

MAGAZINE OF THE GEOLOGISTS' ASSOCIATION

Volume 11 No. 3 September 2012

The Association
Future Events
Festival of Geology Field Trips
Presidential Address 2012
July Lecture / East of England
Rock and Fossil Show
Celebration of Sussex Geology
Field Trip to Ketton Quarry
Circular
Sussex Coast Weekend
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Conserving Bateman Collection
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Annual Report
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Back Cover:
FESTIVAL OF GEOLOGY

(425 ft), together with steep descents that are likely to be muddy. Beaches are often rough and traverses will involve boulder-hopping, seaweed covered rocks and soft shingle. Boots with good ankle support are strongly recommended. Good waterproof clothing may well be needed as the coast is exposed to Atlantic weather. We hope to be in the vicinity of at least one hostelry each day for lunch.

Cost & booking: Numbers will be limited to 25. Car sharing may be necessary. We will be based in Wareham which has a mainline railway station and is well equipped with hotels, pubs with accommodation and B&Bs. Please note the GA will not be arranging accommodation. If there is sufficient interest we will have a group dinner on the Saturday night. Further details will be available from Sarah Stafford at the GA office. Register with Sarah sending an administration fee of £10 per person to confirm your place.

FOSSILFEST VIII **Leader: Nev Hollingworth** **Sunday 28 October 2012**

Our yearly popular tripLocation(s) have still to be decided but plenty of fossils can be expected. Attendees will need to be sure they can safely cope with the conditions to be found in working quarries.

Equipment: You must have a hard hat, hi vis vest and suitable footwear.

Cost & booking: Numbers will be limited to 25. Register with Sarah Stafford at the GA office sending an administration fee of £5 to confirm your place.

OVERSEAS TRIPS 2013

Geology of the Bordelais (see article in this Magazine P.21)

Leader Professor Jean-Pierre Tastet,
University of Bordeaux and CAP Terre,
assisted by Professor Graham Evans,
University of Southampton.

24 - 29 May 2013

The geology of the Bordelais will be presented with particular reference to the geological control on the siting of the famous vineyards and the character and history of the coastal zone.

The geology of the various AOC (Appellation of Controlled Origin) vineyards will be demonstrated and illustrated by wine-tastings in the various Chateaux. Also, the evidence of the evolution of the coastline during the last 6,000 years as well as the impact on man will be examined by visits to the coastal dunes systems, especially Dune de Pilat, Lac de Sanguinet, Bassin d'Arcachon, Gironde estuary and marshes. Visits to local museums will provide an opportunity to understand the history of human occupation during the Holocene.

The provisional programme is:

Arrive Bordeaux. Each participant must make their own travel arrangement to and from Bordeaux, night in Bordeaux.

1 - Geology of the Quaternary fluvial terraces, their relation with the Medoc AOC (Margaux, Saint-Est  pe, ...), night in Soulac (or Pauillac).

2 - Gironde marshes, ocean coast, their dynamics: the coastal erosion and 6,000 years of evolution, Soulac museum, night in Bordeaux.

3 - Saint-Emillion vineyards: geology and character of the wine, medieval city (UNESCO world heritage site), underground cellars (ancient rock extractions).

4 - The coastal dunes and the Dune du Pilat: 6000 years of climatic record. The lake of Sanguinet: geological and archaeological chronology of a late Holocene coastal enclosure, Sanguinet museum, night in Bordeaux.

5 - The Graves AOC and the famous Bordeaux AOC of sweet wines: Sauternes & Barsac and Sainte-Croix-du-Mont: their relation with the Miocene substrate and the river terraces, night in Bordeaux.

Transport will be coach. The approx. maximum cost will be 700 Euros. This will include six nights hotel accommodation (extra for single occupancy), breakfasts, lunches with Bordeaux wine, only one dinner (day 1 in Soulac). A geological tour of the city of Bordeaux and its building stones will be included.

A deposit of 100 Euros will be required for the booking after the exact dates forwarding to all members who express an interest.

MAJORCA: trailwalking traverse of the Serra de Tramontana **30th April - 11th May 2013**

This is different from the usual run of GA overseas trips. It will be a group of 8 members plus two leaders who will make a coast to coast traverse of the island along the strike of the limestone mountains making up the Serra. The principal leader will be Tony Brook who writes:

"The island of Majorca is the largest of the Balearics, in the western basin of the Mediterranean. Its northwestern flank consists of a broken range of limestone mountains known as the Serra de Tramontana, which are the summit ridges of the submerged northeastern continuation of the Sub-betic Cordilleras of Southern Spain. The Serra consist of a disjointed series of Jurassic Limestone blocs, that have been pushed up and along northwest thrust planes, to create limestone escarpments and coastal cliffs, with the intervening valleys and basins preserving older deposits, and also showing karstic features. The recently-constructed trail through the mountains, known by its European designation as GR221, and locally as 'The Drystone Route', links up ancient

paths, tracks and trails through the Serra as it winds its way from coast to coast, producing, in the process, a linear geological traverse and trailwalking expedition across this Mediterranean island".

Accommodation will be half-board in a combination of mountain 'refugis' and resort hotels. Participants should be fit and experienced, and capable of carrying a laden rucksack for reasonable distances each day (on one day, 22 km). For eager field geologists, this reconnaissance expedition will be a memorable experience. The cost, excluding travel to and from Majorca and personal daily expenses, will be £560.. Would interested members please email Tony Brook:

anthony.brook27@btinternet.com by 30 November.

PERU

Spring 2013 (April-May)
(with add-ons to Easter Island or Galapagos possible)
Organised by Professor Dick Moody
(rtj.moody@virgin.net)

Provisional Itinerary:

Day 1. LHR-Lima via Madrid Day 2. Tour of Lima and museums
Days 3-4. Geology of Lima Area; Day 6. Lima to Ica (Oasis and Fossils)
Day 7. Nasca Lines. Day 8. Nazca to Cusco
Days 9. Geology of Cusco area. Days 10-14. Geology of Urubamba Area including Inca sites.

Day 15. Cusco-Puno on train. Day 16. Lake Titicaca

Day 17. Local geology of Puno Area;

Day 18. Puno to Arequipa

Day 19-20. Colca Valley (Condors)

Volcanoes of region

Day 21. Arequipa to Lima to UK. (or onto Easter Island or Galapagos)

Estimated cost: £3200 double room occupation.

Contact Richard if interested.

rtj.moody@virgin.net

INDIA 2013

India 2013

Leader Dr Michael Oates

January/early February 2013

Preparations are in hand for a Field Meeting in India in late. The leader will be Dr Mick Oates, assisted by Indian geologists expert in particular areas. It is planned to fly from London to Mumbai, and then to examine the geology and cultural attractions of NW India, basing ourselves at various places, probably including Jaisalmer, Jodhpur and Kutch. There will be good opportunities for fossil and mineral collecting.

Travel in India will be by air-conditioned coach and domestic airlines. Hotels are very comfortable and will probably include some former palaces of local rulers. Costs are still being calculated, but are expected to be in the region of £2500 per person.

The Bordelais, March 2012

Owing to two members withdrawing at the last minute, a planned GA excursion to the Bordeaux area had to be cancelled. However, three members who had already booked their travel decided to make a private excursion. Professor Jean-Pierre Tastet (J-PT) of Bordeaux University and the association CAP Terre (<http://www.cap-terre.org/>), who had organised the trip from the French end, very kindly agreed to give us a flavour of what we were missing. Thanks to J-PT's kindness, and Elaine Bimpson's readiness to find all the geological maps we could ever need at a moment's notice, we obtained an excellent introduction to the area.

Two of us travelled out by train (only a day's trip by Eurostar and TGV), and the third flew out. The following morning, at J-PT's suggestion, we took an introductory bus tour, which showed us the main architectural highlights, and gave us



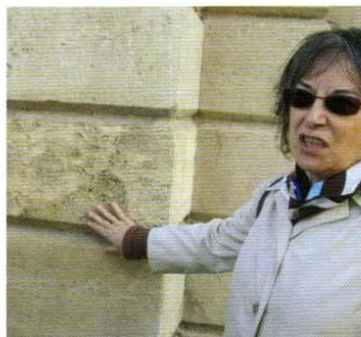
Our hosts, Professor Jean-Pierre Tastet and Hélène Vignau-Haramburu providing us with some fascinating insights into the geology of Bordeaux

information about the history of the city.

After lunch, J-PT met us in Bordeaux's centre and after a quick orientation introduced us to Hélène Vignau-Haramburu, a colleague and member of the local geological association, who took us on a building stones walk. The recent ambitious cleaning and rebuilding programme showed the city to great advantage, and our hosts were able, with the aid of numerous maps, sections and cartoons, not only to give a clear interpretation of the geology but also discuss the palaeontology and the history of the buildings, and give other fascinating insights that would otherwise have been hidden from us.

The Oligocene starfish limestone (*Calcaire à astéries*) was the main building stone used before the advent

of the railways, and had been quarried from the opposite bank across the Gironde. (The name "Gironde" is derived from the Occitan equivalent of the French word for swallow. The open



Hélène Vignau-Haramburu pointing out a sirenian rib bone

mouth of the estuary 60 miles downstream, and the two tails of the Garonne and the Dordogne that together form the system, do look a little like the bird.) Being relatively young, of Rupelian age, and relatively unconsolidated, the rock was porous, friable, and not very resistant to weathering, and the sand blasting to



The one mile long, polished (and sometimes slippery) Cretaceous limestone pavement

clean off centuries of pollution had also in some cases removed its protective patina. Bordeaux's problem was our opportunity though, and some fascinating fossils were revealed, such as the rib of a sirenian (a sea cow) poking out of a wall.

On seeing us examine the ammonites in the multi-million euro, one mile-long, polished Cretaceous limestone pavement, one of the more recent additions to the building stones collection of the city, a street vendor took delight in pointing out another problem for Bordeaux. He told us that as soon as it rained, people were

slipping on it and breaking their legs.

The joy of having J-PT as a guide was his intricate knowledge of the city combined with his being a wonderful raconteur: how many of us are ever likely to be called on to identify the rocks that had been substituted for a consignment of whisky to help determine where the deed was done? An apparently ordinary street was given interest by a vivid description of how, underneath our feet, a seven-storey car park had been constructed. The same technique, in which a box is



Wine tasting at Château Cos d'Estournel

excavated in stages, and walls constructed to prop up the walls, is currently being employed to create stations for the Crossrail project in London. This was only Day 1, and in our opinion we had already been treated to a fine demonstration of applied geology. However even better was to follow.

On Day 2 J-PT organised a welcome by a vineyard at St. Emilion, which we visited by train. After a walk and lunch in the mediaeval town that was fascinating in its own right, we were given an introduction to the process of winemaking, and a tasting of wines, at the nearby Château Clos Madeleine. A tasting of wines from Clos Madeleine itself and from Château Magnan La Gaffelière, a property managed by the same firm down the hill but on a very different terroir, allowed us to judge for ourselves the effect of different soils on wines of the same vintage.

Day 3 saw J-PT finding time in his busy schedule (among many projects, he was producing a film about a newly-discovered karstic cave; see <http://www.grotte-de-tourtoirac.fr/>) to take us by car into the Medoc. A whistle stop tour of the new university campus in the suburbs was followed by a drive out into the country, where we stopped for a comprehensive explanation, using an impressive set of displays setting out the detailed geology on a large scale, of how the region had acquired its special character as a location for viticulture. Repeated inundations of the Aquitaine basin over the last 30 mys, and more recently the effects of a series of

Pleistocene glaciations, had left at least six natural terraces. This formed an array similar to that found in the Thames Estuary, comprising well drained but poor soils on a limestone bedrock. The well-known Margaux appellations were found on terraces 3, 4, 5 and 6, not on terraces 1 and 2.

For a long time it was generally thought in the wine trade that those terraces in sight of the river had proven to be the best sites for viticulture. However, in the middle of the nineteenth century, under the 1855 Classification (and long before detailed surveys informed by modern geological science had been completed), the châteaux of the area (this simply means the premises that produce wine, not necessarily a stately home) were rated by Bordeaux Chamber of Commerce, purely on the basis of the historical price that the wines had been able to command. When the pedology and geology were looked at in more detail in the late twentieth century, it turned out that all but one of the wines placed in the highest category in the 1855 Classification ("first growth") were produced from vines grown on two terraces only, Terrace 3 and 4. These are the most dissected and best drained of the terraces.

We were given practical demonstrations of different approaches to viticulture, and the opportunity to sample the produce, at two very different châteaux. The first, a small artisanal château, was owned and operated by a very knowledgeable fourth generation viticulturist who still tended 80-year old vines planted by his grand-parents, who were long standing friends of J-PT. Christophe Landry was obviously passionate about his trade and applied bio-dynamic growing methods, including rotation of planting areas, and the avoidance of imported fertilisers and unnecessary energy inputs.

In the afternoon, after a journey north past many famous châteaux, a brief stop at Château Margaux, (which has a very grand house built by the architect of the Bordeaux opera house), and lunch at St Estèphe, we visited Cos d'Estournel. This is a château that produces a second growth claret on Terrace 3. There great lengths have been taken to apply a scientific approach to terroir, and modern winery technology. A detailed survey of the château had been carried out by a soil scientist colleague of J-PT (see Becheler, P; Tastet, J-P; Arangoits, D: *Geologie, Terroir et Viticulture au Château Cos d'Estournel* (Saint-Estèphe) *Geologues*, no 168) to identify all the distinct sub-units in terms of soil type. At the point at which the soil changed the plants would be marked, and sometimes those only centimetres apart would be picked separately at harvest time. 72 different terroir sub-units (same

geology, same soil and same vine species) had been identified, and as a result 72 different vats for the grapes from each had been built in a new winery which had cost millions of euros. This enabled fine judgements to be made as to which grape varieties to plant on which sub-unit, and which grapes would produce the best wine in the actual weather conditions of each year. The cost had been huge, but the outcome in terms of better wines apparently justified the effort. The proportion of the output used for the first wine of the château (Cos d'Estournel), which commanded a much higher price than the second wine (Pagodes de Cos) has increased, over the years, by over 30%. We were able to compare the 2008 vintages of both wines after a talk on the history of the château, and a tour of the new winery. Both were fine wines, but we could sense why one commanded the higher price.

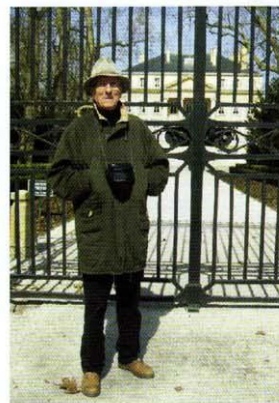


Some of the fossils found at Château Cos d'Estournel

We also had a brief opportunity to walk the vineyards with J-PT, referring to his large-scale geological maps. Having identified the area immediately underlain by Tertiary limestone, we looked for fossils, and two species of Oligocene echinoids, the very small *Sismondia* and the much larger *Echinolampas* were found amongst the vines. We also found a bivalve and a gastropod.

Our journey back to Bordeaux allowed J-PT time to expand on everything from his schooling at the local school run by his father (he was glad to be allowed to go to boarding school near the University at the age of ten) to enthusing about the role of the amateur in archaeology and geology. His touching on the work at the Sanguinet Lake on the coast

whetted our appetite to find out more, but sadly that would have to wait for a possible future official GA visit. However we did get a hint of the treasures in store when we visited Arcachon, and the Dune du Pilat (the tallest sand dune in Europe), by train and bus, the next day. Although the 100m climb to the top of the dune was quite tiring, the views were exhilarating. Helpful displays about its



Professor Jean-Pierre Tastet at Château Margaux

formation had also been provided in English. In Bordeaux itself there are all sorts of interesting things to see that we enjoyed on the final day of our visit, including the Musée d'Aquitaine, which has a wonderful display of the archaeology and the world class palaeontology of the area.

In short our private excursion was well worth the effort, and we have no hesitation in recommending that the GA re-present the originally envisaged trip. Professor Jean-Pierre Tastet is not only a perfect host but is hugely knowledgeable. Combine that with a fascinating region, which has much to offer to those following a wide range of disciplines, and you have the makings of a first class study tour.

Richard Trounson
Paul King



The view from Dune du Pilat, the highest in Europe