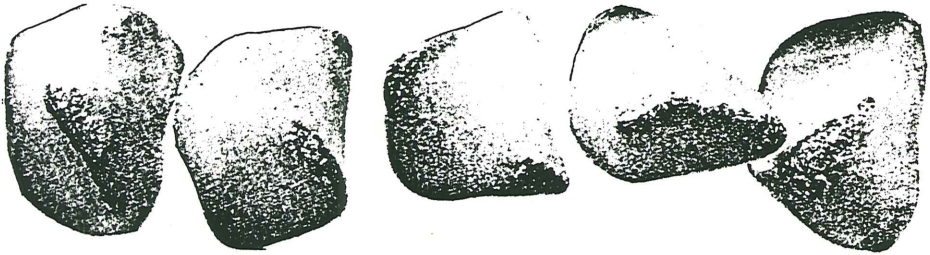


# CHARNIA



LEICESTER

LITERARY AND PHILOSOPHICAL  
SOCIETY

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THE NEWSLETTER OF  
SECTION C (GEOLOGY)

SPRING 1996 EDITION

The recent 'Saturday School', or more properly Symposium, was the most thought provoking and stimulating yet. That's my opinion - it would be interesting to receive comments from elsewhere. 'Origins & Innovations' considered the origins of vertebrates, their jaws, teeth and limbs. Richard Aldridge and Mark Purnell are to be congratulated for bringing together speakers from disparate areas of research; not only from the audience's point of view but also, it seems, for putting these workers in touch with each other, who might not otherwise have crossed paths.

Understanding of chordate/vertebrate origins has moved along considerably since I acquired my basic knowledge three decades ago! Embryology could then only roughly point to what were labelled 'presumptive areas'. Professor Peter Holland from Reading showed us that early *Amphioxus* embryos could be stained to show which areas would eventually become cerebral vesicle, pancreas, or whatever. That is, the control genes are identifiable and can be shown to do the same specific job, no matter what the vertebrate. For example, the cerebral vesicle of *Amphioxus* can now be shown without any doubt to be the equivalent of the diencephalon of higher vertebrates. Future research in this area of palaeontology will no doubt depend more and more on DNA in a way not quite envisaged by 'Jurassic Park'...

Like astronomers listening to the background microwave hiss of the Big Bang, palaeontologists are picking up faint echoes of vertebrate origins. The living echoes, such as *Amphioxus*, the jawless fishes and the lungfish are telling us more and more.

The strange thing about the fossil record is that the most vital links are often the most difficult to find. Sometimes, the fossil evidence isn't really missing at all and all that is required is to rearrange what we do know. Hence cladistics, which shows both 'cousin' and temporal relationships. A cladogram is a much clearer way of showing the 'tree of life' since it indicates more clearly the shared characteristics between life-forms. For example, it now seems clear that 'bony' fish appeared much sooner on the scene than the Devonian.

Another big question is: why are there apparent sudden leaps in evolutionary change, contrary to the classical Darwinian view? Were they simply responses to perhaps violent environmental changes of tectonic proportions, or simply serendipitous chance mutations giving some physiological, feeding or reproductive advantage - or even more simply, the filling-in of unexploited and vacant niches? Where intermediate forms do exist they had precious little time or opportunity to become part of the fossil record. Somewhere between 377 and 367 million years ago tetrapod vertebrates evolved. When, where and how did fins/lobes become limbs? If any reader is contemplating a visit to the States - particularly the area of the Harding Sstn. outcrops in Colorado, they might like to get in touch with Ivan Sansom at Birmingham University's Earth Science Dept. and make arrangements to bring back a few bags of samples for microvertebrate analysis!

More than two centuries ago the polymath Goethe presumed that a facial bone (the intermaxillary) - identifiable in terrestrial vertebrates, must also be present in humans. Was he applying the 'principle' of ontogeny repeating phylogeny? Sure enough, the intermaxillary does exist in our species, but only as the premaxillary of the foetus, later to become a fused part of the upper jaw which receives the incisors. This type of predictive science reminds me of the forecasts made by Mendeleev of the exact nature of chemical elements, yet to be discovered in his day, which would complete the clearly defined pattern of his Periodic Table. There are doubtless many like modes of discovery, probably waiting to be revealed by geneticists, made by studying primitive Chordates, such as *Balanoglossus* and the tunicates. This is the challenge of palaeontology - the pattern is clear but the last few pieces of the jigsaw cannot, as yet, be made to be fit, or worse, be found.

Resumes of each speaker's contribution to the 'Origins & Innovations' Symposium will be published later this year in the Society's 'Transactions' - well worth a read. The last thing I would mention about the Symposium is that it was good to see a number of undergraduates in attendance - and taking notes too!

Later this year (perhaps at the Members' Evening) we may be treated to a preview of the fossils Dave Martill has collected from Brazil and the remarkable preparation of them by Peter Blake. The only clue that I'm giving is: insects... Dr. Martill also has a considerable reputation in the field of the reappraisal of material in fossil collections; more of that further on in 'Charnia'. The cover of this Spring 1996 issue is just as topical as preceding front covers: it shows a group of stones. As to their lithology, all I am prepared to say is: think of this issue's publication date! The answer is to be found somewhere in the following pages... G.S.

LEICESTER LITERARY & PHILOSOPHICAL SOCIETY - SECTION 'C' - GEOLOGY

SECRETARY'S REPORT (1995-6):-

This year saw a well supported programme of Winter meetings, with average attendance into the thirties. Our thanks go to John Martin for getting us back into the New Walk Museum in November for a leisurely 'behind the scenes' visit. Mike Le Bas gathered in some of his colleagues for his farewell series of lectures - he is retiring to the South Coast and we wish him well. Alf Whitaker, Alan Woolley, Marge Wilson, Jane Plant and Evelyn Brown gave us interesting talks across a wide spectrum. These were ably complemented by Jeremy Richards and Keith Duff from English Nature and were rounded-off with our ever popular and lively Members' Evenings with a wide range of exhibits and presentations. Simon Conway-Morris delighted the parent body when he opened the New Year with his extra-terrestrial talk. Dick Aldridge and Mark Purnell organised this year's Saturday School, which has just taken place. Our forthcoming Winter programme begins on October 2nd. and restarts after Christmas on January 15th. Bob King, our President, has kindly agreed to open the season and we shall be joined by the Russell Society on this occasion. November 16th. sees an extra meeting here at the University, by kind invitation of the Yorks. Geol. Soc. Our Saturday School and Parent Body Joint Meeting have not yet been finalised.

E.B.

TREASURER'S REPORT:-

This is the first year that all our funds have been in the Hinckley & Rugby Building Society and our Interest has benefitted accordingly. Our income from subscriptions has risen this year, partly due to some back subscriptions and partly due to the addition of new members. Our paid-up membership now stands at ninety-eight. On the expenditure side, speakers' expenses remain low largely due to the generosity of those not claiming any expenses. There have been three issues of 'Charnia' during the year, the production of which, together with postage, continues to be a main item of expenditure. Our overall running expenses have however fallen, resulting in a balance of income over expenditure of £85.

STATEMENT OF ACCOUNTS AT MARCH 11th., 1996.

<u>RECEIPTS</u>	1995-6	1994-5	<u>EXPENSES</u>	1995-6	1994-5
Cash in hand (£40.14)			Insurance	68.33	66.66
Bldg. Soc (£421.84)	461.98	564.24	Speakers' exp.	54.75	67.45
Subs.	314.50	266.50	Stationery	24.84	
Donations	4.00	6.00	Photocopying	17.41	
B.S. interest	16.82	7.39	Postage	25.32	
Coffee sales	18.74	12.05	Sec.& Tr. exps.		85.86
Visitors		2.50	Charnia prodn.	78.80	112.56
			Telephone	1.09	
	<u>816.04</u>	<u>858.68</u>	Museum meeting		29.93
			Book token		34.24
			Cash in hand (£6.33)		
			Bldg. Soc. (£540.97)	547.30	461.98
				<u>816.04</u>	<u>858.68</u>

Audited and signed:  
M.J.East, 11.3.96

FIELD SECRETARY'S REPORT - 1995:

- Sunday, April 30th. A visit to Bantycok and Staple Quarries. A very good turnout, in spite of the hot weather. Many thanks to Andy Swift.
- Sunday, May 20th. An afternoon of 'hands-on' experience of geophysics at Oadby. Another surprisingly good turnout. With thanks to Ian Hill.
- Saturday, June 24th. A morning visit to a gypsum mine, both of the surface and underground workings. All places fully booked. Thank you Graham Stocks.
- Sunday, August 20th. A visit to Blockley pit. A good turnout from our own group, the Warwick group and the Essex group. Very hot and very dry. Thanks to Pete Blake and Roy Clements.
- Sunday, September 3rd. A Visit to Buddon Wood Quarry. An excellent turnout. Many thanks to Gill Weightman.

I look forward to seeing more members and their friends on this year's field excursions. If you have any suggestions for visits during the field season of 1997, please let me know.

Peter Blake

PROFILE: PETER BLAKE, FIELD SECRETARY.

After being medically discharged from the Army in September, 1970, I developed further my life-long interest in geology by specialising in the study and collection of minerals. Much of this activity was carried out during holidays in Cornwall. In 1971, following leg surgery, I was unable to travel as far afield as the South West and had to confine my geological activities nearer to my home in Warwickshire. As a consequence of this, geological interest developed a palaeontological bent.

During the long, hot Summer of 1976 I unearthed what I can only describe as a 'pregnant ammonite' at Blockley Station Pit. This is definitely a specimen of *Lytoceras* sp. though it has an annular swelling of unknown function. Some of you may remember seeing this when I brought it along to one of the Members' Evenings.

It wasn't until the late eighties that I got into the geological swing of things again, due to more surgery. Long Itchington became the field site of convenience and I began to find, amongst other things, Plesiosaur bones. My wife, Helen, also has developed a keen interest in geology and on one occasion we found a very large nodule containing the disarticulated bones of the ichthyosaur *Tamnodontosaurus*. This was identified as such by Leicestershire Museums Service and thus developed my association with their Earth Sciences Section.

In the December of 1990 I was introduced to members of the Lit & Phil Section C, during the Museum Open Day of that Year. I subsequently became a member of the Society in 1991, joining the Committee in 1993, to become Field Secretary in 1994.

P.B.

Readers of 'Charnia' may already be aware of the possible adverse effects of Local Government re-organisation on the County's Museum Service. When the City of Leicester assumes unitary status the fear is that the County's collection of several million artefacts could be split up. The hope is that a joint committee will be able to co-operate and run the Service between the City, County and the County of Rutland. Lord Kimball, in a House of Lords debate, described the Museum Service as 'unique' and that it is 'recognised as the finest provincial museum service in the country.' His speech was supported by Baroness Hollis, the former leader of Norwich County Council, in whose county a co-operative approach has already been adopted. John Martin, Keeper of Earth Sciences for Leicestershire Museums writes for 'Charnia':

'Many readers will be aware of the process of Local Government Review which has been working its way across England, and of our own Museum Service's concerns that the Review of Leicestershire's local authorities could result in dismantling the integrated County Service which has served the area so well for nearly 150 years.

The Museum would not be here but for the Lit. & Phil. The Society's collection of 10 000 items was entrusted to the Town Council in 1849; it is this collection which, under the stewardship of Town, City and (since 1974) County has grown into the largest (4 million items) and best (15 museums all over Leicestershire dealing with every aspect of the area's arts, science, industry and culture) provincial museum service in the country. The idea that all of this could be broken up, half-duplicated or closed down has filled Museum staff and customers with horror.

A campaign to ensure that the Service did stay together and did form part of Parliament's Orders for the reorganisation of Leicestershire has been waged, at all levels from local parish to the House of Lords, over the past two years.

We have not won yet. The Orders were published at the end of February; there can be no formal provision for Leicestershire Museums after reorganisation, because museum services are not a 'statutory function' like education, social services and so on. We did get a debate on the subject in the Lords, the uniqueness of the service is now recognised, and we are hopeful of a Joint Board, formed by the three new local authorities (new Leicester, new Leicestershire, Rutland) to run Leicestershire's Museums from April 1997. Where the money will come from, we're not quite sure; we are by no means out of the wood yet, but things are looking a bit more hopeful.

More news when I have it,

John Martin.'

*If readers have views about this matter and would like to express them in 'Charnia', please contact the editor.*

Another good attendance marked this meeting, our final of this session, with Mike Le Bas giving what may well be his farewell talk as he retires to the South. In his report he commented that it did not look possible that we would be able to move back to the Museum in the near future. He thanked all members of the committee for their help and support in his year of office. He made reference to a good series of Winter meetings, all well-attended, and to a promising forthcoming Summer programme, which he hoped that the membership would fully support.

The reports of the other Officers appear elsewhere in this issue. The Saturday School was reported to be an excellent day, both from the quality of the content and from the scale of attendance - around seventy being present.

In the election of Officers, there being not more than one nomination for each post (and no nomination for Vice-Chairman) they were proposed, seconded and accepted en bloc and nem con. There were three vacancies for the committee and five nominations were received. This is a very pleasing sign to have members willing to come forward and get involved in the running of the Section. Thanks must go to Trevor, Dennis, Andrew, Nazima and Jan for this. The results of the ballot were for Trevor Ford and Dennis Gamble to serve for two years and Jan Zalasiewicz taking the one year slot by a small margin.

Following the official business, Mike gave a stimulating and enlightening talk on his theory of the 'Mount Bardonia volcano'. John Martin, our incoming Chairman rounded-off the proceedings by wishing Peter Blake, our Field Secretary, a happy 40th! (...and I'm sure we all join in by wishing Helen and Peter all the best with their expected new arrival). John then thanked Mike for his talk and wished him well in his retirement.

It was just as well that this was our last meeting of the season, as we struggled to meet the 9.30pm deadline for leaving the Museum. Our thanks to the porters for their patience.

FOSSILS FROM MESSEL...

...at the New Walk Museum from June 2nd. to July 21st., a stunning exhibition of fossil bats, snakes, hedgehogs, toads, birds, crocodiles, assorted rodents, and fish. This is a must!

## Programme of Field Excursions for Summer 1996.

**SATURDAY, APRIL 20th. BRADGATE PARK - THE BRAND - BLACKBROOK RESERVOIR.** The Charnian supergroup is mainly a sequence of strongly cleaved island-arc volcanoclastics and pelites which contain Ediacaran fossils. Rising diorite masses influenced sedimentation and tectonics, and the upper part of the Charnian controversially contains the possible Cambrian trace fossil, *Teichichnus*. Meet at Old John Car Park (Hunt's Hill) at 1030h. Bring a packed lunch. This is a joint meeting with the Shropshire Geol. Soc., who will be arriving by minibus. Leaders: Drs. Helen Boynton and John Moseley. (Access to The Brand courtesy of Lady Martin).

**SUNDAY, APRIL 28th. BRADGATE PARK VOLCANIC & SEDIMENTARY ROCKS.** Meet at Hunt's Hill Car Park (i.e. Old John car park) at 1400h. Map ref. SK 522116 - Sheet 140, Leicester & Coventry. Leader: John Martin.

**SUNDAY, MAY 12th. BARDON HILL QUARRY.** In and around Bardon Hill Quarry are exposed acid volcanic structures; dacite domes and mineralised dacitic breccias. These are cut by massive quartz-filled mineralised fractures locally producing cataclastic and chlorite schists and veins with quartz, albite, dolomite, haematite and gold. The breccias result from pyroclastic volcanism as the result of dome collapse and possibly caldera collapse. Meet at the entrance to Bardon Hill Quarry at 1000h; end by 1600h. Lunch will be in the pub nearby. Map ref. SK 445127. Hard hats and boots necessary. No children. Leader: Mike Le Bas.

**SUNDAY, JUNE 2nd. KETTON QUARRY.** Excellent exposures of the Middle Jurassic clays and limestones. Meet at junction of Pitt Lane and the A6121 at 1000h. End by 1600h. Map ref. SK 984051 (Sheet 141). Leader: Alan Dawn.

**SUNDAY, JUNE 22nd. DUDLEY MUSEUM & WREN'S NEST NATURE RESERVE.** Begin with tour of Dudley Museum to view extensive collection of fossils from Wren's Nest and local Coal Measures, followed by visit to Wren's Nest Nature Reserve. Many Silurian fossils to be found. Meet at entrance of Dudley Museum, St. James Road at 1000h. Hard hats and boots necessary; strictly no hammers or chisels. Leader: Colin Reid.

**SUNDAY, AUGUST 11th. BLOCKLEY BRICK PIT.** A visit to Blockley Station Quarry which exposes a superb section of Lower Lias, yielding a diverse fauna of Jurassic fossils. This is a joint visit with the Essex Rock & Mineral Society. Meet at Quarry entrance, 1100h. Map ref. SP 182369 - Sheet 144. Leader: Peter Blake.

**SUNDAY, SEPTEMBER 15th., SOUTHAM WORKS QUARRY, LONG ITCHINGTON.** Exposures of Lower Lias with plentiful ammonites and other fossils. Joint visit with the Essex Rock & Mineral Society. Meet in Works Car Park at 1030h. Map Ref. SP 417624 - Sheet 157. Hard hats and boots necessary. Leader: Peter Blake.

**SATURDAY, SEPTEMBER 21st., DUNTON BASSETT GRAVEL PIT.** Wolstonian glacial deposits, left by an advancing ice-sheet, the chronology of which is controversial. Lacustrine clays are overlain by glacial sands and gravels; the latter are distally fine, grading upwards to coarser proximal deposits, before final inundation by ice, which left a covering of till. Hopefully, a portable ground conductivity meter will be demonstrated. This apparatus can map boulder clay thickness and aided by hand augers lake sediments can be analysed. Meet at the entrance of Bruntingthorpe Gravel Pit on the A 426 at 1030h. Map ref. SP 545890 - Sheet 140. Hard hats and boots necessary. Leader: Jan Zalasiewicz.

Further info. from the Field Secretary, Peter Blake, on 01788-550965.

NOTICES HAVE BEEN RECEIVED OF OTHER SOCIETIES' 1996 ACTIVITIES...

## STAMFORD GEOLOGICAL SOCIETY

**Saturday, April 13th.** The Royal Botanic Gardens, Kew. At this time of the year magnolias, tulips and the Spring beds will be in season; also on special display will be the Shirley Sherwood Collection of the work of over a hundred of the World's best contemporary botanical artists. Our excuse for this diversion is a visit to the new Evolution House where we will step back to the Cyanobacteria of the Pre-Cambrian to follow the sights, scents and sounds of the evolution through time. Meet at Stamford Bus Station at 0830h. The cost will be between £6 and £7, to be collected on the day. Admission charges to Kew Gardens are Adults £4; Senior Citizens/Students/unemployed/children (5-16yrs) £2. There is a 20% discount if we book as a group and pay in advance. If you wish to reserve a place, please contact Peter Green.

**Saturday, May 18th.** Lincolnshire Limestone Quarries. This presents an opportunity to visit three local Lincolnshire Limestone quarries; Greetham and Clipsham in the morning, followed by a picnic or pub lunch and then on to Ketton main quarry in the afternoon. This is a joint visit with Hull Geological Society. Leader: Alan Dawn. Meet at the entrance to Greetham Quarry at 1000h (map ref. SK 933145) or 1400h at Ketton, by the junction of the A6121 and Pit Lane, map ref. SK 984051.

**Saturday, June 22nd.** Brixworth Church. A morning visit to follow up Dr. Diane Sutherland's most absorbing talk on the nature of the diverse types of stones used to build Brixworth Parish Church in Northants. Leader: Dr. Diane Sutherland. Meet at the entrance to the church, Brixworth. (*No time specified - Ed.*)

**Thursday, July 11th.** Welland Bank Gravel Pit. An evening visit. This pit has in the past yielded an abundant variety of Pleistocene fossils. Meet at 1900h at the pit entrance on the B1166 road, to the west of West Deeping. Map ref. 188084. Leader: Alan Dawn.

## WARWICKSHIRE GEOLOGICAL CONSERVATION GROUP

**Sunday, April 14th.** Ketton Quarry and Ketton Geological Trail. 1200h. Meet at Westwood Car Park (Warwick University) at 1000h for shared transport - 'phone Martin Bradley on 01926-428835. Leader: Alan Dawn.

**Sunday, May 19th.** Hartshill, Nuneaton. 1030h. Leader: Alan Cook.

**Wednesday, June 12th.** Waverley Wood Quaternary Site, Bubbenhall, Coventry. 1900h, lead by David Keen of Coventry University.

**Thursday, July 11th.** Coten End Quarry and buildings in Warwick. 1900h, lead by John Crossling of Warwick Museum.

**Sunday, August 18th.** Southam Quarry - Blue Lias fossils. 1030h.

**Sunday, September 15th.** Charnwood area - Beacon Hill and Bradgate Park. 1030h. Lead by Diana Sutherland of Leicester University.

**Wednesday, October 9th.** A.G.M. at 1930h, followed by talk: 'Masonry in Warwickshire Churches' by Maurice Rogers.

**Thursday, November 14th.** 'Biodiversity' - a talk, commencing at 1930h, given by a speaker from English Nature. This is a joint meeting with Warwickshire Wildlife Trust, at Warwick University in the Westwood Lecture Theatre. Coffee available from 1900h.

Wednesday, December 11th. Mineral & Fossil workshop for specimens collected on field trips. Also - Celebrations of the Season plus a competition to elect the GEO-CHEF of 1996. To be judged by an eminent Geo-gastronomic Inorganic Nutritionist.

For further details of this Society's activities contact either Martin Bradley (Chairman) on 01926-428835 or the Secretary, Mr. C.M. Barlow on 01203-686463. Meetings take place at St. John's House, Coten End, Warwick. Coffee served from 1915h.

#### ESSEX ROCK & MINERAL SOCIETY

Saturday, April 13th. Newhaven, Sussex. A guided tour of the Mineral warehouse at Worthing (not normally open at weekends) followed by a visit to a mineral locality at Newhaven. Meet at the premises at 1000h. Leader: Graham Ward.

Sunday, April 28th. Bawdsey, Suffolk. A hunt for amber along the coast of Suffolk by an experienced local amber collector. Red Crag fossils may be collected nearby. Further details from Gerald Lucy on 01799-523310.

Saturday and Sunday May 11-12th. Derbyshire Peak District. A weekend in the lead mining areas of the Peak District to visit some classic mineral localities. Further details from the leader, Graham Ward, on 01277-218473.

May 25-27th. (provisional dates) Barnstaple, Devon. A three-day field trip to visit some classic mineral and fossil localities in this beautiful area of Devon. Joint visit with the Medway Mineral and Lapidary Society. Further details from David Turner on 01245-267450.

Sunday, June 9th. The Naze, Walton, Essex. Another chance to collect Red Crag and London Clay fossils at this classic site. Meet outside the cafe near the tower at 1000h. Bring a garden sieve. Joint visit with the Essex Field Club. Leader: Gerald Lucy.

Saturday, June 15th. Wenlock Edge, Shropshire. A visit to Shadwell Quarry which yields trilobites and other fossils from the Wenlock Limestone. Further details from the leader, David Turner, on 01245-267450.

Saturday, June 29th. Swanscombe, Kent. A visit to the giant Northfleet Chalk Quarry which yields fossils from the Upper Chalk and Woolwich Beds. Leader: Bob Higgins. Further details from Gerald Lucy on 01799-523310.

Saturday, July 13th. Roxwell Gravel Pit, Chelmsford, Essex. A morning visit to this pit which exposes boulder clay left here by an ice-sheet and gravels of the old River Thames. Numerous derived fossils can be found. Meet at the Roxwell Road entrance at 0800h. Joint visit with the Essex Field Club. Leader: Gerald Lucy.

Saturday, July 20th. Ockley, Surrey. A visit to Smokejacks Brickworks, organised by the Geologists' Association to which ERMS members are welcome to attend. Weald Clay exposed here yields fine fossil insects and occasional dinosaur bones. Further details from the leader, Peter Austen on 01622-754497.

Saturday and Sunday, July 27-28th. Lake District, Cumbria. A weekend in the mining areas of the Lake District to visit some classic mineral localities. Further details from the leader, Graham Ward, on 01277-218473.

Sunday, August 11th. Blockley, Gloucestershire. A visit to the famous Blockley Station Quarry which has a superb section through the Lower Lias yielding a diverse fauna of Jurassic fossils. Joint visit with the Leicester Lit. & Phil. Soc. Leader: Peter Blake. Further details from David Turner on 01245-267450.

Saturday, September 7th. Dover, Kent. A visit to the spectacular White Cliffs to study the chalk and collect fossils from the beach exposures. Leaders: Chris Halstead and Bob Williams. Further details from David Turner on 01245-267450.

Sunday, September 15th. Radstock, Somerset. A visit to Writhlington Geological Nature Reserve, organised by the Geologists' Association, to which ERMS members are welcome to attend. Fine Carboniferous plants and occasional insects can be found in the Coal Measures. Further details from the leader, Peter Austen, on 01622-754497.

Sunday, September 15th. Southam, Warwickshire. The Rugby Cement Works at Southam Quarry exposes the Lower Lias with plentiful Jurassic ammonites and other fossils. This is a joint visit with the Leicester Lit. & Phil. Soc. Leader: Peter Blake. Further details from David Turner on 01245-267450.

September 28th. (provisional) Croft, Leicestershire. A visit to the well-known Croft roadstone quarry which has yielded fine mineral specimens, particularly zeolites. Further details from Gerald Lucy on 01799-523310.

Sunday, October 20th. Isle of Sheppey, Kent. On this occasion we intend to collect baryte, pyrite and selenite crystals, as well as London Clay fossils, from the coast between Hen's Brook and Paddy's Point. Meet in Fourth Avenue (map ref. 998724) at 0930h. Leader: David Turner.

*IAN RACE, FIELD SECRETARY OF THE OPEN UNIVERSITY GEOLOGICAL SOCIETY, HAS KINDLY SENT US DETAILS OF THEIR FORTHCOMING ACTIVITIES. PLACES ARE ON A FIRST COME, FIRST SERVED BASIS TO O.U. STUDENTS AND WE MAY PICK UP WHATEVER CRUMBS ARE LEFT!*

APR 4 Walton Hall, Talk: Lava from Space - Andy Harris. Contact David Maddocks on 01462-812933.

APR 9-14 Kintyre, Geology & Whisky on Islay, Jura, etc. - Steve Cribb. Contact Rosemary Farr on 01494-727262.

APR 8-13 Devonshire, Camelot 96 - Dr. Peter Keene. Contact Sandy Colby on 01455-290271.

APR 14 Northumbria, Northumberland Coast - John Burke. Contact John Burke on 0191-5140711.

APR 15 Newbury, Pub evening at The Spotted Dog. Contact Helen Craggs on 01628-37899.

APR 17 London, RSM lecture: Geology in the Aegean Islands - Dr. Alan Timms. Contact Wilf Walker on 0181-850-9012.

APR 19-21 Wales, Pembrokeshire Coast National Park sediments and volcanics. Contact David Maddocks on 01462-812933.

APR 20 Chepstow, S236 Introductory Day - Dave Green. Contact David Care on 01222-611140.

APR 20-21 Ireland, Limestones of the Burren - Betty Higgs. Contact John Leahy on 00353-4641731.

APR 21 Surrey, Albury Traverse Conservation. Contact Iain Fletcher on 0181-5430179.

APR 21 South Wales, Ogmere (Bridgend) Field Trip - Dr. Geraint Owen. Contact David Clare on 01222-611140.

APR 21 Forest of Dean, Mapping the Wigpool Syncline - Clive Roberts. Contact Joe Jennings on 01902-735188.

APR 21 Torquay, Torquay Field Trip - Dr. E.B. Selwood. Contact Linda Fowler on 01579-50641.

APR 21 Ingleton, Beginners' Mapping Exercise. Contact Norma Rothwell on 0161-6530862.

APR 27 London, Geo Treasure Hunt in the City of London. Contact Iain Fletcher on 0181-5430179.

APR 28 Ketton, Economic geology and RIGS site - John Aram. Contact John Colby on 01455-290271.

APR 27-28 Weardale, Lead mines and minerals - George Fenwick. Contact Jean Sampson on 01142-361258.

MAY 2 Walton Hall, Talk: Pillows, poudings and fruits de mer - Dee Edwards. Contact David Maddocks on 01462-812933.

MAY 3-6 Isle of Man, Geology & Resources - Chris Hunt and Geoff Thomas. Contact Michael Gagan on 0161-7489029.

MAY 3-6 Derbyshire, Weekend in Derbyshire - Jill Smethurst. Contact Don Berry on 01305-784816.

MAY 3-6 Kintyre, Weekend trip to Islay - Graham Smith. Contact Doug Palmer on 01382-533563.

MAY 3-6 Wales, Geology of the West Wales area - Clive Roberts and Dave Green. Contact David Care on 01222-611140 or Jan Ashton-Jones on 01432-870827.

MAY 4-5 Derbyshire, S236 Weekend - John Downes. Contact Iain Fletcher on 0181-5430179.

MAY 4-6 South Shropshire, Long Mynd - Stiperstones & Onny Valley - Sue Beale and Tim Coleman. Contact Yvonne Cutt on 01303-242894.

MAY 12 Shropshire, Onny Valley Geological Trail - Alf Cole and John Jones. Contact Alf Cole on 01922-34899.

MAY 15 London, Lecture at RSM - to be announced. Contact Wilf Walker on 0181-850-9012.

MAY 18 Manchester, Day workshop - thin sections, fossils and mapping. Contact Jane Michael on 0161-3660595.

MAY 18 Dublin, Field Trip - Ian Somerville. Contact John Leahy on 00353-4641731.

MAY 18-19 Charnwood, Spring Weekend - Steve Temperley. Contact Wendy Hamilton on 01359-230130.

MAY 19 Derbyshire, RIGS day in South Derbyshire. Contact Glynis Sanderson on 01332-601850.

MAY 19 East Mendips, Field Trip to East Mendips - John Downes. Contact Helen Craggs on 01628-37899.

MAY 19 South West, Caradon Mines - Gordon Neighbour. Contact Linda Fowler on 01579-50641.

MAY 19 Ashford in the Water, Geology of the area - Tony Browne. Contact Jean Sampson on 01142-361258.

MAY 25-26 Oban, Strontian - Morven Peninsula - Mal McCibben. Contact John Lamont on 0131-4432824.

MAY 25-29 Skye, Skye 1996 - Dr. Paul Williams. Contact John Barry on 0191-4172799.

MAY 30 Gaping Ghyll - with Bradford Caving Club. Contact John Burke on 0191-5140711.

JUN 1-2 Devon, Dartmoor Landform Trail - Brian Harvey. Contact Wilf Walker on 0181-8509012.

JUN 2 Ingleton, Geology of the area - Norma Rothwell. Contact Jean Sampson on 01142-361258.

JUN 6 Walton Hall, Talk: Diamonds and Impact Craters - Rob Hough. Contact David Maddocks on 01462-812933.

JUN 7-11 Ireland, South West Ireland - David Green. Contact Chris Tompkins on 01384-375476.

JUN 8 or 9 Cambridge, Barrington Quarry or Upware Pit - Simon Kelly. Contact Wendy Hamilton on 01359-230130.

JUN 9 Sussex Coast - Prof. Rory Mortimer. Contact Yvonne Cutt on 01303-242894.

JUN 8-9 Malverns Weekend Trip - Ian Rigby. Contact Helen Craggs on 01628-37899.

JUN 8-16 Leadhills, Gold Panning in Scotland. Contact Linda McArdell on 01707-339450.

JUN 14-26 The Pyrenees - Dr. Bill Gaskarth. Contact Jan Ashton-Jones on 01432-870827.

JUN 15 Leadhills, Family Barbecue Day. Contact Avrill McRobb on 0141-9422842.

JUN 15 Bo'ness, Visit to Birkhill Clay Mines - Stuart Munroe. Contact Doug Palmer on 01382-533563.

JUN 16 Mallerstang, Glaciation - Wishart Mitchell. Contact Chris Arkwright on 01772-39022.

JUN 16 Skegness, Gibraltar Point and Wolla Bank - Ken Hanks and John Colby. Contact John Colby on 01455-290271.

JUN 16 Isle of Wight, Whitecliff Bay - Mike Chaplain. Contact Jane Clarke on 01703-252309.

JUN 16 Cheshire, Alderley Edge, Surface and Underground - Phil Ingham. Contact Rhiannon Wheeler on 01902-883377.

JUN 19 London, RSM Lecture: Vertebrates of Asia - Peter Whybrow. Contact Wilf Walker on 0181-850-9012.

JUN 22 Walton Hall - Open Day. Contact O.U. at Milton Keynes.

JUN 23 Sunderland, Sunderland Coast and Hett Dyke. Contact John Burke on 0191-5140711.

JUN 30 Cornwall, Lizard Field Trip - Peter Ealey. Contact Linda Fowler on 01579-50641.

JUL 13-27 Iceland - Sandy Smith. Contact Jenny Bennett on 01462-454752.

JUL 13 Folkestone, Rockwatch Event - Fossil Foray. Contact Yvonne Cutt on 01303-242894.

JUL 14 Anglezarke, Rockwatch Family Day - Alan Diggles. Contact Chris Arkwright on 01772-39022.

JUL 17 London, Evening Visit to Chiselhurst Caves. Contact Wilf Walker on 0181-850-9012.

AUG 10-17 Cornwall, Geology Camp 96 - West Cornwall. Contact Sandy Colby on 01455-290271.

AUG 10-17 Lundy, A Week on Lundy. Contact David Care on 01222-611140.

AUG 30 Shap, S267 Geophysics Weekend - Shap Fells. Contact Clive Roberts on 01242-532954.

SEP 1 Antrim, Mapping at Ballintoy - Tony Lee. Contact John Leahy on 00353-4641731.

SEP 7-8 North Wales, Industrial Archaeology at Dolgellau. Contact Linda McArdell on 01707-339450.

SEP 8 Langollen, Limestones and Sandstones - Ros Todhunter. Contact Chris Arkwright on 01772-39022.

SEP 18 RSM lecture - to be announced. Contact Wilf Walker on 0181-850-9012.

SEP 29 Axmouth, The Axmouth Undercliff - Keith Moore. Contact Linda Fowler on 01579-50641.

OCT 5 Surrey, Albury Traverse Conservation. Contact Iain Fletcher on 0181-5430179.

OCT 6 Langdale, Borrowdale Volcanics - Peter Kokelear. Contact Chris Arkwright on 01772-39022.

OCT 13 Sussex, Autumn Geowalk. Contact Brian Harvey on 01276-475931.

OCT 16 London - lecture at RSM - to be announced. Contact Wilf Walker on 0181-850-9012.

OCT 25-29 Ireland, Presidentail Field Trip - Antrim & Donegal - Nigel Harris. Contact Helen Craggs on 01628-37899.

OCT 25-27 Isle of Wight - Allan Insole. Contact Yvonne Cutt on 01303-242894.

NOV 8-10 Wales, Winter Weekend in Snowdonia, Dr. John Conway. Contact Helen Craggs on 01628-37899.

NOV 15-18 Malverns, Winter Weekend - Clive Roberts. Contact Christa Peeling on 01483-429909.

NOV 20 London, Lecture at RSM, to be announced. Contact Wilf Walker on 0181-850-9012.

DEC 4 London, RSM Lecture: Palaeoclimates, Bob Spicer. Contact Wilf Walker on 0181-850-9012.

DEC 6-8 Durham, Snowflake 96 - The Permian of Durham. Contact Sandy Colby on 01455-290271.

Note: Other venues are arranged, though as yet no dates appear. Hopefully, the O.U. will forward these at a later date, plus details of other field excursions for the forthcoming year. 'RSM' is the Royal School of Mines, Imperial College, Prince Consort Road, London SW10.

by David Martill

There are two ways that palaeontologists can make exciting discoveries. One involves the romance of exploration, trips to far away places, where no one has gone before, or at least - no one from your side of the profession. Such trips might involve assembling teams of intrepid explorer-types, require huge amounts of cash and may, in difficult terrain, involve more time spent in travelling and trekking, than in actual collecting, once the destination is reached. Such trips, although exciting, are often dangerous and prone to failure. Expeditions to new places are a gamble; you may not find anything new; indeed, you may not find anything at all! A less-expensive and generally more sedate way to make exciting discoveries is to browse through the dusty drawers of old museums. Museums like Leicester Museum, in the basement of which are the accumulated bits and pieces of more than one century of public donations, are the aftermath of human curiosity - the many strange objects that curators were unable to identify but didn't dare discard.

Such specimens may be honestly housed in drawers maked 'don't know'. Last year, with my co-worker Dino Frey, we visited Stuttgart Museum for Natural History in Germany. Looking through an extremely well-curated collection we came across the 'Don't know' drawer. Inside were two specimens, one a row of several vertebrae, the other a skull. The specimens had both come from Brazil, from the north-east where we regularly undertake our field expeditions - and both specimens were in rock that matched exactly that from a locality we had visited. Both specimens were originally thought to be pterosaurs, but were in fact dinosaur remains. This in itself was not unusual; after all, dinosaur bones can be very common at some fossil sites and misidentification is commonplace when time is at a premium. However, these specimens were special: the skull was from a completely new type of dinosaur representing a new family of sharp-nosed fish eaters; the vertebrae were from a dinosaur not recorded from South America. From just a cursory glance through a museum drawer we discovered a new dinosaur and confirmed the existence of trans-continental dinosaurs. Not a bad day's work for the price of a train ticket - and what about the risk? Well, all museums have bits and pieces that remain to be identified, so there is a good chance you will find something new... and I can't even recall the original purpose of visiting the Museum!

I sometimes wonder if it is possible to increase the chances of making such discoveries: could we do it to order? For example, the giant Cretaceous pterosaurs such as *Quetzalcoatlus* from Texas and *Arambourgiania* from Jordan were large enough to fly the open oceans and must surely have crossed the chalk seas that once covered the United Kingdom. Their bones are difficult to identify, though certainly large enough to attract attention and be handed in for identification. I wonder which county town museum has the first British example of *Quetzalcoatlus* gathering dust, waiting to be 'discovered'? To increase your chances of finding it visit those towns with museums on the outcrop of the chalk - and go knowing what you're looking for.

Dino Frey and I did exactly this in Jordan to find *Arambourgiania*. This animal was first recorded from phosphate deposits just north of Amman more than fifty years ago. So, with one fax message to announce our arrival we went to the old mine at Ruseifa, some 8km north of Amman - and there, in the office of the abandoned mine, was a cabinet full of 'interesting' objects collected by the miners over a period of more than fifty years. And in the cabinet? Well, lots of junk (to my untrained eye) but, to our pleasant surprise (understated here) more bones of giant pterosaurs. A small investment but palaeontologically, a jackpot prize.

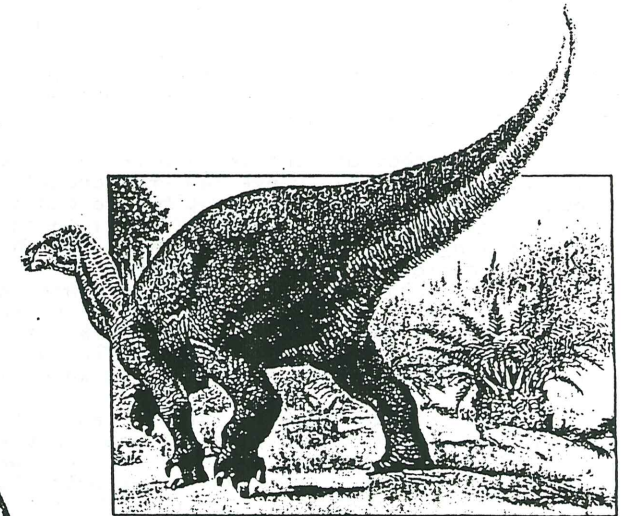
DM

In the same vein, Roger Newman writes...

## A WRONG-ASAUR

A skeleton of an Iguanodon has stood on its hind legs for nearly a century in the Sedgewick Museum of Geology in Cambridge, looking down at the visitors with a puzzled expression. It looked a little sore - and now a change of opinion has come to its rescue. It used to roam on all fours and not on its hind legs. The curator wishes to reassemble the beast so that it stands on all fours. A tricky job, manipulating Victorian castings, though the Iguanodon will be happier and one day visitors may see a more realistic animal.

Roger also sent this puzzle: Why is *CHARNIA* twelve - and what is the longest English word that you can make using only letters from '*CHARNIA*'? Only those letters may be used - but as many times as you wish. A small prize is on offer for the longest word submitted to: 5 highgrove Crescent, Leicester, LE2 8PX, by September 30th., 1996.





As plates bump and grind and the planet as a whole continues with what are possibly the last gasps and wheezes of de-gassing, I wonder why volcanoes and Earthquakes continue to surprise us. What will the headlines be when The Big One really does strike California?

At the beginning of March, Mount Komagatake, on Hokkaido's northernmost tip, began to erupt. The volcano had been quiescent for 54 years. Prior to that, Komagatake erupted in 1856, killing twenty people.

Mid-March, Popocatepetl also reawakened, spewing out dense, sulphurous ash. This volcano, with its twin, Ixtacihuatl, lie 45 miles to the south-east of Mexico City. So far, Mexico City is not suffering any ill-effects, although aircraft have been excluded from overflying the plume and its vicinity (aircraft weather-radar does not detect the presence of airborne volcanic ash.) Popocatepetl last erupted in December 1994 - producing a mild, six day shower of ash. The current eruption is exceeding this.

Also in mid-March, twenty eight people, mostly children, were killed by a Richter 6.9 earthquake in the Xinchiang Uyur Zizhiq Province of China. A further 128 people were injured.

Citizens of Ygizovo, on the Kamchatka Peninsula, were warned that the volcano Avachin was threatening to erupt. This was during the third week of March... The stones depicted on the front cover are concretions of organic origin...

On the subject of ash: archaeological excavations at Glen Shin in Sutherland have revealed what appears to be the death of a large human community, brought about by volcanic fallout. Something like half a tonne of sulphur per acre fell on this area in the north. The volcanic ash and the Bronze Age relics which indicate a sudden cessation of agricultural activity point toward an Icelandic eruption some 3 000 years ago. Perhaps this volcanic event would not be remarkable, unless it coincided with meteorologically adverse conditions. This is not far-fetched: the 1783 fissure eruption of Laki made the air foul enough to taste as far away as Naples. The crops also suffered that year and sunsets/-rises were vivid.

...and back to those stones again: they appear to be faceted, like dreikanter. This is not what they are. Analysis proves them to be a solid monohydric alcohol, with varying amounts of a linear tetra-pyrrole, or its oxidation product. Still no idea?

During National Science Week, a new mineral was announced; 'new' in the sense that it matched no existing published description and new in the sense that it was macroscopic (Thirty or so new minerals are discovered annually as microscopic samples). The blue mineral was thought to contain copper. Analysis proved otherwise - the blueness came from iron. The structure appears to be similar to serpentinite, though it is composed of fibres 0.0001 mm in diameter. If it is the product of deep, ultramafic activity (the samples described came from Morocco) a suitable name for it might be 'fubarite' which, I understand, is an acronym for 'folded-up beyond all recognition'-ite. By the way, a person searching for *those* stones would not require a hammer, a chisel or a trowel; a much sharper instrument would be needed!



GS

The first two Field Visits organised by the Lit & Phil are concerned with the geology of Bradgate Park. The Transactions of the Leicester Literary & Philosophical Society, Vol. 81, 1987 - 'A Guide to the Geology of the PreCambrian Rocks of Bradgate Park' gives excellent briefing material, as a preliminary for your visits. The Museum may still have copies for sale. The Editorial reads a little like Richard Dawkins, or someone of his ilk. Such an author is Stephen Jay Gould. His recent book, 'Eight Little Piggies' (Cape, ISBN 0-224-03716-1) is the sixth in a progression of volumes and is a most interesting read, loosely being the history of the natural history of palaeontology. I have found this book hard to put down and easy to dip into at almost any point. Two other titles of interest are 'On Methusaleh's Trail' which is described as the natural history of living fossils and an account of the Great Extinctions (Peter Douglas Ward, Freeman, ISBN 0-7167-2203-8) - and 'The End of Evolution' by Peter Ward (Weidenfield & Nicolson, ISBN 0-297-81475-3). This latter title is an essay on the ecology of mass extinctions and biodiversity from a palaeontological viewpoint. Again, these two titles require no technical know-how and make for enjoyable reading matter. I was pleased to be able at last to afford a copy of 'The Ecology of Fossils' (Ed. W.S. McKerrow, Duckworth, ISBN 0-7156-1298-0) This book, as its title suggests, places fossil species in their ecological contexts, giving a community by community account throughout geological history. An excellent textbook, made affordable through Blackwell's Academic Book Sale (tel: 01865-792792). It is hoped to expand this section on book reviews, perhaps running to a couple of pages, in subsequent issues of Charnia.

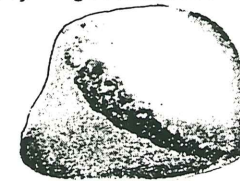
GS

#### POSTSCRIPT

A busy season ahead! There's plenty to choose from - too much, in fact. Make a note of the venues of interest to you in your diary and on your calendar, though please do everything you can to support The Lit & Phil. The April 20th. Field Excursion will be interesting for two reasons: it involves a reappraisal of Charnian stratigraphy - are some of the volcanoclastics Cambrian? Secondly, we will be allowed to visit the grounds of the home of Lady Martin to study old quarry sections at one of the best times of the year. Your guides are two experts on Charnian geology. Do please spread the word among your friends, relatives and colleagues about our meetings and encourage capacity crowds. Thanks one again to our Field Secretary, Pete Blake, for arranging our society's summer calendar.

As usual, getting Charnia prepared for printing is a last-minute rush, more so with an impending wedding. I am particularly grateful to John Martin and Dave Martill for producing their articles with only a day's notice. If any reader has any material for publication in Charnia please submit it to me. For example, you may wish to write-up your account of a field visit, or you may wish to write about why you are interested in geology, or what got you started in the subject. It would also be of interest to begin a Lit & Phil Section C Question and Answers Forum...

All right, I'll tell you some more about those front-page stones. The person digging them out would be in the company of another person, who would most probably be fat, fair, female and forty. The removal of the said stones is fairly straightforward, being known as a cholecystotomy, which would ultimately follow bouts of choledochitis. The stones are biliary calculi, or more ordinarily - gallstones.



GS

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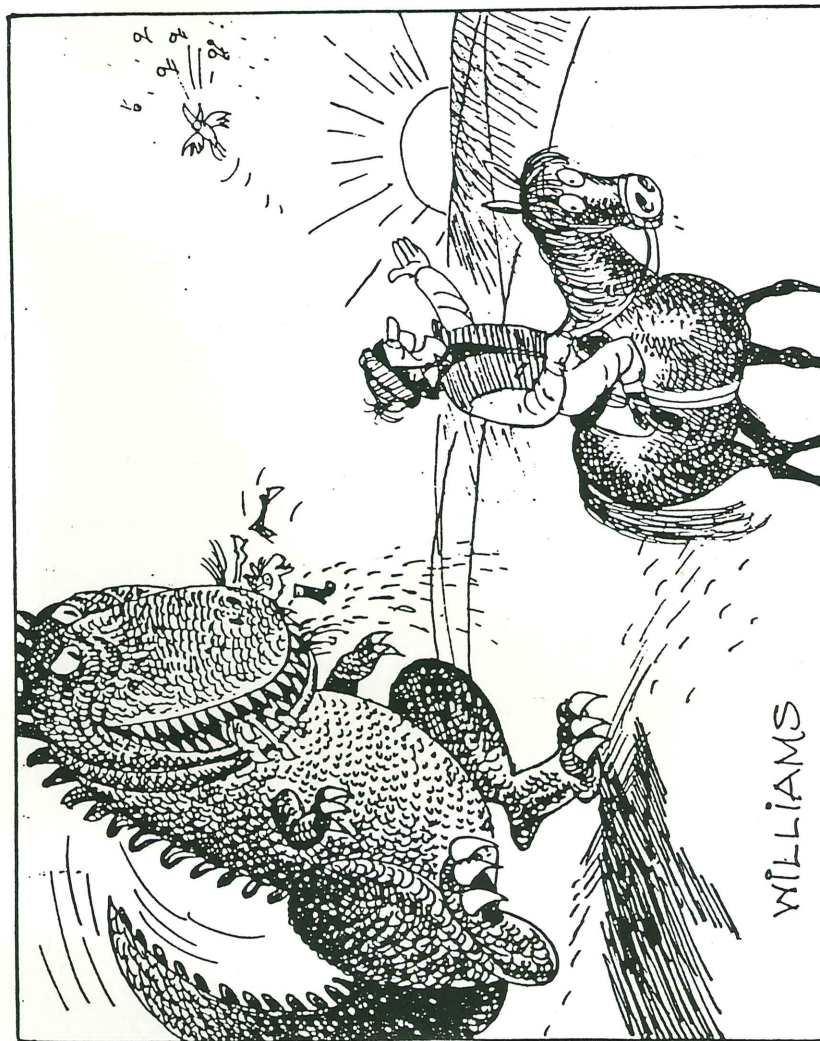
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No co-opted members to date.

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*'The magic of dawn! Who could imagine that dinosaurs once roamed these Downs?'*