Farnham Geological Society

Vol 3-No 6

# NEWSLETTER - JANUARY 1991

The fifth edition of the Newsletter is devoted mainly to the field trip to Central France, celebrating the 20th anniversary of the Society. Peter Cotton, our Field Secretary, ably helped by Tony Brown, was the author, to whom we are much indebted.

Aubrey Clark kindly provided a report on the field trip to Walton-on-Naze and the Isle of Sheppey. This trip included an enjoyable visit to Stuart Baldwin's Fossil Hall at Witham, Essex to see his fossil replicas and books. Aubrey has also provided a short report on a visit to the Writhlington colliery site.

David Caddy (Editor)

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## VISIT TO THE MASSIF CENTRAL, SEPTEMBER 1990 - A 20th YEAR CELEBRATION

On the evening of the 4th September, 28 Members of the Society together with our guide, Dr. Reg Bradshaw from Bristol University, left Farnham to catch the overnight ferry from Portsmouth to Le Havre. We were to travel down to the Auvergne visiting sites in the Departments of Allier, Puy de Dôme, Cantal and Haute Loire in the centre of the Massif Central, geologically one of the most interesting areas of France.

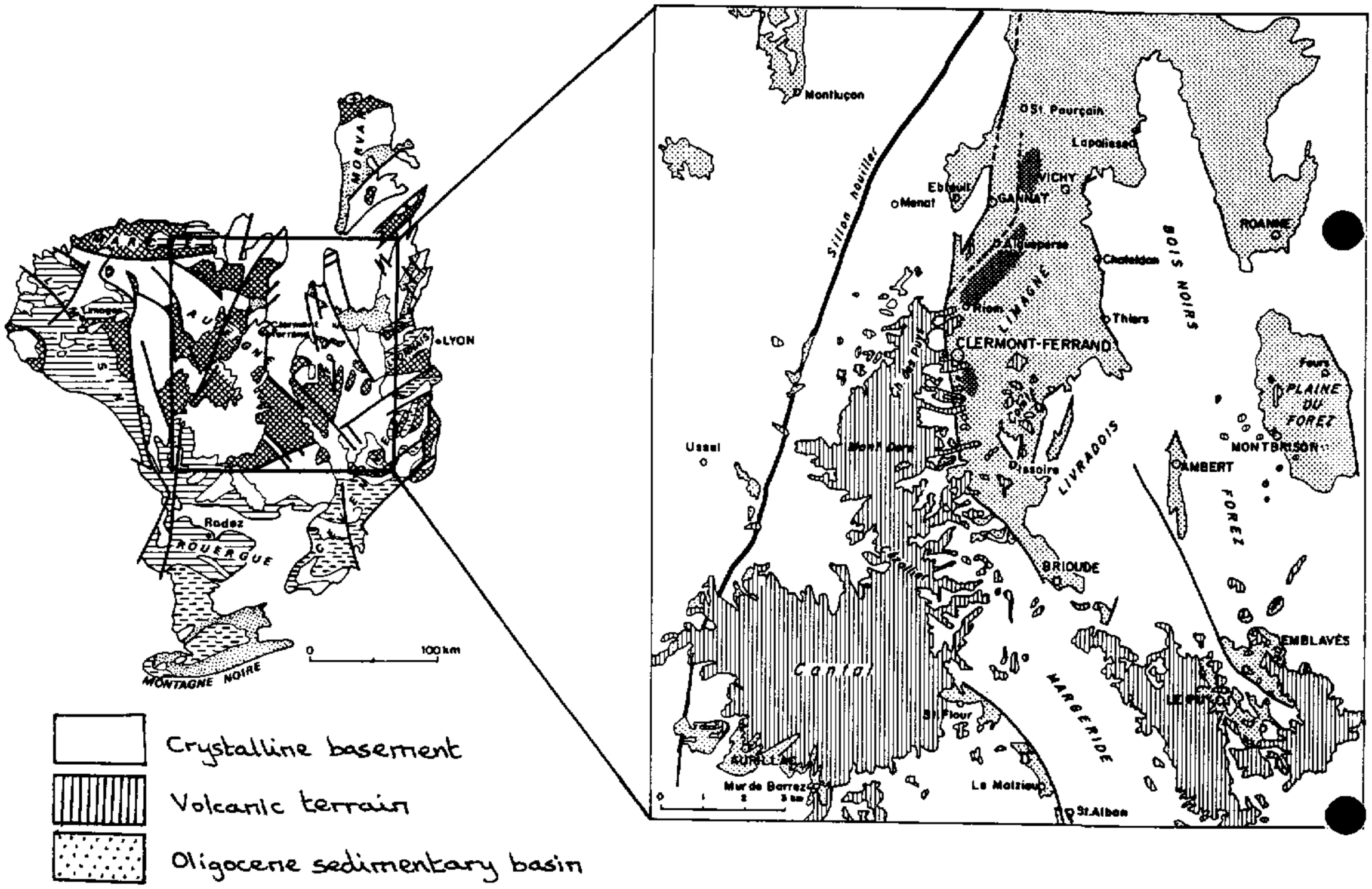
Our first day in France en route for Châteauroux was free of active geology and we viewed the relatively flat landscape of the north of France and the west of the Paris Basin passing over Upper Jurassic, Cretaceous and Tertiary rocks from the luxury of our 49-seater coach driven by Martin, of whom more anon. We stopped for lunch and a short sight-seeing tour in the historic city of Chartres.

The drive to Châteauroux - our stop for the first night in France - was uneventful and we arrived very weary after a poor night's rest on the ferry and a long journey. The hotel was far from luxurious and we celebrated our arrival by complaining that there was no electricity in our area of the hotel. This was doubtless due to the simultaneous plugging-in of a multitude of coffee-making and other appliances!

The following morning, before leaving the city for our drive to Châtel-Guyon, we asked Martin to drop us near *Les Halles* in order to buy provisions for our picnic lunch. We proceeded down ever-narrower lanes with lines of parked cars to find ourselves confronted by a 'Road Closed' notice and no real possibility of reversing back the way we had come. But help was to hand in the form of a peaked-cap official who obligingly helped us to move some bollards so that we could drive through a pedestrian precinct and eventually escape the wrong way down a one-way street. We began to appreciate that our driver possessed that indispensable attribute for dealing with French traffic problems - sang froid!

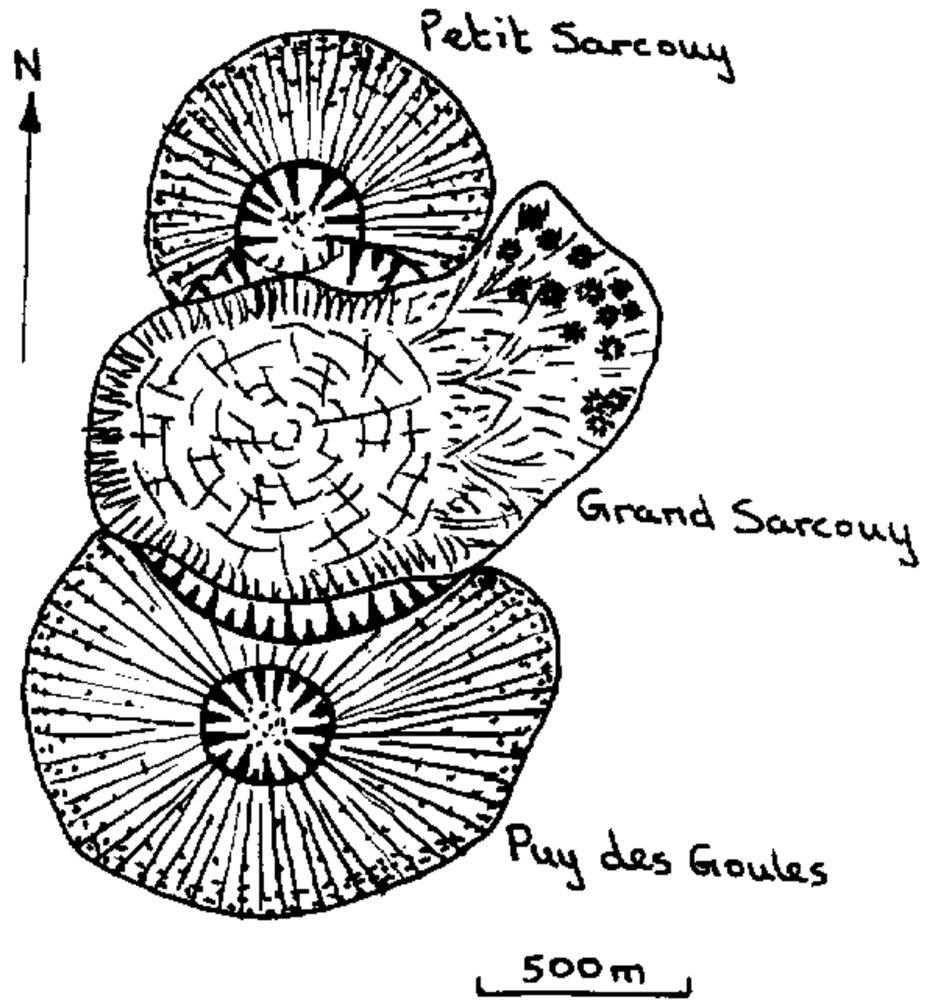
The day saw our introduction to the geology of the area. Above St. Eloy des Mines, looking out over the Massif with the Puy de Dôme in the distance, our leader gave us an outline of the geological history of the area reminding us that there are no Mesozoic rocks in the Massif Central. The sea has never covered the area, which has thus been subject to extensive erosion, since the end of the Permian Period.

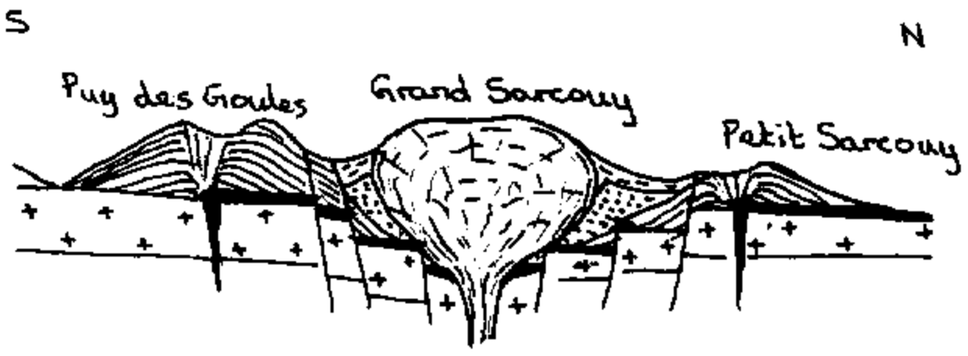
On the plateau, Precambrian and Palaeozoic, up to Permian, crystalline basement rocks are exposed. These have been metamorphosed up to anatectic granite which implies temperatures up to 700°C and pressures of 10 Kbars, which correspond to burial to a depth of some 30 Km. The last major deformation of the 'Hercynian basement' involved rocks from Precambrian to late Carboniferous age. In the Tertiary there was limited sedimentation at the edge of, for example, the Limagne Basin where there are some terrestrial and brackish water deposits. The area is, however, famous for its evidence of volcanic activity, including the strato-volcanoes of the Cantal and Mont Dore (dating from the Miocene) and the very recent scoria cones and maars etc., the latest of which date from only about 4000 BP. The geomorphology of the area has been much modified by the Pleistocene glaciations, especially on the major strato-volcanoes.




Later in the day at Les Chambons we inspected schistose and gneissose rocks of the basement. Then at Sautere Quarry we first got to grips with volcanic rocks - basalt lavas with large peridotite xenoliths derived from the mantle, following this at Beunit by seeing basalt with granitic xenoliths, part of the Puy Gonnard scoria cone. In the evening we reached our first base for geological trips, Châtel-Guyon, a spa town situated at the northern end of a remarkable line of volcanic vents some 30 Km long, known as La Chaîne des Puys (chain of peaks). This chain is very young with activity occurring as recently as 4000 BP. Because of this the volcanic features are well preserved and during the two days spent in the area we had our fill of strombolian cinder cones, breached cones and maars (craters caused by magmas rising through ground water to produce violent eruptions).

Our first physical exercise was the climb of Puy des Goules which left many of the party gasping by the time we had reached the summit. However, we quickly recovered to enjoy the superb views, including the distant sight of Puy de Dôme, the highest peak in the Chaîne des Puys.



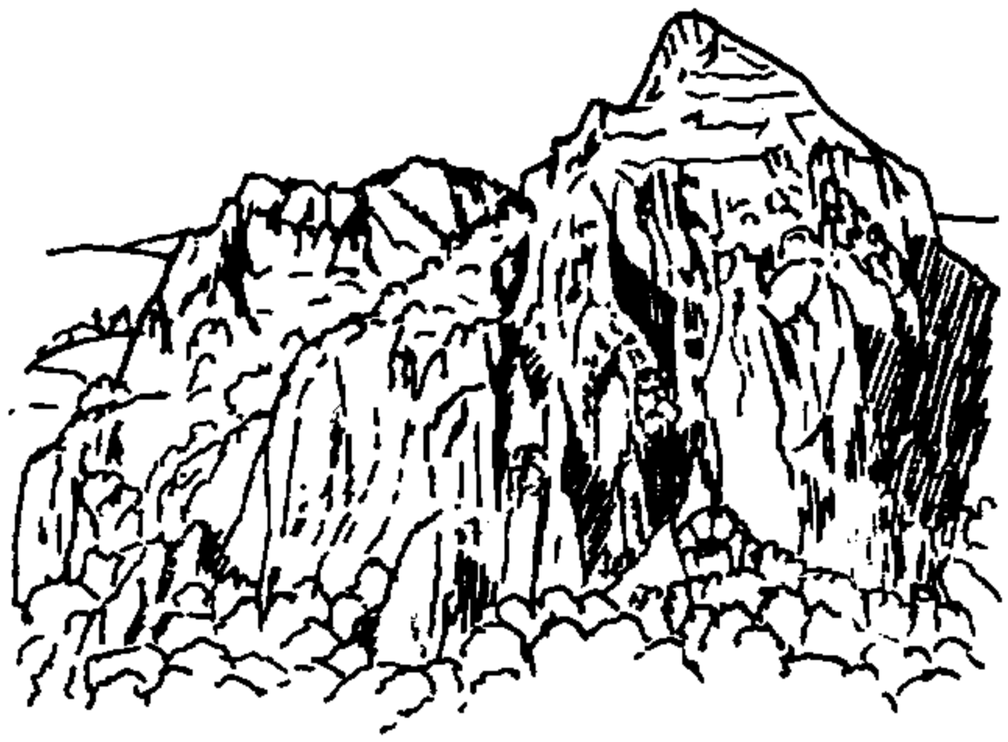




Returning to the coach many of the party made the effort to cross the col to Grand Sarcouy and examine the domite exposed in an old quarry (domite is a general term for the hornblende- and biotite-trachytes of the Puy de Dôme area). The later trip up the Puy de Dôme, which rises to some 4800 ft, was easier as the coach took us to the summit. Puy de Dôme is a good example of a volcanic peak which has evolved by the cumulative extrusion of highly viscous trachyte to form what is known as a cumulo-dome. The views from the top are astonishing - to the immediate north and south along the Chaîne des Puys; to the east across the extensive Limagne basin which is separated from the Chaîne des Puys by a major fault escarpment; in the distance to the south the strato-volcanoes of Mont Dore and Cantal which we would be visiting later in the trip.

Descending once more, we visited the quarry at Chuquet Genestoux which exposes deposits of scoria containing granite xenoliths, probably from a 'satellite' spatter cone of the Maar d'Enval. In some of the granite xenoliths at this site the ferrous ions in the biotite mica have been oxidised to the ferric state to give the mica a golden coloration.

From Châtel-Guyon the party headed southward to Le Mont Dore after viewing a quarry within the 'Volvic Stone', the highly vesicular and porous basalt lava through which the Volvic mineral water has been naturally filtered. Le Mont Dore is another spa town but specialising in respiratory complaints, whereas Châtel-Guyon was for digestive disorders. The French N.H.S. finances treatment at these various spas. This provided the explanation to a puzzled Field Secretary for his inability to book just one hotel in Châtel-Guyon - we finished up in five! Fortunately, everyone seemed pleased with the hotel allocated. The French health service also stepped in to help Jackie Clark who had to have a broken wrist set and pinned in the hospital at the neighbouring town of Riom, thus missing a night at the hotel.

Three days in the delightful setting of Le Mont Dore allowed us to make several excursions to locations in the massive strato-volcano of Mont Dore. Over a period of 5 million years, during the Pliocene and Pleistocene, this volcano covered some 300 square miles with volcanic material. Highlights of this part of the trip were visits to the twin phonolite domes of Roche Sanadoire and Roche Tuillière; to Lac Chambon which was formed when Le Tartaret volcano dammed the valley; to the troglodite caves carved in the soft lahar deposits (mud flows of ash and pumice) above the village of Perrier; and a trip by cable car followed by a strenuous climb to the top of Puy de Sancy. This volcanic peak, rising to nearly 6500 ft, is one of the youngest of the Mont Dore, being formed within the last 1 million years. From the top, the views in every direction are incredible and we were fortunate to have a clear morning so that we could see further south to the Cantal strato-volcano, the grand-father of them all with a basal area of around 1040 square miles.



Because of the great mass of volcanic material that has poured out over the Massif Central most of the original basement granite and metamorphic rock has been covered by ejecta. It is only when one drops into deep-cut valleys or goes farther away from the centres of volcanic activity that one sees the basement rocks. It becomes quite an interesting game when travelling in the coach to spot where the junctions occur.

A light-hearted diversion while staying at Le Mont Dore was dry tobogganing down a metal track sitting on little more than a tea-tray, which did however have a crude braking system in the form of a lever which you pulled back to brake and pushed forward for full-speed ahead. Our leader had remembered this from a previous visit.

On September 11th we set off south for St. Flour, a run of about 70 miles. The River Dordogne has its source in the Puy de Sancy near Le Mont Dore and we followed the valley of the Upper Dordogne westwards through La Bauboule and then south to the interestingly named town of Bort-les-Orgues. A massive dam has been built across the river here to create a reservoir for both water and hydro-electric power supplies. The main geological attraction here is the cliff of basaltic columns, that stands out above the town, looking like a stack of gigantic organ pipes, hence the name. We had by now moved into a landscape dominated by the massive Cantal strato-volcano whose eruptions began in the late Miocene about 11 million years ago and continued to the late Pliocene. The evolution of this volcano over 8 million years was naturally very complex and it has left a whole series of pyroclastic and lava deposits ranging from vast basaltic plateaux such as that west of St. Flour to trachyandesite flows disposed radially around the twin central peaks of the Cantal; the Puy Mary and the Plomb du Cantal.

A good road goes quite a long way up the flanks of Puy mary but leaves a stiff climb on foot of about 800 feet to the top which is some 6000 ft above sea level. Nita Lougher celebrated her 70th birthday by climbing to the top; and it has to be said that she wasn't the only septagenarian who made it to the summit, an inspiration to the rest of us who felt at times like turning back! The views from the top were also inspirational and one could clearly see the dramatic effects of glaciation in scouring out the U-shaped valleys, leaving arêtes between them and cirques high up on the slopes.

Before referring to the little contretemps that greeted our arrival in St. Flour that evening, mention must be made of our enjoyable stop in a small village north of the Puy Mary called Cheylade. Pat Bennet and Alan Cromer, two new members, had remembered the church here from their previous visit and it was well worth a stop. Built from the sturdy rock called Brèche Andesitique, quarried nearby, it stands in a little village square and has some marvellous internal features, chief of which is the tiled ceiling of the nave where each tile has a different design.

Arriving in St. Flour outside the Nouvel Hôtel where we had booked many months before, our Field Secretary went inside to inflict his schoolboy French on yet another luckless receptionist, only to be informed by the manageress that we weren't staying there but at another hotel further up the hill. A whole series of angry observations in English could not, alas, be instantly translated and so we went as bid to the alternative hotel. This turned out to

have an enormous range of accommodation. The lucky ones were settled in luxurious rooms with all facilities 'en suite' while the luckless pair found themselves in a garret where no '*chat*' had ever been swung and facilities were rudimentary.

The following day we headed back west over the basalt plateau to Murat, a town beautifully sited under the Cantal mountains. A dominant feature of this area and nearby Chastel sur Murat is the series of trachy-basalt plugs on top of which are built churches or statues of the Virgin. These volcanic necks lie on a NW-SE fracture zone and it was from the top of the northernmost neck at Chastel that we viewed the nearby Cantal mountain range. We went on to Virargues to see the extraction of diatomaceous earth from a huge quarry; lorries were carting this soft grey rock to a nearby site for 'settling' and it was at this latter site that large specimens of diatomite with leaves were collected before we had our picnic lunch. Wally was successful in transporting some slabs back to the UK with the leaves intact.

After lunch we headed back east to St. Flour old town, visiting the cathedral, before proceeding southeast to see the Viaduc de Garabit, a spectacular iron bridge over the river constructed by Eiffel before he built his Paris tower. Near the bridge we found some interesting roadside exposures of high grade metamorphic rocks where the temperatures had been high enough to produce migmatites showing a streaky foliation.

The next day, Thursday 13th, we travelled to Le Puy en Velay, a historic town in the Haute Loire. En route we explored the valley of the Allier which runs north, parallel with the Loire which it joins at Nevers. This is a fascinating valley, both scenically and for its geological interest. Some marvellous columnar basalts fill the valley sides south of St. Arcons d'Allier and there was much debate about how many different episodes had created such apparently diverse columnar effects.

It was here that the contest between Reg, our guide, and Martin, our driver, as to who was going to admit defeat in getting the coach through seemingly impossible situations, was finally decided. We came to a 'bridge too far' and it was just not possible to turn the coach on to it. Martin wisely decided that the safety of his coach and passengers took precedence over crossing the river to St. Julien des Chazes. However, we found an ideal picnic spot by the river and had the group photograph taken, which later appeared in the Farnham Herald. Driving out of the valley, Martin later said that he had noticed that the safe load for the bridge was less than the coach's unladen weight, so our failure to cross was all to the good.

It was while we were climbing out of the Allier valley to continue our journey via Monistrol to Le Puy that we noticed a sleek British registered Jaguar following us. This turned out to be driven by Kate Jemmett who had hurried down from Le Havre to join us for a couple of days in Le Puy and had pinpointed our after lunch location from directions given by Reg, no mean feat of navigation!

After effecting a meeting we crossed over the Margeride granite plateau before descending again to cross the Allier at Monistrol. At a roadside exposure on the plateau we found granites with huge orthoclase phenocrysts, many of them with Carlsbad twinning. Tony Brown collected the biggest specimen of the trip and it served as a magnificent centre-piece to our display at the G.A. reunion at University College London on 3rd November.

There was a lot of geology to see in this area - granite basement, augen gneisses at St. Pirat, columnar basalts from the volcanoes of Devès, phonolitic domes and scoria cones - but time was pressing if we were to get to Le Puy at a reasonable hour, so we had to content ourselves with coach geology and distant views eastward over the Devès Plateau from Montbounet to Le Puy.

The following day we visited several places around Le Puy, starting with the village of Polignac to the north where we climbed up to the old castle from which good views of the surrounding countryside of the Le Puy Basin were obtained. Prominent features in the near distance were volcanic necks similar to the famous ones of the Rocher d'Aiguilhe and Rocher Corneille in Le Puy itself. These necks were composed, not of lava but of basanitic hyaloclastite breccia formed when hot magma came into contact with water.

From Polignac we made our way to the east of Le Puy to the village of Blavozy. Here we visited a site where the Blavozy arkose was being quarried; the quarry dating back probably to Roman times. Blavozy Stone is a hard coarse grained sandstone of Eocene age resting directly on granitic basement. It is much favoured as a building stone. We were interested to see in the nearby cemetery how the local people get over the problem of burying their dead in a region of hard rock. They don't; they build the graves on top of the rock basement.

This day's visits marked the end of our organised geological field excursion. Martin had to have a rest day and this we spent exploring the fascinating city of Le Puy. Most people rose to the challenge of climbing one of the Rochers referred to earlier, and some climbed both the Rocher d'Aiguilhe on top of which perches the chapel of St. Michel and the Rocher Corneille with its dramatic cast iron statue of Notre Dame de France standing 70 feet high on top. This terracotta-coloured statue was made from cannons captured from the Russians at the battle of Sebastopol, It can be climbed on the inside, where the ingenious method of bolting together the various sections can be seen. Unfortunately the highest section to the top of the head was closed, thus depriving those who wanted the dubious pleasure of looking through the eyes of a virgin!

The cathedral at the foot of the mount was also a marvellous building. The little streets and squares of the old town were quite delightful and the local museum had many interesting exhibits. In the evening we didn't all dine together but went into groups to various eating places in the city, all claiming on return to the hotel that the one they had chosen was the best and the company the finest.

Sunday saw us heading east to Lyons and then north to Auxerre on the A6 motorway. We stopped for 3 hours in Beaune, a delightful city where most people visited the Hotel Dien to see where the old and sick were looked after. When inspecting the surgeons quarters with its array of viscous-looking instruments Harold Siddons observed that things havn't changed very much! Another thing that most people did in Beaune was to buy some bottles of Burgundy at fairly reasonable prices.

At Auxerre there was just time before dinner, thanks to the good offices of Martin who drove us the few miles into town, to tour the old town with its many bridges over the river Yonne and its charming old streets and squares. At dinner we celebrated the third birthday of the trip, that of Margaret Bourgoing. We also took the opportunity of saying very sincere thank-yous to both Reg Bradshaw and Martin for their respective guiding and driving during the trip.

Monday the 17th and off to Paris in the morning. After leaving our luggage at the hotel on the southern outskirts of Paris, we went into the city to visit the magnificent collection of minerals at the National Museum of Natural History. The size of the specimens, mostly from South America, is quite mind-boggling and the range of minerals is so great that it is impossible to make more than a cursory inspection during a period of 2-3 hours. The following day we went back into the city to have our minds boggled once again, this time at the École des Mines Museum of Mineralogy where the layout and labelling of the exhibits was excellent.

After lunch groups went their separate ways and, between us, we went on a Seine riverboat trip, visited Notre-Dame Cathedral, scaled the Eiffel Tower, toured the Louvre Museum and the Musée d'Orsay in the converted Gare d'Orsay to name but a few. Some of us also fell into a tourist trap and paid the best part of £5 for a cup of tea and a gateau outside Notre-Dame. As on the first night in Paris we made our own eating arrangements but a large group virtually took over a small restaurant at the rear of a local bar were a very reasonable meal cost about £7 a head - not bad for Paris!

Bright and early on Wednesday morning we were off to Calais to catch the afternoon ferry for Dover, laden down with large chunks of France. A westwards drive along the Weald and back home to Farnham on the 19th.

Peter Cotton and Tony Brown

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## FIELD STUDY VISIT TO WRITHLINGTON COLLIERY SITE, Sunday 17th June 1990

The site (ST 704553) lies about 300 yards north of Writhlington village church, being some two miles to the east of Radstock (ST 6955) in the county of Avon. Permission is required from the owners and a section of the site is reserved for field study purposes. The mainly shale and siltstone waste on the site contains small animal and plant fossils from the Carboniferous Period.

This particular visit comprised some twenty people from diverse places as far apart as Brighton, Bristol and Reading. The trip was led by Ed Jarzembowski on behalf of the Geologists' Association. The Farnham Geological Society was represented by Wally Stedman, Cath Clemesha and Colin Brash. Wally found a spider. Cockroach wings were also found as well as a variety of plant fossils.

Aubrey Clark

# FIELD STUDY VISIT TO WALTON-ON-THE NAZE AND THE ISLE OF SHEPPEY, MAY 1990

Some fifteen Members of the Farnham Geological Society, having driven in their own cars, assembled at 10 a.m. on Saturday 19th May 1990 outside Stuart Baldwin's Fossil Hall, at Silver End, Witham, Essex.

Stuart personally welcomed us to his museum in which he proudly showed us around his display of specimens followed by an introduction to his tightly packed shelves of antiquarian books. He had some geological maps too, all priced and for sale. We were then directed to an adjacent building where Mrs Baldwin was in charge of the sale of pamphlets, fossils and replicas literally home made on the premises. The replicas are of such a quality that they are sold to schools and universities both for teaching and examination purposes.

Certainly Stuart's Museum of Palaeontology is well worth a detour if in the area. The museum is usually open from 10 a.m. to 5 p.m. "but an appointment is essential to avoid disappointment". After lunch in a local hostelry we drove to Walton-on-the-Naze and met alongside the Naze Tower (TL 265235), the most easterly part of Essex.

This section of cliff is well known as the type section of the southern Waltonian Red Crag which rests directly on London Clay. The Red Crag and overlying silts and gravel have slipped badly and there is a considerable quantity of slipped material on the lower cliff of London Clay where abundant fossils can be found. These include bivalves such as *Glycymeris* and gastropods such as *Neptunea contraria* and *Neptunea despecta*. Pat Wilson found one of each; shall we see her sporting a pair of ear-rings, left and right? Much of the red shelly material has been comminuted but with the continuing erosion of the Red Crag cliff there is always a possibility of finding whole fossils in the slipped areas.

The night was spent at the Tanunda Hotel, 217 New London Road, Chelmsford, a comfortable and pleasantly equipped hotel which had adopted the East Anglian practice? of not serving dinner at week-ends. Several managed the three-quarter mile walk to the Moulsham Tandoori thereby suffering enough additional exercise to add real enthusiasm for an undoubtedly good tandoori.

On Sunday morning we met at the home of Jim Craig, Roselands, Minster Drive, Minster-on-Sea, Isle of Sheppey, Kent, and what an Aladdin's cave that house turned out to be! Jim modestly explained that his daily work had nothing whatsoever to do with geology but that micropalaeontology was his hobby. Specimens, mainly from the London Clay of Sheppey were beautifully displayed in four rooms. Inspection took quite a long time and the well deserved expressions of admiration for this amateur extraordinary did appear to be appreciated.

Jim led us to Barrow Brook (TQ 012728) where we gained access to the sand and pebble beach. We walked for about a quarter of a mile to the southeast in the direction of Warden Point where we were advised of likely finds on the beach. The cliff, like that at Walton-on-the-Naze, is likewise being badly eroded and the best fossil sites are at the wash out points just above the London Clay. Most of the fossils are found in accumulations on the beach or in loose cementstone nodules on the foreshore.

All had been warned that sustenance of any sort would not be available close by and so had brought a good supply of sandwiches and other eatables. The warning to do this was clearly well advised.

Searching continued long after the lunch break. Finds included shark's teeth of which there were a large number of varieties possible, tropical seeds, *Nipa burtinii* (a tropical fruit pod), *Teredina personata* of which one Member had two or three fossilised examples of the actual mollusc responsible for the worm-like holes in the rock samples. Lastly, 'cementstones' which embodied crab, lobster or even larger vertebrate remains.

By the time we reached home it must have been well into the evening. The field trip was generally pronounced most enjoyable, and instructive even if we did not all turn up a sea dragon. We are indebted to Dave Taylor for the first day's itinerary and to Wally Stedman for the second; also to Cath Clemesha for the excellent handouts. We are also indebted to the Daily Telegraph of 21st May for recording the Sheppey Island beach scene with, among others, busy in the background Daphne Tarbox by way of proof of our visit. The bearded gentleman in the foreground with the large tin of pamphlets urging objection to the crisis cuts at the Natural History Museum being a timely reminder that we have all received requests to that end.

Aubrey Clark

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**CONGRATULATIONS**

Our congratulations go out to Conrad Volkner who attained his Open University degree in geology during 1990. Conrad is carrying on with his studies in order to obtain an Honours classification for his degree. We wish Conrad all the best in this endeavour.

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## BOOK REVIEWS

1990 has been a good year for the publication of new geology books, with most publishing house bringing out several new titles. Unfortunately few of them have been very accessible to the interested amateur geologist, either due to the technical level or, more commonly, the prohibitive price. However, the year did see the publication of several moderately priced books which might be of interest to Members. Short reviews of several of these follow:

HIGHLAND GEOLOGY TRAIL by John L Roberts. Published by Strathtongue Press, Tongue by Laird, Sutherland IV27 4XR, Price £4.95.
Many of the existing geological field guides to northern Scotland deal with very localised areas or require long walks into hill and moorland terrain to see the geology. This new guide, which reflects the author's 30 years of field work in the highlands has adopted more of the roadside travelogue style which is so popular in America. The book is laid out as if you were to undertake a drive around the coast of northern Scotland, beginning in Inverness and finishing in Oban. All of the exposures described are either roadside or coastal close to main roads, and as such the sites are all readily accessible. The guide has been written with a minimum of highly technical terms, so as to appeal to the non-specialist. It is supported by black & white sketches. There were rather too few for my liking. However, this guide does come into its own when used in conjunction with the author's earlier book 'The Macmillan Field Guide to Geological Structures' (reviewed in the December 1989 Newsletter). Many of the marvellous colour photographs in this book (which incidentaly won a prestigious award) were taken at sites described in the geology trail; the author includes cross-references to photographs in his earlier book. I discovered this book towards the end of last year's holiday in Scotland and only wish that such a guide had been available years ago.

**WREN'S NEST NATIONAL NATURE RESERVE; Geological Handbook and Field Guide** by A Cutler, P G Oliver and C G R Reid. Published by Nature Conservancy Council. Price £1.
This new 30 page pamphlet replaces the earlier (1970 and 1978) NCC leaflets. It has been expanded to include a detailed stratigraphic column and more detailed geological map of the nature reserve. The guide has been substantially rewritten and is supported by many good pen and ink sketches. It should be an essential companion to any visit to this important site.

**GEOLOGY IN SHROPSHIRE** by Peter Toghill. Published by Swan Hill Press, 101 Longden Road, Shrewsbury SY3 9EB. Price £9.95.
This book represents the first real synthesis of Shropshire geology since the publication of the BGS regional guide in 1971. The author is a lecturer in geology of the extramural department of Birmingham University and for many years has been responsible for adult education in Shropshire. The book reflects the author's 20+ years of field work and leading field trips in and around Shropshire. His experience in teaching adults is shown by the clarity of the book and the avoidance of needless technical jargon. At 180 pages long the book presents a detailed chronological description of the county's geology, well supported by sketches and both B&W and colour photographs. This book is not a field guide, but should be considered as an essential companion on any geological trip to Shropshire. It is to be hoped that the author produces a companion field guide in the near future.

**VERTEBRATE PALAEONTOLOGY** by Michael Benton. Published by Unwin-Hyman, Price £14.95.
Since 1991 is the 150th anniversary of the introduction of Dinosaurs into our lives we can expect to be bombarded by new books and articles in the popular scientific press on dinosaurs. Whilst undoubtedly fascinating their larger than life image means that dinosaurs are typically discussed outside of their context to other vertebrates groups from which they evolved and competed. Until recently the only texts to deal with vertebrate palaeontology as a whole have been heavy (in every sense of the word!) and very expensive hardback editions. The publication of Michael Benton's paperback book gives us an up to date and very readable treatment of the development and evolution of the vertebrates. The book presents a unified account beginning with speculations on the origin of Chordates and concludes with the latest theories on human evolution. The book is supported throughout by frequent and clear diagrams. Whilst clearly written as an undergraduate text book, it remains an easy book to read and is the most accessible book on vertebrate palaeontology currently available to the interested amateur.

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**ADDENDUM**

As mentioned in Peter Cotton and Tony Brown's article on the field trip to the Massif Central, an exhibit based on the field trip was displayed at the Geologists's Association annual reunion in November. We subsequently received a short letter from Eric Robinson of the G.A. complimenting us on our exhibit.

To allow a wider audience to see this exhibit it is intended that it should be used in the display cabinet outside the Lawson Room over the next several months. The exhibit naturally divides into four geographic areas. Each area will be used as a theme for one display. The first area (La Chaîne des Puys) has been on show for the past two months. Over the next three or four months it is planned to rotate in the other four areas (Le Mont Dore, Langeac, and Le Puy en Velay). So if you want to see what the rocks and scenery of the Massif Central look like keep any eye on the display cabinet.