

Forthcoming Meetings:

Indoor meetings are held at the Saracen's Head, Stone Street, Dudley. 7.30 p.m. for 8 p.m. start.

Monday: 5th December: Lecture "The Racecourse Colliery Mine" by Nigel Chapman of the Black Country Museum (mining) group. Nigel will talk about the mining group's past, present and future activities including the present artificial underground display.

The mining group have been researching on the history of coal mining in the Black Country and are at present engaged on the reconstruction of a small mine simulating working conditions on the face of the Dudley thick coal (see our Christmas cards!) They have been reinstating an old coal mine which exists on the Black Country Museum site. They examined old mining records from all over the Black Country and where necessary, have brought in equipment from other locations, to reconstruct an authentic small mine.

Pithead and winding gear has been installed, and the underground workings have been developed.

This talk should give a real insight into mining practices, including the geology, of the old Black Country.

Monday: 16th January, 1989: Lecture: "A mineral hunter in Ireland", by Colin Reid, Keeper of Geology at Dudley Museum. Prior to his appointment as Curator of Dudley's palaeontology collection Colin was employed as an exploration geologist to search for gold, platinum, coal and lignite in his native Northern Ireland and to compile a map on the Mineral Deposits of Ireland. This map, produced for a conference on Irish Mineral Exploration in 1984 remains the most up-to-date publication on the country's geology.

Until recently Ireland was considered to be virtually devoid of mineral resources, so much so that the government offered tax-free incentives for exploration companies to come and search. The result was the discovery of the largest lead and zinc deposits in Europe, a mini-Klondike that still continues today, and an Irish government trying desperately to U-turn, and get back some of the millions pouring into the coffers of foreign investors!

In addition to the lecture, Colin will also have part of his own mineral collection on show - notably zeolites from the Antrim basalts and semi-precious beryls and topaz from drusy cavities in the Mourne Mountains.

Monday: 13th February: AGM at 7.45 p.m. followed at 8 p.m. by Paul Shilston on "Yellowstone and Yosemite - two great national parks".

Yellowstone and Yosemite are probably the two most attractive national parks in the USA, and they offer interesting geological contrasts, as well as breathtaking scenery.

Yellowstone is on one of the Earth's "hot spots" and shows an amazing range of geothermal features - geysers, hot springs, fumaroles and mud pots. The Upper Geyser Basin has the largest concentration of geysers in the world, over 25% of the world's total, including Giant Geyser which erupts over 200 ft high, and of course, Old Faithful.

The hot springs include Mammoth Terraces, a series of lime-rich springs which have developed beautiful pools edged with travertine of delicate blues and pinks.

Yosemite is quite different. It is a large granatic area which was heavily glaciated during the Ice Age, and shows spectacular landforms caused by glaciation and weathering.

The 3000ft sheer cliff of El Capitan, and the celebrated Half-Dome with its distinctive shape, are only two of these features to be seen.

Paul visited both these parks in 1987 and will illustrate his talk with some of his slides.

Monday: 13th March: Lecture: "The Channel Tunnel" by R. G. Rainford of Tarmac Construction.

Tarmac Construction are one of the partners in the Eurotunnel Consortium and this lecture will describe some of the geological and civil engineering aspects of the tunnel project and will update members on the current progress of tunnelling.

28th March - 10th April

MURCHISON SYMPOSIUM:

An international conference on the Silurian Rocks of the world at Keele University. Between 150-200 geologists are expected for this conference, participants coming from as far afield as China, Australia, the USSR and the USA.

Sunday: 30th April: Field Meeting: "Tertiary Dykes in South Staffs". Leader: Dr. David Thompson of Keele University. Joint meeting with Shropshire Geological Society. 10.30 a.m.

May: Lecture to be announced.

Monday: 19th June: Evening field trip to Uffmoor Wood. Woodland, wildlife and geology. Leader Alan Cutler.

Monday: 3rd July: Bar-b-cue at Oldswinford Hospital School.

September: Date to be confirmed. Field trip to the Wrekin area, Leader Dr. Alan Wright of Birmingham University.

Monday: 2nd October: Lecture: "The Age and Nature of Glaciation in North Wales: a modern interpretation".

EDITORIAL:

It is pleasing to note that our programme in the near future has very much

a local flavour albeit in different ways. A lecture on a mine simulating working the Dudley thick coal must be dear to members' hearts and I for one look forward to hearing about it and eventually visiting.

January's lecture on mineral exploration in Ireland might not seem to have a local element but it is very pleasing to welcome Colin Reid the first Keeper of Geology at Dudley Museum who will be giving the lecture. Colin's appointment has certainly given geology in the Black Country a tectonic lift, witness the very successful open day held recently in the museum.

Last but not least the article included in the latter part of this month's newsletter is a re-print from an article by our own Paul Shilston on the BCGS reprinted from Geology Today. This should certainly be of interest to members and hopefully they may pass it to a friend to read through and, who knows, gain a new recruit.

Best wishes for Christmas and the New Year.

Contaminated land - The Next Environmental Disaster? (part 2) by Graham Worton:

The hazardous chemicals which are commonly considered are given below. These are grouped according to their damaging affect:

Group at Risk: Common Chemical contaminant:

Humans/ animals	Chromium, Cadmium, Arsenic, Mercury, Lead Tars, Phenols, Cyanides Asbestos, Pesticides, Radioactive compounds Acids and Alkalis.
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Building Materials Services and pipes	Sulphate, Sulphide, Phenols Coal-tar, Chloride, Acids, Alkalis.
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Plants (Phytotoxic elements)	Boron, Copper, Nickel and Zinc
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In terms of a health risk to humans, obviously the concentration of the chemical and the duration of exposure are important factors. Another important factor is the type of exposure and the type of chemical. Typical exposure routes for humans are:-

Direct ingestion	(a child putting dirty fingers into his/her mouth)
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Indirect ingestion	(eating contaminated vegetables - i.e. grown on contaminated soil etc.)
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Inhalation (breathing in vapours, dusts, fibres etc.)

Skin contact (direct contact with skin - absorbed poisons, irritants or carcinogenic substances)

Indirect hazards (fire and explosion caused by further chemical reactions in the ground releasing toxic or explosive gas)

Contamination of water supply.

Clearly therefore a contaminated site can be rendered harmless and redeveloped if we can prevent direct contact with the contaminated soil and prevent sensitive organisms (plants) and structures (pipes, foundations) etc. from coming into contact with the contaminated soils or we can remove the problem altogether and deposit it elsewhere in a licenced waste disposal facility.

There are many options for reclaiming a contaminated site. In the UK two methods are used in 99%+ of cases treated. These are:-

- (i) to excavate the contaminated material from the ground and take it to a waste disposal site elsewhere, depositing 'clean' material in its place.
- (ii) to place a barrier layer of clean material between the contaminated soil and the surface of the site to prevent direct access.

There are numerous ways of extracting a particular chemical from the soil to clean the soil in-situ including physical separation of heavy metals, magnetic separation of metals, thermal incineration of the soil to burn off tars and organic chemicals, Microbial degradation of organics, chemical stabilisation or fixing etc.

Scale of the problem:-

It is clear that potentially there are a very large number of sites which may be contaminated. In the UK there are in excess of 13,000 landfill sites alone and tens of thousands of steelworks, gasworks, petrol stations, scrap

yards, railway yards, chemical works etc. The number must also perpetuate to some extent as industrial dereliction is an ongoing problem of our modern society. In Europe data is very conflicting and is no doubt to some extent politically biased but indications are that several tens of thousands of sites are currently recognised as contaminated with many more potentially contaminated sites requiring further investigation.

Let us hope that the realisation that a throw-away society such as ours provides difficulties for the generations that follow is not too far from public concern, and that episodes like the recent Karin-B saga can force nations to give more thought to the ultimate costs of irresponsible handling of industrial by-products.

Open Day at the Geology Museum, Dudley - 29th October, 1988:

On Saturday 29th October the second Open Day was held at the Dudley Geology Museum, organised and presented by Colin Reid, the curator, to try and bring together the different geological factions within the West Midlands and present Geology as an interesting subject to the public. Some 600 people, mainly adults and including the Mayor of Dudley, visited the museum and members of the public were still coming in at 5.10 p.m. even though the closing time was ostensibly 5.0 p.m.

In conjunction with the open day, the Nationwide Geology Club held their AGM at the museum and pronounced it one of the best days out that they had ever had and hoped to come back next April.

The Open Day Exhibition, which included stands from the West Midlands Mineral and Gem Society, Wrens Nest, Dudley Cave Rescue Team, our old friends Johnson, Poole and Bloomer represented by Colin Knipe (Graham Worton part-time), the Nationwide Geology Club, Spencer Mather with his Norwegian minerals, the Association of Earth Science Teachers, the Museum itself and of course BCGS, represented at various times by Graham Worton, John Gollidge, Alan Cutler and myself, was very well received and the 'hands on' display of minerals and fossils on the adjoining Museum and BCGS stands proved very popular.

As would be expected there were many queries, particularly from children, about fossils or minerals they had found and mums and dads were very busy making notes of the information given by the museum staff and ourselves. One spectacular fossil, over 2 ft in diameter, was brought in by wheelbarrow,

much to the amusement of those present. It had apparently been found in Evesham during the excavation of a trout pond, and was identified as *Alsatites liasicus*, an ammonite from the Lower Lias.

Considerable interest was shown in the activities of the BCGS and our advertising literature disappeared at a rapid rate. It will be interesting to see if we receive any feedback which results in new membership. Over a dozen people did say that they were interested in joining. We also managed to sell some Christmas cards, charts and booklets, altogether a successful day for the Society.

One of the stars of the exhibition was the display of Norwegian minerals. presented by Spencer Mather, Spencer, who lives locally, spent several years in Norway and has amassed a superb collection of gems, which he cut himself and minerals and was responsible for the setting up of the first Mineral Society in Norway. Much to the delight of Colin Reid, Spencer has offered to donate his collection to the Museum, if suitable display facilities can be provided - a spectacular acquisition, if it comes off.

Of particular interest to myself was the display of old mine plans by J. P. & B. which gave an insight into the skills of the mining engineers of the last century.

Apart from the exhibition and the display of fossils and minerals in the museum itself, Colin presented a series of film shows which included the films "Journey into Evolution", a little outdated but very enjoyable and the excellent "Fossils - Exploring the Past". The films proved very popular and the shows were well attended.

The local press were of course present and BCGS received a little more publicity as our stand was used as a background for the photographs taken of the Mayor with representatives of the museum stand team.

Our thanks to Colin Reid for a thoroughly enjoyable day which Colin himself voted a total success, although he had initially had some doubts that it would match up to last years spectacular first Open Day. It was nice to see that all Colin's hard work had been rewarded and everyone present agreed that it had all been totally worthwhile and were already looking forward to next year.

Chris Jowitt:

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geology today

The Black Country Geological Society

Britain has been noted for its local geological societies since the great amateur geology boom of the 19th century. Many such societies (old, new or re-formed) still exist. But what is their role in the 1980s? We asked Paul Shilston to describe the history and current activities of The Black Country Geological Society, of which he is Honorary Secretary.

The Black Country – Where is it? What is it? Most people have a vague idea that it is somewhere near Birmingham, but to the geologist it is exactly defined as the horst block of Silurian–Carboniferous strata, upfaulted in the Midland Triassic plain. Lying between 5 km and 20 km west of Birmingham, with Dudley as its main centre, it was one of the cradles of the industrial revolution, the result entirely of its geology. There were significant deposits of limestone, ironstone, fireclay and coal, including the famous Dudley Thick Coal with a single 10-metre seam. This led to the early development of ironmaking and related industries, and brought great prosperity to the region. Indeed, so important was geology considered that Dudley Borough included its commonest trilobite, *Calymene blumenbachii* (the 'Dudley Bug'), in its coat-of-arms. The Black Country Geological Society now also uses it for its logo (see opposite).

There are several important geological sites in the area, including Wrens Nest, famous for its trilobites, which was created a National Nature Reserve in 1956 on account of its geology. There is also Doulton's Claypit, formerly worked for fireclay, and created an SSSI on account of the extensive Carboniferous sequence displayed. Interest in geology is natural in such an area, and there has been a geological society in existence, with a few gaps, since the middle of the last century.

The present Black Country Geological Society (BCGS) was founded in 1975, but it can claim a loose connection with the Dudley and Midland Geological Society founded in Dudley in 1842. This society would have drawn its initial membership of 150 from local people with scientific interests as well as from many connected with the mining industry (both coal and limestone). Its national standing was indicated by

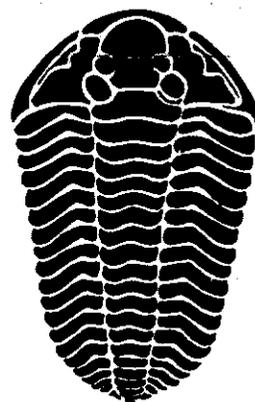




Fig. 1. Doulton's Claypit SSSI (Site of Special Scientific Interest), an important Black Country geological and wildlife site.

the fact that its inaugural meeting was addressed by Sir Roderick Murchison, who travelled to Dudley specially for the purpose. This society was re-founded in 1862, and it carried on until early in this century, when it appears to have died out.

The present membership of the BCGS is basically a group of people brought together by their interest in geology. It includes people who studied geology at university or at more modest level, people whose jobs bring them into contact with geology (civil engineers, teachers, water supply, foundry and other engineers) and people who have developed an interest in geology from love of countryside, from collecting specimens or from seeking an academic study. The Society runs a programme of lectures, given in Dudley, and field meetings within a reasonable day's travelling distance. As the Society does not have close contact with an academic or other institution, it relies for lecturers and leaders on the goodwill of local bodies. We receive much help from local universities and polytechnics, from museum staffs, from local companies with a geological interest, from public bodies, and from many other sources. We are very grateful for the time and effort these people put in on our behalf.

Fig. 2. A BCGS evening field meeting at a local Triassic exposure near Stourbridge.



Conservation

From its beginnings the BCGS has been active in the conservation of geological sites; in fact, it was the issue of the West Midlands County Structure Plan, with its implications for geological sites and their future, which helped to trigger formation of the Society in 1975. Conservation activity has been carried out on several fronts:

- (1) creating a register of all geological sites in the area.
- (2) liaising with other local conservation bodies (Urban Wildlife Group, wardens of local nature reserves, Nature Conservancy Council, local authorities, British Trust for Conservation Volunteers, etc.) in monitoring conservation progress. Sites that are important geologically are more likely to be preserved if they can be linked with other interests - wildlife, recreation, industrial archaeology, teaching - so that pressure can be brought to bear from several directions.
- (3) playing a 'watchdog' role of speaking out when sites are threatened - physically or by planning and development.
- (4) helping to develop or clean up local geological sites.
- (5) stimulating public interest in conservation.

Other activities

In addition to the general programme of lectures and field meetings, the society has carried out a range of specialized activities, mostly to help the wider public gain an appreciation of geology. Typical among these are:

(a) creating a catalogue of Black Country geological sites. This was a considerable undertaking, and the local knowledge of society members was invaluable, especially in identifying those smaller local sites that might otherwise have been missed. When Stoke-on-Trent Museum became a Geological Site Documentation Centre, the Society's records for the South Staffordshire area were offered to it; and now that Dudley Museum is to become a Centre, all records will be transferred there.

(b) helping to conserve the Dudley Museum collection. Dudley has an important place in the history of geology, but over the years its collection had been allowed to deteriorate, eventually being stored in a damp basement (the fate of many collections!). There were no official resources to conserve it, so society members carried out an amateur conservation programme during 1978-79, restoring and identifying where possible, and moving the collection to a better location. This action, plus further lobbying, created some general interest and resulted in professional conservation being carried out by a supervised MSC group. Recently Dudley Borough has appointed its first Keeper of Geology, and the Museum now sports the geological *Thumbs Up* sign on its front door.

(c) helping with the rescue of the Fraser Collection. This large Victorian collection was left to Wolverhampton, but had been allowed to decay, finishing up forgotten in yet another damp basement. (How many damp basements are there?) The society was aware of its importance, and made efforts to arouse interest in its preservation. Contact was made with Tristram Besterman, then at Warwick Museum

and acting as co-ordinator for research on Midlands geological collections. Further representations gradually had effect, so that when a peripatetic geological curator was appointed for the West Midlands, Rosemary Roden made it her first priority to work on the Fraser collection. The story has a happy ending, for the collection, now saved and assured of a future, is returning to its original home in Wolverhampton, in a special gallery opening in February 1988.

(d) running a programme of guided geological walks for the public, on behalf of the Countryside Commission. They featured three local sites: Wrens Nest, Doulton's Claypit, and Cotwall End Valley, with several visits to each during the summer. During the four years 1979-82 that the programme was run, over 1000 people took advantage of these walks. Eventually, the walks were discontinued when the Countryside Commission stopped its programme, and the publicity could not be maintained.

(e) helping establish geological information and trails at nature reserves in the locality at Saltwells Nature Reserve, Netherton; Cotwall End Valley, Sedgley; and Sandwell Valley Countryside Interpretation Centre. These are all nature reserves in a generally urban environment, but with a geological interest adding to their importance for recreation and wildlife.

(f) hosting the 1985 AGM of the Geological Curators' Group, which was held in Dudley. The Society is a member of the GCG and values the role of museum curators in providing a bridge between the academic world and the general public.

Looking to the future

For most societies, maintaining or increasing membership is always an important consideration. Many members join for only a few years and then leave to pursue other interests, so it is essential to have a steady intake of new members. The teaching of geology (or the lack of it) in schools has an effect on the number of potential recruits, as does the image of geology held by the general public. Financially, it is



Fig. 3. A BCGS weekend meeting - a visit to a slate mine in Dolgellau.



Fig. 4. Our very own borehole! An unusual meeting given by a local drilling firm.

important to have a secure base, but the society does not have heavy running expenses, and so far this has not presented a problem. The future of any society of this nature depends, in the long run, on the commitment and enthusiasm of the members and officials. With this in mind, the future looks good.

Further details of The Black Country Geological Society may be obtained from Paul Shilston at 16 St Nicolas Gardens, Kings Norton, Birmingham B38 8TW.

Field trip to South Wales, Sunday 18th September:

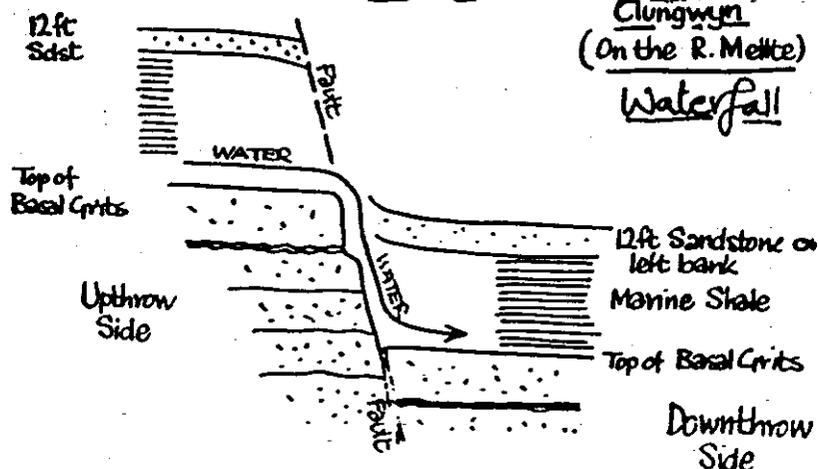
An excellent turn-out of Shropshire and Black Country Geologists benefitted from glorious weather for their excursion to the valley of the River Mellte and the Vale of Neath in South Wales.

The morning was spent looking at the Carboniferous succession near Ystradfellte. Our first halt was at the caves where the river has cut through jointed limestone of Basal Carboniferous. This is horizontally bedded and overlain by a more massive limestone forming the roof support. Clints and grykes are well developed.

The river emerged with greater discharge at the resurgence than at the entrance indicating that water must enter at several levels. Members took the sub-

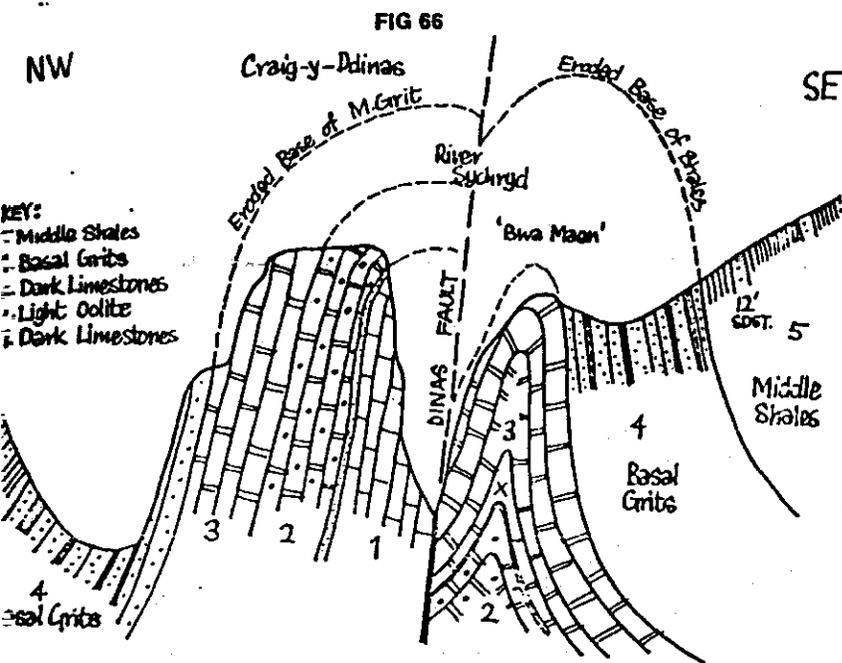
aerial route between sink and resurgence but numerous more suitably attired parties were following the river.

A very spectacular waterfall occurs at Clungwyn where a normal fault trending NW-SE cuts across the river and downthrows basal grits of Middle Carboniferous Millstone grit by 10 m.



After lunch we proceeded to the impressive quarry at Dinas Rock where dips exceed 70° and a tight anticline is seen as evidence of the Vale of Neath disturbance during the Hercynian Orogeny. The Dinas fault runs between the steeply dipping strata in the quarry and the axial plane of the anticline.

Geology including such titles as The Beginning of the Age of Dinosaurs, Minerals of Devon and Cornwall, Evolution of the Earth, Evolution and Environment in the Late Silurian and Early Devonian plus many others. List from editor or above address. They also purchase out-of-print and rare titles.



3. Murchison Symposium - Participants of the Symposium are planning a historical visit to Dudley on Friday 31st March, 1989. The Society has offered a contribution towards the cost of hosting the visit; this has been warmly received by the Symposium organisers who will give the Society an acknowledgement in the Symposium literature.

From the Papers:

We then climbed to the Dinas Silica Mine where refractory bricks were made from very pure quartzites. The rock unit is the basal grit. The final two sites were in the Pennant Sandstone group where the panorama from the North facing scarp extended from Black Mountain in the West to the Brecon Beacons in the East - a magnificent view. Closer examination of the Pennant group took place in the upper Rhondda where plant fossils were found within this arkosic, often coarse sandstone.

Andrew Rigby:

BCGS News etc.

1. Diamond Lapping Machines - a range of sanders, files, wheels and discs plus diamond whetstones available from Engineering Factors Ltd., Horns Road, Hawkhurst, Kent, TN18 4QT. Tel: (05805) 2560.

2. Natural History Book Service Ltd., 2 Wills Road, Totnes, Devon, TQ9 5XN. Tel: (0803) 865913.

A range of texts on Palaeontology and

BLACK COUNTRY GEOLOGICAL SOCIETY.

NOTICE is hereby given that the fourteenth annual general meeting will be held at 7.45pm on Monday 13th February 1989 at Saracens Head, Stone Street, Dudley.

A G E N D A.

1. Apologies for absence.
2. Minutes of the AGM held on 12th March 1988.
3. Statement of accounts and Treasurer's report.
4. Chairman's annual report.
5. Election of officers and committee.
 - (a) Chairman.
 - (b) Vice-chairman.
 - (c) Hon. Secretary.
 - (d) Treasurer.
 - (e) Field secretary.
 - (f) Four committee members.
 - (g) Hon. Auditor.
6. Any other business.

The retiring officers and committee are :

CHAIRMAN	A. Cutler	VICE-CHAIRMAN	J. Colledge
HON. SECRETARY	P. Shilston	TREASURER	Mrs. J. Shilston
FIELD SECRETARY	(vacant)	HON. AUDITOR	
COMMITTEE MEMBERS	S. R. Hughes	Mrs. J. Meakin	
	A. Rigby	P. Smith	
	G. Worton		

Hon. Secretary:

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