

Newsletter

Oxford Geology Group joins BGG for triple quarry visit

Sunday February 21st

By Henrietta Flynn

Aminibus full of enthusiastic Oxford University Earth Science students, led by Paul Austin Sargent of the Oxford Geology Group (OGG), joined us for a full day of Woburn Sand geology in Potton. Our total party of around 25, met at Potton Scout hut to examine a small sandstone quarry face of Lower Cretaceous Woburn Sands (formerly called Lower Greensand, Late Aptian – early Albian).



The site provided an excellent opportunity for the students to practice their stratigraphic logging techniques since the reddish sandstone face shows such a great variety of grain sizes, cementation, sedimentary structures and differential weathering. It even exhibited an unconformity, low angle cross bedding and complex iron horizons. Our BGG leaders, Frances and Glynda encouraged the students to discuss the sort of environment that would produce this type of rock, concluding a near shore, high energy marine environment with strong currents probably a shallow estuary. The students methodically measured the 3-4m exposure and compared their detailed graphic logs.



Shortly after we crossed the road to look at the building stones at St Mary the Virgin church in Potton. Quite appropriate as it was Sunday, we also popped inside for a visit. The church was built using local stone cobbles mixed with the red-brown Woburn Sand blocks and was held together with a thick mortar. We were looking for evidence of the green mineral glauconite which gives 'greensand' its name but it was not evident here. So fitting to follow Sunday morning at church, with a delicious Sunday lunch at The Rising Sun pub in Potton.

Our second quarry of the day at Deepdale was visited in the afternoon. This quarry was last worked in the 1970's and is currently part of a landfill. The near continuous face of vivid orange-brown sandstone has experienced much slumping with several dangerous overhanging edges. *(continued on page 2)*



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We had taken the precaution of wearing hard hats which actually became more of a hazard when the wind took a number of hats flying! (so much for health & safety!).

We observed more sedimentary structures like ripples, ironstone layering, pinch-outs and trace fossil evidence in the form of iron encrusted burrows, some looking like pipework.



Our last quarry was at the RSPB Lodge nature reserve. This large disused quarry gave us the opportunity to see a 15m high stable exposure of the Woburn Sands. These well cemented, blocky faces exhibit excellent cross bedding, pebble beds and of iron staining. The students made notes and examined grain size, cementation and bedding features. Then we all discussed with Glynda, Frances and Paul the mobilisation of iron rich fluids and compared all 3 quarries in terms of chronology and water depth of deposition. Perhaps a good subject for a PhD thesis!



This was a jam-packed day showcasing Bedfordshire's best sandstone exposures, much appreciated by our visiting young geologists. It also established a good relationship with the OGG who are hoping to invite BGG to join their field trips later this year.

Many thanks to Frances for organising such a successful event.

Marston Vale Forest Centre Fossil Fun Day

By Bev Fowlston

Anne Williams, Emma and I attended a fossil fun day held at Marston Vale Forest Centre in February. This was a full day of interactive workshops for children, who made modelling clay figures of Marston's prehistoric sea monsters, coloured in pictures and played Marston's Monster Bingo.

During the sessions, small groups of the children and their parents came up to view and handle our display of rocks, fossils and minerals. We explained more about the creatures they had been creating. Some of the children, and most of the parents, were fascinated by the stories we could tell and the facts given about some wonderful specimens.

A great day was had by all. If this is something other members could help out with now and again, please let someone on the committee know so we can contact you for help in the future.



Forthcoming Events

By Frances Maynard

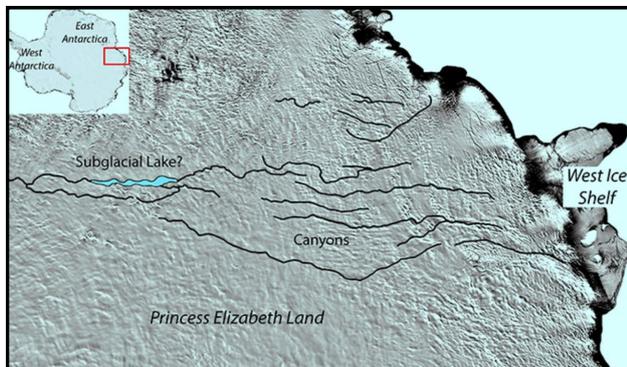
Event	Date	Time and Place
<p>Two Moors Heritage Trail – Flitwick</p> <p>A five-mile circular walk across the Flitwick moor (a SSSI), and Flitton Moor, a national nature reserve.</p>	Sunday 17 April	<p>10.30 am Flitwick Mill</p> <p>Map ref. TL 042 347</p> <p>Parking on Station Road, Flitwick</p>
<p>Silsoe Quarry – a chance to explore a new site where the lower greensand is still extracted for the brick making industry</p>	Saturday 21 May	10.00 am TBC
<p>Building stones walk - Leighton Buzzard</p>	Sunday 19 June	11.00 am TBC
<p>Fossil and Rocks day at The Higgins Museum, Bedford</p> <p>A chance to look at some of the samples at the Higgins and also bring along your own samples for identification. Possible 'hands on' workshop to look at minerals and thin sections</p>	Saturday 23 July	10.00 am TBC
<p>Potton Show – a chance to display our work to the villagers of Potton</p>	10 September	TBC
<p>Annual General Meeting and walk of the Stockgrove Geotrail</p>	9 October 2016	<p>TBC</p> <p>Possibly at Stockgrove Visitor Centre or at Heron's View Visitor Centre in Rushmere Park</p>

We look forward to seeing you at one or more of these events. Please note these events are subject to change so watch out for more details on each event from Frances nearer the day.

Details can be found on the website: www.bedfordshiregeologygroup.org.uk; on our Facebook page <https://www.facebook.com/BedfordshireGeologyGroup/>; or on

World's largest canyon system may lie under Antarctic Ice Sheet

According to an analysis of satellite data published in January in the [journal *Geology*](#), the world's largest canyon system and a large lake may lie under the ice sheet in Princess Elizabeth Land, East Antarctica.



Although the discovery needs to be confirmed by direct measurements, the previously unknown canyon system is comparable in depth to the Grand Canyon, but many times longer. It is thought to be over 685 miles long and in places as much as 0.6 mile deep.

The canyon system is made up of a chain of winding and linear features buried several miles of ice in Princess Elizabeth Land (PEL), one of the last unexplored regions of the Earth's land surface.

"The subglacial landscape of PEL is poorly known due to a paucity of ice thickness measurements," said lead author Dr Stewart Jamieson, of Durham University "This is problematic given its importance for understanding ice sheet dynamics and landscape and climate evolution." Scientists believe that the landscape beneath the ice sheet has probably been carved out by water and is either so ancient that it was there before the ice sheet or it was created by water flowing beneath the ice.

"Discovering a gigantic new chasm that dwarfs the Grand Canyon is a tantalizing prospect," said Prof. Martin Siegert, of Imperial College London. "This is a region of the Earth that is bigger than the UK and yet we still know little about what lies beneath the ice. In fact, the bed of Antarctica is less well known than the surface of Mars".

Secrets of the Sands

Greensand Country Update

By Bev Fowlston

At the end of February, Anne Williams and I attended the final Phase 1 Development seminar for the Heritage Lottery Fund, the outcome of which we are still awaiting! My impression is that there are no problems with our submission, so hopefully, it is just a matter of waiting for the final go ahead.

One major change that all partners agreed to, although some a little reluctantly myself included, is that the whole **Secrets of the Sands (SotS) project** is now to be called **Greensand Country Landscape Partnership**.

Other partners presented their projects and ours tie in nicely with many of them. These include: Flit Valley Walk; Flitwick Moor Restoration; Rushmere's Oak Wood Heathland Restoration and

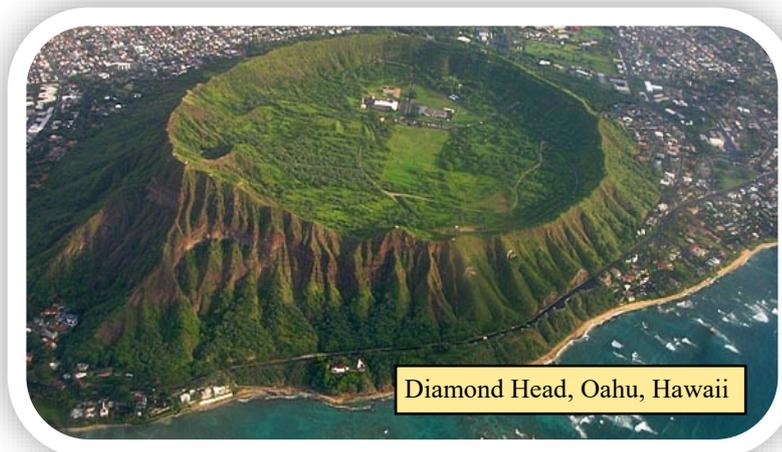
RSPB's Living Heath Restoration, amongst others. The next phase of this major project is the second phase of development, which luckily, we don't have to do anything to contribute. Claire Poulton, the SotS Manager has all the work of collating all the projects together into one master plan ready for final submission on the 31st March 2016. Then the waiting really begins until the funds are dished out to us, the partners.

In the meantime, I will be putting together a schedule of works and ensuring that all landowners are fully on board with the various sites works. In addition, ensure we as a group are ready to move as soon as the money comes through.

I'm still very excited about this project and I will be asking members to help out as and when I need the help, so watch this space!



*Geological news from our cruise reporter
Glynda Easterbrook, hot from the
South Pacific.....*



Diamond Head, Oahu, Hawaii

My

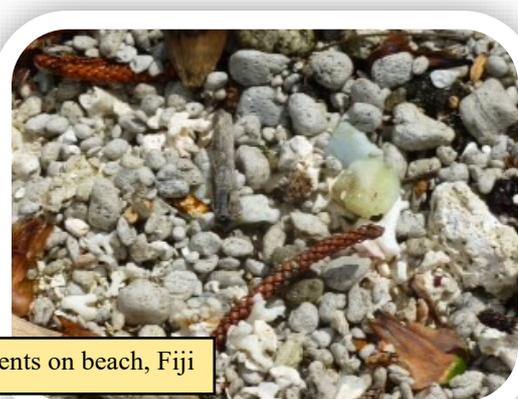
latest cruise took me to the South Pacific for 3 weeks in February. Sailing from San Francisco, our first port of call was Oahu, one of the Hawaiian Islands. These islands are part of the Hawaiian – Emperor seamount chain, a chain of at least 129 volcanoes, seamounts and atolls which become progressively older, less volcanically active and more deeply eroded to the northwest. This is due to north-westerly movement of the Pacific Plate across the Hawaiian hotspot over the last 70 million years.

The island of Hawaii, or ‘Big Island’, is the youngest, and is the only island that is currently volcanically active. Kilauea volcano has erupted 60 times since 1840, and has been continuously erupting since 1983. A new submarine volcano (Lo’ihi) is forming to the south-east of Hawaii, reflecting the probable current location of the Hawaiian hotspot.

Oahu has no active volcanoes, but has two large extinct shield volcanoes (Wai’anae and Ko’olau dated at 3.9 million years and 2.6 million years respectively). Ko’olau makes up 2/3 of the land area of Oahu, but large sections of Ko’olau are also missing, due to landslides. More recent resurgent volcanism resulted in the Honolulu Volcanic Series, producing several volcanic tuff cones, including Diamond Head and Punchbowl Crater. These later, more explosive eruptions were probably very brief, lasting no more than a few days. Diamond Head is estimated to be about 200,000 years old and inactive for the last 150,000 years, being so called because British sailors in the 19th century mistook calcite crystals on the adjacent beach for diamonds. Punchbowl Crater now hosts the National Cemetery of the Pacific.

After a brief visit to Fanning Island, a remote coral atoll close to the Equator, we headed for the Samoa, part of another volcanic chain of oceanic islands surrounded by fringing coral reefs and enclosed lagoons. As coral growth kept pace with subsequent volcanic subsidence, the fringing reefs gave way to barrier islands and, ultimately, remote coral atolls as the volcanoes sank completely beneath the sea.

We then headed to Fiji, where many beaches are composed of coral and shell fragments, but often also quite a bit of pumice. One might expect this to be testament to the volcanic origin of these islands. However, as the islands are for the main part basaltic, and pumice is of felsic origin and very light in weight (enabling it to float and be transported great distances on ocean currents) it is just as likely that the pumice has originated from more explosive volcanoes situated around the rim of the Pacific ‘Ring of Fire’.



Pumice fragments on beach, Fiji

Having left Fiji, carefully dodging Cyclone Winston which arrived there on week after our departure, we set sail for New Caledonia.

One particularly interesting port of call here was Mare Island, a raised coral atoll that has been tectonically uplifted by about 120 metres. Beautiful recent coralline beaches and lagoons are backed by ancient coral cliffs containing abundant fossil corals resembling their modern-day equivalents.

The interior of the island is the former lagoon, surrounded by a rim of higher land that originated as a ring of reef islands. Its fossil coral rock is honeycombed with caves, pools and pits of various sizes. Because of the uplift, the current shoreline is relatively recent and supports only short sections of nearshore fringing reef, unlike the extensive barrier reef found on Grand Terre, the main island of New Caledonia.



Fossil coral, Mare Island

Thanks Glynda for a fascinating report from your latest cruise.....any chance we could all come along next time!!

***Don't forget to
renew your
BGG
membership.
See page 9***



Uplifted coral atoll, Mare Island, New Caledonia

The BGG Library

Anne Williams our librarian holds a variety of geological publications. Below is a synopsis of some of the material she keeps for us:

Maps, memoirs & sheets:

London, UK South, Wellingborough, Hitchin, Monmouth, Leighton Buzzard, Scotland, Church Stretton, North Sea.

Fossils:

British Palaeozoic Fossils NHM
British Mesozoic Fossils NHM
British Cainozoic Fossils NHM
Specialist books on Brachiopods & Bivalves
General identification books & pocket guides

Economic:

History of brickmaking
Lime in the building industry

General:

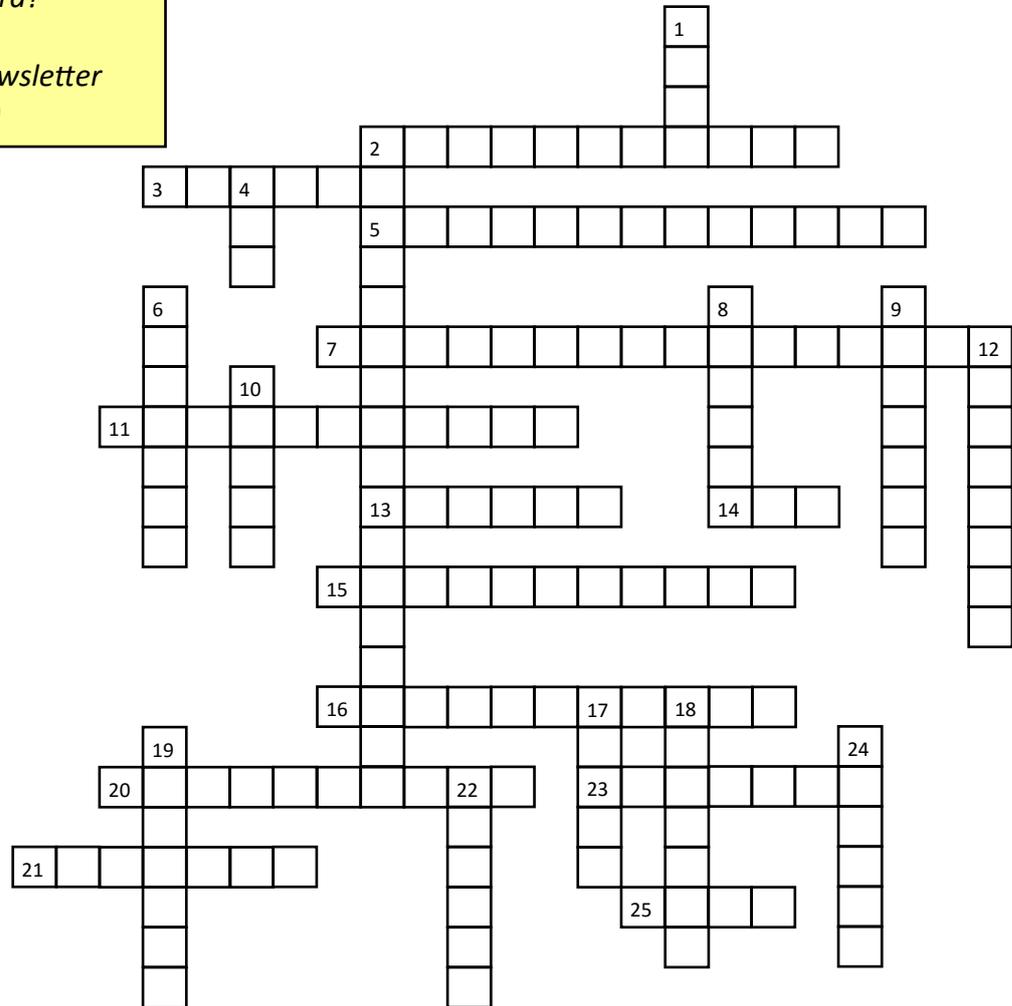
Various handbooks and field guides for rock identification. Mineral classification guides. Several UK geology trails

If you would like to borrow any of these or want further information on the collection please contact Anne (see last page). Also if you would like to donate any books or maps, please give to any committee member so we can build a larger resource for everyone to use.

Geology Crossword

How about trying a simple geological crossword?

Answers in next newsletter
(if you need them!)



Across

- 2 Rocks formed by sediment consolidation
- 3 A monoclinic pyroxene
- 5 Wrote The Origin of Continents and Oceans
- 7 Concept of the motion of plates
- 11 Major rock type
- 13 One big landmass
- 14 Geological time above Era
- 15 Process in making sedimentary rocks
- 16 Outer layer of earth
- 20 Type of moving plate
- 21 Green monoclinic mineral
- 23 From the wind
- 25 Made of plant remains

Down

- 1 Elongated faulted valley
- 2 Creating new crust
- 4 Cut polished stone
- 6 Made of magma
- 8 Changed limestone
- 9 Micro matrix of limestone
- 10 Displacement in earth's crust
- 12 Extrusive alkaline rock
- 17 Bottom of desert basin
- 18 Removal of sediment
- 19 What forms mountains
- 22 Stage in Upper Triassic
- 24 Coarse foliated rock

Visit to Sandy Heath Quarry

Saturday January 24th

By Frances Maynard



This

visit was a great success, with assistance from both the RSPB and the quarry manager. 20 members and guests turned up on a cool, sunny morning to stroll across the restored heathland (not usually open to the public) and examine at close hand the bedding planes in an accessible face.

The quarry is now used to extract sand for building mortar and is still extensively worked. Part of the land has been undergoing restoration to acid grasslands (a rare habitat in

Bedfordshire) which is of value particularly for micro-flora (the smaller the more exciting!). There have also been replanting of heather on the restored ground which has had mixed success.



The lichens were beautiful when viewed 'close-up' as was the distant views of the main quarry faces.



The area had been part of the shallow marine channel between two land-masses in and around the Cretaceous (100 to 125 million years ago). The sand is deposited and then shaped by the action of currents, leaving apparent underwater dune formations and large scale 'ripples'. The seaway was deduced to be not very deep as, although the grain sizes were not large (medium to coarse grain), the deposits were able to be moved by the surface currents. This is now shown as a great variety of cross bedding/stratification indicating also that the current changed frequently.

The fossils that are found within the quarry tend to be marine creatures such as sea urchins but also fragments of wood have been found indicating occasional pulses of deposits of storm damage from the land.

Old Glory Group enthralled again!

By Bev Fowlston

In January, my daughter Emma and I wowed the local Leighton Buzzard history group, enchantingly called *The Old Glory Group*, with our knowledge of rocks, fossils and minerals. Meeting at Billington Village Hall, 80 or so members were given a presentation by myself followed by a hands-on-rocks experience with fun quizzes to entertain them. Emma showed how much she has learnt through attending numerous events over her 10 years (she's 11!) with the BGG and engaged some of the lovely people with stories of belemnites and ammonites. My thanks to the Old Glory Group for the invitation to speak to them for the second time.

Membership Renewal Reminder

Your BGG membership is up for renewal on April 1st. Thank you to those of you that have already renewed their membership subscription. If you haven't already done so, please forward your subscription onto me as soon as possible.

Membership subscriptions for 2016/2017 will remain at **£7.50** per person for the year.

To renew your membership, please send payment to Tony Baker at the following address :

**Mr Tony Baker, BGG Membership Secretary,
36 Chapel Close
Toddington, Beds, LU5 6AZ**

(cheques payable to **BGG**)

Alternatively, you can make an on-line payment to the Group's bank account. If you do decide to renew your membership this way, just drop me an email after payment so that I can keep a look out for it at tonybaker36.bggmembership@yahoo.co.uk.

**Account name: Bedfordshire Geology Group
Bank & branch: HSBC, Leighton Buzzard
Branch sort code: 40.28.12
Current account no: 21507427**

Please can you inform me of any changes in address, telephone no, email etc so I can update our records.

Many thanks, Tony

This newsletter is not the only benefit of remaining a member of the BGG; all our events for members are **free of charge**, non-members pay £2.00 to attend. Group membership is £25.00 per annum. (For organisations with 4 or more employees or members wishing to join BGG).

Want to get more involved?

*All our BGG members share a love of geology and the countryside.
The committee would like to find out more about your other
interests, activities and expertise.*

*Watch out for a communication coming shortly from Derek where
you can update your contact details and tell us more about you.*

- *Are you a keen photographer?*
- *Do you have web/IT skills to improve our website?*
- *Would you like to get involved with site clearances?*
- *Like to help with publicity of events or fundraising?*
- *Maybe you could lead a field trip or walk?*

BGG needs YOU!

Here's the BGG Committee

Chairperson	Peter Lally	plally65@gmail.com
Group Secretary	Derek Turner	derek.turner@phonecoop.coop
Meetings Secretary	Glynda Easterbrook	glyndaeasterbrook@gmail.com
Treasurer	Martin Day	francis.day@btinternet.com
LGS Manager/Information	Anne Williams	annew36@hotmail.com
Events Coordinator	Frances Maynard	fmaynard@btinternet.com
Greensand area rep/Projects	Bev Fowlston	bev.fowlston@gmail.com
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Newsletter Editor	Henrietta Flynn	henriettaflynn@btinternet.com
Membership Secretary	Tony Baker	tonybaker36.bggmembership@yahoo.co.uk

Committee Member Profile

In this issue, Glynda Easterbrook has given us her profile and an insight into her impressive career in geology.



Glynda is a graduate of Imperial College (London University, UK), an Associate of the Royal School of Mines and has an MA in Education.

She began her career as a mineralogist for the British Geological Survey before moving to the Science Faculty of the Open University in the UK, with responsibility for a wide range of Earth Science courses and has 35 years of experience teaching geology.

As an academic advisor to the BBC she worked on several TV series including 'COAST'. She is the co-author of two OU textbooks and has appeared on several OU programmes.

For the last 5 years Glynda has also been lecturing for the cruise industry, (see her latest cruise report on pages 5& 6) and is widely travelled to places of geological interest.

She is a member of the Executive Committee for the Bedfordshire Geology Group, as well as a Vice President of the Oxford Geology Group.

Newsletter compiled and edited by
Henrietta Flynn

If you wish to include an article, photo or share your geological interest in the next issue, then please contact me by email at henriettaflynn@btinternet.com

Hope you enjoy the read!

As always please look at our website for the latest news, details of events, lectures etc. It is also a great source of educational information and so easy to download our wide range of brochures, flyers and geotrails.

www.bedfordshiregeologygroup.org.uk