 cm thick layer of fine grained sandstone. The most important finding in the new excavation is the first articulated neck and skull of a specimen of *Syntarus*, along with other strings of articulated cervical vertebrae and isolated cranial material. The articulated skull material is significant because it may finally help resolve the taxonomic affinity of “*Syntarus rhodesiensis*” and its relationship to *Coelophysus*. Concurrent with ongoing study of the new *Syntarus* material, are a re-examination of the original material and taphonomic and sedimentological investigation of the site. Synthesizing data from the new and original bone beds, coupled with improving age control and depositional environments for the Forest Sandstone will permit a better understanding of the relationships between extensive coelophysid mass mortality concentrations in Africa and North America.

Abstract to the Annual meeting of Vertebrate Paleontology, USA, 2008

### **Stop Press**

*This morning (12<sup>th</sup> May) we exposed a skull in the back of the large block. It is articulated to one of the sets of vertebrae. This is very exciting news. Just a little has been exposed so far, but we can see the braincase and the top of the eye sockets. We will try to get the entire block CT-scanned before we go much further. To add more excitement to the find, it looks like there is also a much larger sized animal in the block as there is a limb bone protruding out of the eye socket, and it belongs to a different type of animal. Eric*

## Chairman's Report 2007

### Introduction

Ladies and Gentlemen. I would like to welcome you all to this year's Geological Society of Zimbabwe Annual General Meeting. I extend a special welcome to our guests of honour, the Dean of Science Dr Teddy Zengeni, Dr and Mrs Francis Podmore, Professor Keith Viewing and representatives of the Mining Industry here present.

The year has been a very difficult one for both the mining industry and institutions of higher learning in Zimbabwe, as both suffered from the exodus of geologists, other professionals and lecturers to the region and abroad. The committee was not spared as it lost one of its members to South Africa. However, our Society continues to enjoy overwhelming support from its members and from the mining industry itself.

### The 2007 Committee

Our committee members are Gayle Hanssen (Honorary Secretary), Collins Mwatahwa (Vice-Chairman and Treasurer), Tim Broderick/Nykadzino Matura (Newsletter), Andrew du Toit (Summer School), Oswald Gwavava (Website), Forbes Mugumbate/Bornwell Mupaya (ZGS Representatives), Hillary Gumbo (Trips and Talks) and Richard Manyanga.

A total of nine committee meetings were held with member's attendance recorded as follows: H. Gumbo – 6/9; G. Hanssen – 7/9; C. Mwatahwa – 9/9; K. Musiwa – 9/9; T. Broderick – 8/9; N. Matura – 2/9; A du Toit – 6/9; B. Mupaya – 5/9; F. Mugumbate – 5/9; O. Gwavava – 3/9; and R. Manyanga – 1/9.

I thank you for your commitment, and well done.

### Membership

Paid-up membership stands at 101 (90 ordinary and 11 foreign members); 11 Institutional; and 12 honorary members.

Our Institutional members are:

*African Consolidated Resources Plc*  
*Anglo American Corporation Zimbabwe Limited*  
*Pan African Mining (Private) Limited*  
*Metallon*  
*Rockover Resources (Private) Limited (Canister)*  
*Samrec Vermiculite Zimbabwe (Private) Limited*  
*SRK Consulting Zimbabwe (Private) Limited*  
*Ultimate Mining and Exploration*  
*The University of Zimbabwe, Geology Department*  
*Zimbabwe Alloys Limited*  
*Zimbabwe Platinum Mines Limited*

### Affiliated Organizations

#### The Menell Society

Menell Society representatives Managed to attend one committee meeting during 2007.

### **The Zimbabwe School of Mines**

N. Matura and L. Manda represented the Society on the Zimbabwe School of Mines' Board of Management and Academic Board respectively. A. Mashingaidze now represents the Society on the ZSM Board of Management following Matura's resignation.

### **The South African and Namibian Branches**

No feedback was received from the GSZ Branches that were set up in the region, where most of our membership has relocated. There has been communication received from Zambia, but no information with regards the possible formation of a branch has come through.

### **Society Activities**

There was generally good attendance for our talks and at the Summer Symposium.

#### **Talks**

A total of six talks, including the Summer Symposium, were presented as follows:

1<sup>st</sup> June 2007 – Professor David Kreamer, University of Las Vegas, USA.

#### **Groundwater Pollution, Flow Modelling and Case Studies**

15<sup>th</sup> June 2007 – Ann Kritzinger

#### **Gold not Grain – Harvest of the Nyanga Terraces**

17<sup>th</sup> August 2007 – Dr Ali Ait-Kaci

#### **Exploration for Copper around the Dikilushi Mine, DRC**

18<sup>th</sup> September 2007 – Dr Eric Roberts, Wits University, South Africa

#### **Late Mesozoic and Early Tertiary Sedimentary, Tectonic and Faunal Evolution of the Rukwa Rift Basin, Tanzania**

30<sup>th</sup> November 2007 – **The Summer Symposium**

5<sup>th</sup> December 2007 – Professor Allan Wilson, Wits University, South Africa

#### **The White Mfolozi Inlier of the 3.0 Ga Pongola Supergroup in South Africa: A Unique Window into Archaean Volcanism**

### **Field Trips**

During the year there was a single trip to see the pit structures and terraces in the Nyanga area, which was a follow-up on the talk presented by Ann Kritzinger. The trip took place over the weekend of 1<sup>st</sup> and 2<sup>nd</sup> September 2007.

### **Sub-Committee Activities**

#### **The UZ Lecture Fund**

Since the last AGM the staffing situation in the Geology Department has become worse, with only one permanent academic member of staff being left in place. One staff member is on sabbatical leave in South Africa. The Department did not accept a first-year intake in 2007. The third years were not taught during the first semester while second-year students received some lectures. There were no field trips undertaken during 2007, essential in both the second and third years of study.

Zimplats sponsored 14 billion Zimbabwe Dollars and Canister Resources donated 2400 litres of diesel, the requirement to make the field trips possible. Concerned geologists from the region donated 180 United States Dollars towards the Geology Fund. The Geological Society would like to thank the Mining Industry for its support. We as a society will continue making an effort to prevent the Geology Department from realizing total collapse.

**The Rand Fund**

Two Honours Degree students applied for sponsorship from the Society for their studies, but they managed to secure sufficient funding from alternative sources. No payout was made by the Rand Committee during 2007.

**The A.E. Phaup Award (T. Broderick and F. Mugumbate)**

The 2007 award will be presented tonight, thanks to the hard work of the sub-committee. (The citation appears below).

**The Mike Vinyu Award**

This award, given to the best final year student at the School of Mines in Bulawayo, will be presented to **Mr Daniel Chamunorwa** this evening.

**The Geoffrey Bond Award**

The Bond Award will be deferred to a suitable general meeting in 2008 as student results are yet to be published.

**The Newsletter (Tim Broderick)**

Three newsletters were published and e-mailed to members during the tenure of the 2007 Committee. These were dated June and September 2007 and February 2008. They were all quality publications containing topical articles. Special thanks are extended for Tim's hard work and professionalism as the sole editor for all three editions.

**Website**

The website, <http://www.uz.ac.zw/science/geology/gsz> has been updated, but there is a lot of room for improvement.

**Finances**

The Vice-Chairman and Treasurer, Collins Mwatahwa, will present the financial report for 2007. We thank him for the sterling job he has performed in looking after our finances so meticulously. Special thanks must go to the accountant from Anglo American who verified the accounts being presented today. (A copy of the financial statements read by Collins can be obtained on request. Ed.)

**Closing Remarks**

I would like to take this opportunity to thank the out-going committee for a job well-done, and more importantly thanks are due to our membership and the Mining Industry without whose support we would not have achieved anything.

I thank you – *Kudzi Musiwa* – 29<sup>th</sup> February, 2008

*Dr Francis Podmore later presented a tremendously well-researched and received geological extravaganza on "A Journey into Space". He also delivered the citation inducting **Dr Teddy Zengeni** as an Honorary Member of the Geological Society of Zimbabwe.*

## Citation for the A.E. Phaup Award for 2007

It is with great pleasure that I (Forbes Mugumbate) present the citation for the paper that has been selected for the 2007 Phaup Award. Your subcommittee comprising, Tim Broderick and myself, considered three well-researched papers for the award. These are:

**Buchholz, P., Oberthur, T., Luders, V. and Wilkinson, J. 2007.** Multistage Au-As-Sb mineralization and crustal scale fluid evolution in the Kwekwe District, Midlands Greenstone Belt, Zimbabwe; a combined geochemical, mineralogical, stable isotope and fluid inclusion study. *Economic Geology*, **102**, pp. 347-378.

**Prendergast, M.D. and Wingate M.T.D., 2007.** Zircon geochronology and partial re-interpretation of the late Archaean Mashaba Igneous Complex, south-central Zimbabwe. *South African Journal of Geology*, **110**, pp. 585-596.

**Romer, W. 2007.** Differential weathering and erosion in an inselberg landscape in southern Zimbabwe: A morphometric study and some notes on factors influencing the long-term development of inselbergs. *Geomorphology* **86**, pp. 349-368.

It is quite disheartening that we were only able to identify three papers for the year 2007. This suggests a waning interest by researchers in Zimbabwe's geology, which for many years has been a paradise for earth scientists from all over the world. We therefore take this occasion to acknowledge the authors of these three papers for continuing to show interest in our geology. The dearth of research is of course related to the general political and economic challenges the country is going through.

The fact that there were only three papers does not, however, in any way suggest inferior quality. In fact the opposite is true. The three papers are of the highest quality and it was no easy task to come up with a winner.

After thorough assessment of the papers, the committee selected the one by Prendergast and Wingate as making the most significant contribution to the advance of Zimbabwe geology. The two authors are not new to Zimbabwe. Dr Prendergast's enthusiasm in researching on the geology of Zimbabwe is evidenced by the number and quality of his papers published in international journals. Dr Wingate is a geochronologist who has written papers on the geochronology of the Great Dyke and the Umkondo Dolerite sills. We appreciate Dr Wingate's growing interest in the unravelling of our geological problems.

The paper, which resulted from comprehensive work including field mapping, diamond drilling and laboratory analyses, is a great piece of science that does not only have wider implications to the local and regional understanding of geology, but also has global connotations. A striking feature of the paper is the presentation of detailed information that is easy to comprehend.

The paper draws attention to some of the following ideas:

- Through geological mapping, diamond drilling and petrographic analysis, the complex structure of the Mashaba Igneous Complex, that has huge economic significance, has been elucidated.
- The results of this study enhance the country's data base on absolute ages for geological events and helps to improve our understanding of the lithostratigraphy. As a result of the

complex structure and antiquity of the rocks in the Zimbabwe Craton, the construction of the lithostratigraphy of Zimbabwe has not been easy. However, with advent of absolute age dating techniques such as the SHRIMP method, stratigraphic understanding in Zimbabwe is gradually being improved. It is for this reason that the geochronological data obtained for the Mashaba Igneous Complex is invaluable.

- The dating confirms the comagmatic origin of the Mashaba Complex and komatiites in the Mashaba and Masvingo greenstone belts. This has important regional and global implications. These results perpetuate the controversial debate on the evolution of the early crust, especially greenstone belt terrains; horizontal accretion of oceanic crust remnants versus vertical tectonics in continental settings. The results of this paper favour the ensialic evolution of greenstone belts, at least in this part of the Zimbabwe Craton.
- Like Dr Prendergast's previous contribution that won the 2004 Phaup Award, this paper also invokes the idea of correlating the Belingwe-type lithostratigraphy throughout the Craton. This does not only have important implications for the evolution of the early earth, but also with respect to economic geology.

The subcommittee concluded that as a result of quality and detail of information, as well as the far-reaching implications, that Prendergast and Wingate's paper deserves the A.E Phaup Award for 2007.

*Forbes Mugumbate and Tim Broderick, February 2008*

### **Citation for Dr Teddy Godfrey Zengeni for Honorary Life Membership of the Geological Society of Zimbabwe**

*Prepared by Dr O. Gwavava and read by Dr F. Podmore  
29 February 2008*

It gives me great pleasure and honour to present to you for Honorary Life Membership of the Geological Society of Zimbabwe, Dr Teddy Godfrey Zengeni BSc Honours (London) 1964, MSc (Stanford) 1968, PhD (Stanford) 1970. Dr Zengeni was born on the 3<sup>rd</sup> April 1942 in the Inyanga District. He attended two secondary schools: St Augustines, obtaining his O-level certificate in 1959 and Goromonzi High School where he obtained the A-level certificate in 1961. He then enrolled at the University College of Rhodesia and Nyasaland (UCRN) in March 1962 for the BSc degree taking Physics, Mathematics and Chemistry in the first year and proceeded with Physics and Mathematics up to third year to graduate with a BSc Honours Second Class Upper Division in 1964. In his first year, Teddy, was awarded a Faculty of Science Prize and the Kitwe Round Table Prize for Mathematics. He again scooped a Faculty of Science Prize at second year.

The young Teddy, undoubtedly full of both excellent theoretical ability and potential, set his mind on acquiring a higher degree in the Earth Sciences. He was admitted in the Geophysics Department at Stanford University, USA, in 1965. He successfully completed the MSc in Geophysics in 1967 when his research project was on "Magnetohydrodynamic Waves Generated by High Altitude Nuclear Explosions". He subsequently enrolled for PhD studies in seismology and the Earth's interior. Teddy's PhD dissertation was "KKP and the Fine Structure of the Earth's Core": he graduated in early 1970.

Dr Zengeni had a keen interest to work at home and upon completion of his PhD he got an assistant lectureship position in the Physics Department at UCRN (now University of Zimbabwe) in June 1970. On his return home to take up the post, his passport was “taken from him” by immigration authorities, presumably on the grounds that “he was an undesirable element”: it was later returned after intervention from the university. He has worked at UZ from 1970 up to now, being promoted to Senior Lecturer in 1980. He was appointed head/chairman of Physics from 1981 to 1989 and Dean of Science in 2001, a post he continues to hold.

Dr Zengeni has made significant contributions to the understanding of Zimbabwe geology through several collaborative geophysical surveys throughout this period. These include pioneering geophysical research applying gravity survey in the search for chrome ore in the Shurugwi area; electrical deep sounding using the Cabora Bassa power lines to South Africa to investigate the eastern and southern parts of Zimbabwe in collaboration with geo-scientists from South Africa (CSIR), Germany (BFB) and Mozambique; seismic refraction investigations to map the crustal structure of the Limpopo Belt; and magnetotelluric research in the Mana Pools and Lower Zambezi basins. Some of this research has led to DPhil studies which he supervised or became involved such as the study by J. Gore on “Structure of the crust and uppermost mantle of the Zimbabwe Craton and the Limpopo Belt from teleseismic receiver functions and surface wave analyses” and the DPhil work by O. Gwavava on “A regional gravity study of the Limpopo Belt and mechanisms of isostatic compensation in the region”. Dr Zengeni is currently in charge of deploying seismic stations along Lake Kariba on both the Zimbabwean and Zambian shores and in monitoring the seismicity of the area. He is part of the Africa Array project team, which has deployed seismic stations in South Africa, Botswana, Namibia, Zimbabwe, Zambia, Mozambique, Tanzania, the Congo, Cameroon and Kenya.

Dr Zengeni has made significant contributions to both the geophysical and geological communities and continues to do so. Hence the geological community in Zimbabwe has seen it fit to recognise him by making him an Honorary Member of the Geological Society of Zimbabwe this evening.

## News



### Geology Department, University of Zimbabwe

*Leo Passaportis*

The news from the department is still much the same in that resources are stretched and there is still much required of us. The department started teaching 3<sup>rd</sup> years before the official opening of the university in February since almost none of their scheduled courses had been taught the previous semester. Even with that head-start it is almost certain that there will still be outstanding coursework come the official end of term in less than a month's time and it is unlikely that they will be eligible to graduate. This is a great shame as 6 of the registered 15 students are already in their fourth year of undergraduate study and one is in his sixth year. Why is this the case?

The principal reason is understaffing. The department is down to two permanent members of academic staff, Mrs M. Mabvira and Dr D. Shoko. Likewise, on the non-academic side there are

only two technicians, Mr D. Maguze (the Chief-tech) and Mr Farai Zihanzu. The librarian, Mr P. Sena and departmental secretary, Mrs G. Chipari, are also employed in the department.

Thus on the teaching side there is a heavy reliance on part-time lecturers who have stepped forward to offer their services. The pay is poor, currently well less than \$US1/hr when only a maximum of 50 hours is claimable in a month, which is less than realistic for larger courses that involve preparation time, teaching, marking and practical work. The amount is revised periodically by the powers-that-be, but if the past is anything to go by it is never competitive when compared to the corporate and industrial environments, the revisions being too infrequent to withstand the ravages of inflation.

As a result there is not much to attract part-time lecturers and those who have “chipped in” have generally been closely connected to the department in the recent past and are trying to do their part out of concern for the students and not for any monetary gain. Thanks should be extended to Mr Gracious Chinoda, Mr. William Moyce and Miss Keretia Danda, all graduates from the department, who have stepped forward to assist this semester despite other commitments. Besides two other part-time lecturers (Mr Gilbert Jemwa and Mr Leo Passaportis) there have been no others. For the third-years only the Metamorphic Petrology component (GL309) still remains to be taught (51 official teaching hours) as well as several components of the multiple-component course GL317 (c.75 official teaching hours). Only the Metamorphic Petrology component of GL214 remains to be taught to the 2<sup>nd</sup> years.

The severity of the current situation is also highlighted by the fact that there has not been a 1<sup>st</sup> year intake this academic year due to the chronic under-staffing. However, the department hopes to enrol some first years, even if it be a handful, for the upcoming semester. But, unless the root cause of the problem i.e. lack of lecturers is addressed, then the difficulties in maintaining a flow of students from intake to graduation will persist. So what can be done?

The department realises that these are difficult times and few people can afford to teach for teaching's sake and expect nothing more. We implore those who benefit through employing our graduates to please step forward and sponsor a course. A list of the outstanding courses is tabulated and available on request. Please look especially at what is outstanding and if you or your company/institution feel that you would like to assist please contact the department directly or contact one of the representatives from the GSZ who sits on the Geology Lecture Fund sub-committee, set up for this purpose (see table below).

The other major outstanding task for the department this semester is the organisation and implementation of the 2<sup>nd</sup> and 3<sup>rd</sup> year field-trips. The department has received assistance from the mining industry in the past in the form of funds for items required during the time spent in the field (food etc) as well as fuel coupons. There are still funds and fuel remaining and the department believes it is in a position to carry out the respective trips. However, there are two areas of concern:

Firstly, our stock of field-work materials, especially geological hammers and compasses has been depleted over the years and are needed. The stock-standard compass for the undergraduate geologist has been the Silva compass. It is a relatively simple and durable instrument that is easy to use and understand.

Secondly, the department's vehicle fleet is a little “ragged”. On paper the department possesses a more than adequate number of mini-buses and 4x4 vehicles, but the reality is that critical parts are missing on a number of them. The vehicles are the property of the University and whilst it provides personnel for servicing vehicles, the UZ relies on departments to source spares and



replacements at their own expense. We require the use of two mini-buses and ideally three of our land cruisers for the upcoming field trips. The respective requirements for these vehicles are tabulated and details are available on request.

As regards the state of the departmental building and its facilities there are a few critical items of equipment that are lacking, non-functional or inadequate. Foremost of these is a photocopier. We possess three machines of various ages (but none new) and the cost to repair them is beyond our means (US\$700 – 900). A replacement machine would be ideal but failing that, repairing one or two of the existing machines would help greatly. Several quotations are tabulated and available as re-worked USD schedules at the market rate of the time.

The other facility that needs to be addressed seriously is the computer laboratory for 2<sup>nd</sup> and 3<sup>rd</sup> year students. The purpose in having a decent computer laboratory is two-fold. Firstly, it gives the students the opportunity to research material on the university internet including the library, and the World Wide Web, as well as facilitating the typing and preparation of assignments. Secondly, it is to be used for teaching purposes. Courses such as the Remote Sensing component of GL317 by necessity require the use of computers and suitable software. It would be advantageous if the department could introduce more computer-related coursework and modules into its undergraduate curricula.

So how is the department trying to help itself beyond appealing for assistance to the broader geology community? The two principal means of generating income are through provision of laboratory services (thin-section preparation, heavy mineral separation and wet chemistry analyses by AA) on a semi-commercial basis and the hire of functional vehicles staff driven vehicles. This has gone some way to alleviating the situation, but a cursory glance at an income-expenditure balance sheet for the year to date shows that the department has made a net loss of some Z\$200 billion. This calculation excludes the vote allocation to the department from the faculty since it is supposedly under review, although the last figure stood at only Z\$82 billion for all categories (CSSP, entertainment, travel, maintenance, protective clothing and teaching equipment).

There are two main means of facilitating material or financial contributions to the department: either through the GSZ or via the Mineral Resources Centre, which is situated within the department and whose accounts facilitate in its operation. It is directed by Dr Richard Owen, a Research Fellow within the department and also counts the bursar and VC on its board of trustees. All contributions will be acknowledged unless the donor stipulates otherwise.

It is at this juncture, more than at any other time, that the fate of the department will be decided. Without an intake of new students we will cease to produce graduates and the industry will have to look beyond our borders for qualified and suitably trained geologists. Although it is unrealistic to expect the department to return to its former strength and status under the prevailing socio-economic climate, with some assistance it could continue to fulfil its core responsibility of providing teaching and instruction of students to a level suitable for entry into the industry.

**Contact details:**

| Name                | Position               | Other          | Email  | Cell        |
|---------------------|------------------------|----------------|--|-------------|
| Mr L. Passaportis   | Part-time lecturer, DG | GSZ Liason     | <a href="mailto:rock_pick2@yahoo.co.uk">rock_pick2@yahoo.co.uk</a>           | 091 2326168 |
| Mrs L. Mabvira      | Lecturer               | Acting Chair   | <a href="mailto:mabvira@science.uz.ac.zw">mabvira@science.uz.ac.zw</a>       | 091 2906612 |
| Mr D. Maguze        | Chief Technician       |                | <a href="mailto:dmaguze@science.uz.ac.zw">dmaguze@science.uz.ac.zw</a>       | 011 639792  |
| Mrs G. Chipari      | Secretary, DG          |                | <a href="mailto:gchipari@science.uz.ac.zw">gchipari@science.uz.ac.zw</a>     | 091 2950681 |
| Ms N. Musundire     | Secretary, MRC         |                | <a href="mailto:nmusundire@science.uz.ac.zw">nmusundire@science.uz.ac.zw</a> | 011 436649  |
| Mr. C. Mwatahwa     | Chairman, GSZ          | Anglo-American | <a href="mailto:cmwatahwa@unki.co.zw">cmwatahwa@unki.co.zw</a>               | 091 239567  |
| Mr. H. Gumbo        | GLF subcommittee       |                | <a href="mailto:hgumbo@mweb.co.zw">hgumbo@mweb.co.zw</a>                     | 091 2566912 |
| Mr. K. Musiwa       | GLF subcommittee       | Mining, UZ     | <a href="mailto:kudzje@eng.uz.ac.zw">kudzje@eng.uz.ac.zw</a>                 | 091 2948915 |
| DG Direct line/Fax: | 263-4-303557           |                |  |             |

**Note:** DG – Department of Geology; MRC – Mineral Resources Centre; GLF – Geology Lecture Fund

## News Flash and Appeal – Geology Department

The Department of Geology is looking to conduct its 3<sup>rd</sup> year fieldtrip after the close of term on the 18<sup>th</sup> July (and before mid-August). It is intended that we go to the Belingwe Greenstone Belt as has become customary and conduct mine visits and fieldwork over 2 weeks or so.

The group was to have been led by Mr G. Chinoda, who did his Honours fieldwork in the area some years back and who knows the area fairly well. He is unfortunately indisposed over the period in question, although it is hoped that he will be available for a reconnaissance trip at the beginning of July.

If there is anyone who could assist in either the reccy or the actual fieldtrip please step forward. All food and travel expenses will be paid and there will be some remuneration at the end of the trip. A proposed itinerary is included below.

We are desperately in need of some assistance in buying several geological hammers and compasses for the fieldwork. Our usual suppliers from days gone (Perry and sons) no longer provide these items, so they will have to be sourced elsewhere. The donation or loan of a few GPS units (the old *Garmin eTrek*s are ideal) for the duration of the work would also be appreciated.

Regards,  
*Geology*

### Proposed Itinerary for the Part III Field Trip 2008

Day 1: Leave the Geology Department at 0800 hours, seeing stops on the way, mainly along the Great Dyke:  
 Stop (i) Falcon Mine (environmental study - gold)  
 Stop (ii) Midlands Greenstone Belt at Boterekwa  
 Stop (iii) Ultramafic sequence and tributary medium-scale chrome mining, trench mapping, south of Shurugwi (Madhatter)  
 Camp at Mushandike.

- Day 2: Asbestos Mining  
Activity (i) Underground mapping at Mashava Mine  
Activity (ii) Grade control at Mashava Mine  
Activity (iii) King Mine (environmental study - asbestos)  
Camp at Mushandike
- Day 3: Zvishavane Area  
Stop (i) Basement Gneiss at Mushandike Dam  
Stop (ii) The Basement Gneiss along Tokwe River.  
Stop (iii) East Dyke along the main road.  
Stop (iv) The Shabani Ultramafic Complex near Shabanie Mine.  
Stop (v) National Monument Basement Unconformity Exposure  
Camp at Zvishavane
- Day 4: Gold Mining  
Activity (i) Underground mapping at Sabi Mine  
Activity (ii) Core-logging at Sabi Mine  
Activity (iii) Grade control at Sabi Mine  
Camp at Zvishavane
- Day 5: Mimosa Mine (platinum)  
Activity (i) Underground mapping  
Activity (ii) Core-logging  
Activity (iii) Visit outcrops of mafic sequence & MSZ near Mimosa Mine  
Camp at Zvishavane
- Day 6: Traverse across Belingwe Greenstone Belt (Upper Greenstones)  
Stop (i) Reliance Formation  
Stop (ii) Zeederbergs Formation  
Stop (iii) Cheshire Formation  
Stop (iv) Contact between Upper and Lower Bulawayan Groups  
Camp at Zvishavane
- Days 7 - 10: Main Mapping Exercise in the Belingwe Greenstone Belt near Bend Mine.  
Camp at Zvishavane
- Day 11: Drive back to Harare

**Expected Benefits:**

The main benefits to the students shall include:

1. Training in underground mapping in three very different mining environments (and minerals/commodities);
2. Activities at mining sites of gold, chrome, platinum and asbestos, including large-, medium- and small-scale – these include some activities on grade control and core logging;
3. Environmental studies at gold and asbestos mines;
4. Mapping and exposure to the full sequences of the Great Dyke, classic Zimbabwean greenstone sequence (Belingwe Greenstone Belt) and basement gneisses;
5. Detailed lithological and structural mapping in a complex Archaean terrain; and
6. Almost two weeks of fieldwork with continuous on-the-job training in appropriate field methodology, behaviour and standards.

**Outputs:**

Each student shall produce the following, which shall form the basis for their assessment:

1. Drive-maps from each of three different underground mapping exercises (asbestos, gold, platinum);
2. Map from one surface trench mapping exercise (chrome);
3. Reports on two different grade-control activities (asbestos, gold);
4. Reports on two different core-logging exercises (gold, platinum);
5. Environmental evaluations on two different sites (asbestos, gold);
6. Detailed lithological and structural map of the Bend area with accompanying illustrated report and cross-section; and
7. Field notebook with records to support the above.

The following collective reports shall also be produced, edited by the Department and submitted to the Chamber of Mines:

1. Technical report, containing detail of activities undertaken, progress made, outputs delivered, a summary of the main findings from each activity (excluding privileged information) and lessons learned; and
2. Financial report.

Specific collective reports shall also be presented to management of the participating mines.

## *Mennell Society Notes*

The Mennell Geological Society has been successfully restructured, an exercise that has ushered in a vibrant new committee that has been running Society affairs. A number of successful activities include a visit to Arcturus Mine in November 2007. This trip helped to give geology students a practical insight into the work of a mine geologist. It also helped to stimulate interest in the scope of work students face in their chosen field. The restructuring of the Society has also increased cohesion among its Members, as was seen by our notable participation in the December Summer Symposium.

This year several activities have been planned and these include field trips to mines and to other areas of geological interest.

On issues such as lectures and field trips, the Mennell Society, on behalf of all geology students, would like to thank the Geological Society of Zimbabwe for the effort it has made in securing funds for the two Part 3 field trips. We would also like to thank the Geological Society for its efforts in securing financial and technical support for the Geology Department.

We would also like to appeal to the geological fraternity for assistance in obtaining fuel to enable our planned trips and to ensure their success. In assisting us, you will have played a part in our grooming as future geologists, as the more we as young geologists know, the more useful we can be to you, our prospective employers during the difficult times that we all face. We also seek more integration with our mother body so that we may become more involved in their geological activities, such as the annual Summer Symposium as these are activities that help us to keep abreast with current geological trends.

The Mennell Society would like to thank Mr F Magomo, the Arcturus mine geologist, and Mr T Kandemiri of Arcturus Mine, as well as Mr W Moyce who donated fuel to ensure the success of

our visit to Arcturus Mine. In addition we acknowledge all those people who donated cash to our Society, as this generosity has helped in making our projects successful, as well as the day to day running of the Society.

We would also like to acknowledge the dedication shown by the permanent staff in the Geology Department, particularly Mrs M Meck for holding the fort and thereby saving the Department from virtual collapse. In addition all the part time staff are thanked, including Mr L Passaportis, Mr S Jemwa, Mr S Chinoda and Dr Drallo for sacrificing their hard-earned savings and their valuable time to ensure that we complete our studies. The technical staff have also been very supportive of our activities as a Society and have played their part in enabling the survival of the Department.

*T C Chidakwa*

Chairman, Mennell Geological Society

## Geological Survey Department



**ZIMBABWE**

*F.B. Mupaya*

Work continued on an average note at the Geological Survey where currently this is tantamount to a care and maintenance operation as only two senior geologists are in position.

The Director attended the African Mining Partnership meeting and the Indaba in Cape Town where progress on several current projects was discussed:

1. Mineral beneficiation led by South Africa
2. Small-scale mining led by Nigeria, Ethiopia and Mali.
3. Environmental/ Sustainable development led by South Africa.
4. Promoting foreign investment and indigenous/ local participation in mining ventures led by Senegal and South Africa.
5. Zimbabwe is still to embark on a joint sub-project relating to the beneficiation of platinum and jewellery manufacturing.

Two geologists recruited last year have been busy evaluating pegmatites in the Mutare District and gold deposits in the Makonde District for small-scale miners. The geologists assessed a "gold rush" site at Chinyika Farm east of Arcturus Mine. Locals panned eluvials at the foot of a granodiorite intrusion truncated by the Chinyika Shear Zone. It would seem, therefore, that there

could be other potential sites for gold mineralization eastwards along this shear zone as to the west are the existing Arcturus, Venus and Ceylon mines.

A Mineral Resources Series publication on Copper in Zimbabwe is being compiled with special emphasis being put on deposit types and their age distribution. Interestingly, with the firming of copper prices on the international market and the widespread distribution of copper deposits of varying type in the country, the industry is quiet with respect to copper exploration.

It is hoped that funds will become available to publish some more bulletins this year.

No exploration licenses have been granted for many years now. Only 5 Exclusive Prospecting Orders (EPOs) remain current, whilst 77 EPO applications, including Special Grants, were received by the Ministry. Only 15 of these applications have been noted by the Mining Affairs Board. Sadly, speculators now peg any vacant ground because much of the country is closed to prospecting due to these EPO applications. The result is that by the time licenses are granted, base metal claims that have not been prospected will be covering much of the country, thereby hindering exploration. Similarly, at a LUGAS meeting, where the new chairman Dr Utete has replaced Mr Ndudzo, concern was raised over the non-renewal of Special Grants for Coal Bed Methane.

## Mining Industry News

*Fadzanayi Bornwell Mupaya*

The 76<sup>th</sup> Prospector's and Developer's Association of Canada (PDAC) Annual International Convention, Trade Show and Investors Exchange held in March in Toronto drew many geoscientists and investors. Participants from Zimbabwe included the Director of the Zimbabwe Geological Survey, Mr M.T. Hawadi and Mrs K. Rugube, Finance Executive for the Minerals Marketing Corporation of Zimbabwe. There was a marked increase in the presence of companies interested in uranium exploration and investment following two decades without any investment in this mineral group.

It is pleasing to note that, despite the background of hyperinflation and high staff turnover, first-year student enrolment at the School of Mines doubled for 2008. The students include 24 Namibians and one from South Africa.

A new company called ZIMARI, a joint venture between the Zimbabwe Mining Development Corporation (ZMDC) and African Mining and Resource Investment (AMARI), has entered the Zimbabwe mining industry. It will focus on base metals, starting with nickel exploration.

The international mining industry is enjoying buoyant times with mineral prices having grown two to five-fold over the past five years, depending on the mineral commodity. However, in Zimbabwe economic hardships have not spared our mining industry, which is not participating as it should in the global boom. The gesture by the Reserve Bank of Zimbabwe in increasing the gold price to ZW\$5 billion per gram in recent weeks will bolster gold production in the **short term**. (*Ed's emphasis*).

**Since Bornwell wrote his piece, the Chamber of Mines' AGM has been held at Victoria Falls, David Murangari is the new President of the Chamber and the Zimbabwe Dollar has**

fallen into total chaos and is meaningless. Jack Murehwa, the outgoing President told *Mineweb* at the time of the AGM that, owing to the combined effects of foreign currency and raw material shortages as well as investor skepticism brought about by the government's controversial indigenisation legislation, gold production for the current year was projected to fall to around 4 tonnes. He said, "From our perspective, declining mineral production, especially gold, is largely because mines are either closing or curtailing production due to distorted local prices, power supply problems and the inability to purchase imported inputs". Murehwa also said that the government must expedite and resuscitate "exploration activities". "If we want mining investment in this country we need to have in place a legal framework that will persuade the investors to use their funds here rather than elsewhere".

## News about Zim Geoscientists

Gleaned from *Geoclips*, a publication of the Council for Geoscience, South Africa.

### December, 2007

**Peter Nyabeze** joined the CGS in September 2007 as a geophysicist in the Geophysics Unit of the CGS Head Office, Pretoria. He completed a BSc Honours degree in Geology in 1993, an MSc degree in Exploration Geophysics in 1995, and an MBA in 2007 at the University of Zimbabwe. He has worked in the mining industry for 12 years for companies such as Reunion Mining Limited, Cluff Mining Limited, MMCZ Management Services and RSG Global, focusing on mineral exploration and prospecting. He carried out mineral exploration in Zimbabwe and Mozambique using various geophysical and geological techniques. Peter was a member of teams that discovered and evaluated various mineral deposits in Zimbabwe, among others the Maligreen porphyry gold deposit, covered under about 5 metres of Kalahari Sand. In addition he has done exploration work for diamonds, industrial minerals, and base metals such as copper, nickel and chrome. He also has experience in negotiating joint ventures and smart partnerships in the mining industry.

### March 2008

**Dr Vunganai Midzi** joined the CGS on 1 September 2007 as a Seismologist. He commenced his seismology career after joining the Department of Meteorological Services, based at the Goetz Observatory in Bulawayo, Zimbabwe in August 1993. In 1995 he left the country for Melbourne, Australia to study for a postgraduate diploma in Meteorology at the Bureau of Meteorology, under the auspices of the World meteorology Organisation. After completing his diploma at the end of 1995, he returned to Zimbabwe where he worked for about six months before leaving for Bergen, Norway to study for his Masters and Doctoral degrees in Seismology. He completed his ScD degree in August 2000 and returned to Bulawayo. Dr Midzi worked in the Seismology Section of the Goetz Observatory for about one and a half years before leaving to join the Department of Applied Physics of the National University of Science and Technology in Bulawayo. He started a Masters degree programme in Geophysics together with colleagues of the department. He was involved with training and research at the university for the next five and a half years. By the time he left the university to join the CGS he had been promoted to a Senior Lecturer and was a member of the University Senate.

Please provide us with news about yourself or other geologists. We need to keep in touch with all of you out there. [cmwatahwa@unki.co.zw](mailto:cmwatahwa@unki.co.zw) or [makari@zol.co.zw](mailto:makari@zol.co.zw)

## Research Funding Opportunities



### GSZ Research and Development Fund

The objective of the Research and Development Fund is to give financial assistance for the development of earth science research and training in Zimbabwe. This financial assistance shall be in the form of annual Grants. Grants shall be made for activities over the course of up to one year. Those wishing to continue beyond one year must make subsequent and separate applications. The purpose of the Fund is to support:-

- Research projects on earth science topics of interest (Note that grants from the Fund will not be made to support projects which result in results that are not available to all members of the geological community in Zimbabwe);
- Scholarships for postgraduate study in earth sciences;
- Field trips and short courses for the training of Zimbabweans in earth sciences; and
- Travel to conferences to present earth science results.

In recommending the award of Grants, the following shall be considered:-

- The objective and purpose of the Fund;
- Potential benefits of the proposed activity to the geological and mining communities in Zimbabwe, in terms of development and/or the generation of new knowledge;
- The availability of matching funds, source or provided by the applicants; and
- The aim of awarding more than one Grant in a given year.

Grants made from the Fund shall be on condition that:-

- Results from the supported activity will be presented to the Society via a talk and an item or items in the Newsletter;
- Submission to the Fund Subcommittee of an annual report by 31 December of the year in which funding is granted; and
- Submission of a financial report to the Fund Subcommittee, with copies of receipts, by 31 December of the year in which funding is granted

All applicants for the award of Grants from the Fund shall be Members in good standing for the current membership year. Normally, the principal applicant should have been a member in good standing for at least twelve months.

Applicants for Grants should submit to the Research and Development Fund Subcommittee an application containing details of the applicants, summary of the activity, justification of the activity, proposed methodology, timeframe, budget for application and details of matching funds, if any. If you would like to apply for support, please contact the Research and Development Fund Subcommittee Secretary, Applications for this year should be made to the Chairman, Mr Collins Mwatahwa.



### SEG Timothy Nutt Memorial Fund

A fund in memory of Timothy Nutt has been established by the SEG Foundation at the request of his family and close friends. Tim was a prominent consulting economic geologist, a SEG Member and contributor to the Exploration Reviews pages of the SEG Newsletter. He worked extensively throughout Africa and had strong professional and emotional ties to the country of Zimbabwe. He was attacked and killed on April 12, 2003, while carrying out exploration work in Eritrea. He was 49.



In accordance with the wishes of Tim's widow, Jacquie, the fund is to provide financial support for students and young economic geologists located in Zimbabwe or in southern Africa with ties to Zimbabwe. The fund may be used to support travel to technical meetings, field trips, research grants, technical lectures, SEG student chapter activities or any other activities approved by the SEG Regional Vice President for Africa. SEG members resident in Zimbabwe will aid the Vice President in selecting recipients.

A message from Judith Kinnaird, Professor of Economic Geology at the University of the Witwatersrand, shows that the SEG has decided this year to award grants from the Tim Nutt fund to allow students to attend the international SEG-GSSA conference on Economic Geology in Johannesburg in July. Consequently no more funds are available for this year but will be available again in 2009.

## Society Activities

### Summer Symposium 2008

28th November 2008

Department of Geology, University of Zimbabwe

### Call for Papers

We are looking for 15-minute presentations on a broad range of subjects of interest to geologists

We are planning an interesting set of presentations on:-

- Advances in Mineral Exploration Techniques
- Developments in Reserve and Resource Classification
- Skills Situation and Challenges
- Latest fossil finds
- Environmental Management
- Topics of general interest to Geologists

If you would like to present, please let us know ([kudzie@eng.uz.ac.zw](mailto:kudzie@eng.uz.ac.zw))

*Please put this date in you diary now*

**Date yet to be set for August – Trip to assess the Furume Impact Structure,  
Ndanga West**

**GEOLOGICAL SOCIETY OF ZIMBABWE:  
CONTACT DETAILS OF MEMBERS OF THE EXECUTIVE  
COMMITTEE**

| NAME              | PORTFOLIO                         | EMAIL   |
|-------------------|-----------------------------------|---|
| Mwatahwa, Collins | CHAIRMAN                          | cmwatahwa@unki.co.zw  |
| Mugumbate, Forbes | Vice Chairman /Treasurer/Members  | fmmugumbate@yahoo.com   |
| Hanssen, Gayle    | Secretary                         | dms@zol.co.zw   |
| Du Toit, Andrew   | Summer Symposium                  | andrew.dutoit@zimplats.co.zw  |
| Broderick, Tim    | Newsletter Editor                 | <a href="mailto:pbroderick@mango.zw">pbroderick@mango.zw</a> ; makari@zol.co.zw             |
| Musiwa, Kudzie    | Summer Symposium, Website         | kudzie@eng.uz.ac.zw   |
| Gumbo, Hillary    | Society Talks                     | hgumbo@mweb.co.zw   |
| Chatora, Daniel   | Field Trips                       | drchats@yahoo.com   |
| Manda, Luckson    | Bulawayo Representative           | <a href="mailto:LManda@Rockover.co.zw">LManda@Rockover.co.zw</a> ;<br>lucksonuk@yahoo.co.uk |
| Mupaya, Bornwell  | Geological Survey Rep/Newsletter  | fbmpaya@yahoo.co.uk   |
| Passaportis, Leo  | Geology Dept., UZ, Representative | Rock_pick2@yahoo.co.uk  |

## Institutional Membership, 2008

Anglo American Corporation Platinum Exploration Ventures

Mineral Resources Centre, University of Zimbabwe

Musiwa Environmental Services

Samrec Vermiculite Zimbabwe (Pvt) Limited