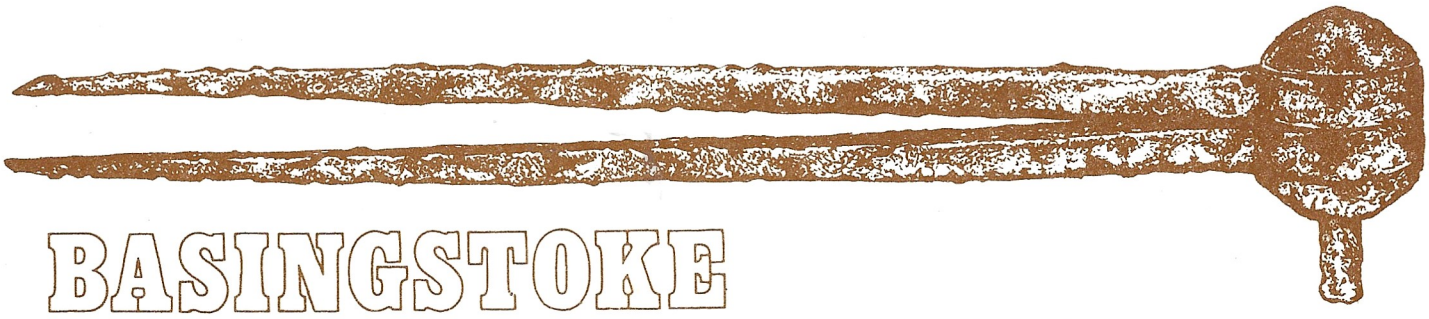

BASINGSTOKE ARCHAEOLOGICAL SOCIETY

Newsletter

Number 49 October 1978

CONTENTS

CALENDAR

Saturday 21st October Postponed from 14th October Details as in Newsletter 48	Visit to excavation at Abbotstone Down, Old Alresford. Meet 2.00 p.m. Second Car Park, Oliver's Battery Country Park B3046. (SU585362)
Wednesday 25th October	Early Human Origins in Africa. Lecture by Richard Leaky. University of Southampton 'Aspects of Antiquity' series. Lecture Theatre A, Physics Building. 7.30 p.m.
Thursday 26th October	'London's Mediaeval Waterfront' Lecture by Mr. Gustav Milne, Department of Urban Archaeology, London. Chute House, Basingstoke. 7.30 p.m.
Saturday 28th October	'Wessex from the 5th to 11th Centuries' One-day Conference. Council for British Archaeology Group 12. Queen Elizabeth's School, Wimborne Minster, Dorset. 10.30 a.m. - 5.00 p.m.
Friday 10th - Sunday 12th November	'The Archaeology of Hampshire from the Stone-Age to the Industrial Revolution' Hampshire Archaeological Committee non-residential weekend conference. University of Southampton.

LONDON'S MEDIAEVAL WATERFRONT

At three o'clock in the morning on the 1st September 1666 Samuel Pepys was awakened by one of his maidservants summoning him to witness a fire seen in the city: the Great Fire of London. Pepys' account of the events that day and the three succeeding ones, when London's fortunes and future took such a dramatic turn, are vividly recorded in his famous Diary. From his upstairs window at the Navy Office, where he lived in Seething Lane, close by the Tower, he surveyed that morning, shortly before dawn, a London never to be seen the same again. The city had spread out before him: narrow cobbled streets, timber-framed houses massed closely together, silhouettes of innumerable roof gables, church towers and spires. But this London to be so rapidly and disasterously razed to the ground was not simply the London of Charles II. It was more. It was a city much much older, reaching back even beyond the Tudors.

Lying defenceless before the oncoming flames, fanned by a strong north-easterly breeze, the Thames-side above London Bridge can be pictured as a warren of stores and cellars, low, dark, timbered buildings, some rotten with age and neglect, interrupted only occasionally by a merchant's house, a church or a livery company's hall. Little of the grand London which inspires our imagination of Charles II's reign was to be found here by the waterside among the wharves and jetties. But it was here in the hovels that a large part of the population which gained a living upon the water found home: wherrymen, stevedores, porters, carriers and the rest.

Parallel to the river the one continuous street, Thames Street, narrow and low lying, along which all the merchandise brought to and from London had to pass, would be choked with carts, their wheels rumbling on cobbles amid the cries of people, the clamour of horses joining in the pandemonium. Out to the river's edge dingey alleyways, such as Trig Lane, led between squalid buildings, mostly weather-boarded and tar-coated, preserving no order or plan. Famous but ill-fated halls belonging to the great Livery Companies, some with their lower walls washed by the Thames, halls like the Dyers', Fishmongers' and Watermen's, themselves ancient buildings, were to suffer total destruction along with the churches of Allhallows-the-Less and its neighbour, Allhallows-the-More: the latter having a cloister towards the river.

Westward up river stood the grey fortress palace, Baynards Castle, built in 1428 to replace the earlier stronghold of Robert Fitzwalter from the reign of King John. To the east stood King John's London Bridge, approached by Fish Street Hill, with, at its foot another victim, the church of St Magnus-the-Martyr. An earlier fire of 1632 had previously destroyed the houses on the northern end of the Bridge and only a gap in their rebuilding prevented the Great Fire from licking its destructive way to the southern shore.

From Pepys' window his eye could have traced the entire circuit of the mediaeval wall, affording protection then, as it had done for hundreds of years. For London in 1666 was still a walled city entered only through its several gateways. The fire was then only two hours old. He was not to realise that in the space of four days most of mediaeval London was to be lost for ever.

No-one can be unaware of the tremendous archaeological effort that has attempted to keep pace with London's post-war redevelopment. First the Roman archaeology began to catch the headlines. More recently mediaeval and post-mediaeval London have received their deserved attention. Gustav Milne, our October speaker, is Waterfront Project Co-ordinator and Site Supervisor of the Trig Lane excavations currently being carried out by the Department of Urban Archaeology, London.

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Waterfront archaeology is experiencing mounting interest and an international conference on the subject is to be held in London in April 1979. Our lecture will be something of a personal preview of the papers the Department of Urban Archaeology will be presenting to that conference.

In November 1972 Dr. Ralph Merryfield of the Guildhall Museum talked to us on Roman London. This lecture proved particularly popular: one of those rare 'standing room only' occasions at Chute House. 'London's Mediaeval Waterfront' is likely to hold similar general appeal and members are advised to come early.

Thursday 26th October, Chute House, Basingstoke, 7.30 p.m.

Reminder - the multi-storey car park is free at that time in the evening.

THE ARCHAEOLOGY OF HAMPSHIRE

Briefly announced in Newsletter 48, the non-residential weekend conference, 'The Archaeology of Hampshire from the Stone-Age to the Industrial Revolution' is being run jointly by the Hampshire Archaeological Committee and the University of Southampton Department of Adult Education. Its stated aim is"to give an up-to-date, expert account of Hampshire archaeology to an audience of local amateur archaeologists".

In April this year we were invited to make suggestions as to the theme, style and content of the presentations. The announced programme is, much to the Committee's satisfaction, more or less as we suggested it might be. Papers will cover all periods from the Palaeolithic to the Industrial Revolution with other separate presentations on the environment and economy of those periods. There will be 'state of the art' reports by acknowledged experts which set out to bring the results of recent archaeology into perspective, showing how recent developments have affected our understanding of archaeology in Hampshire in particular and Wessex in general. "As well as providing a statement of current knowledge on their subject, it is hoped that speakers will suggest directions and priorities for future work, and give an indication of the problems involved, in particular those created by present-day large-scale destruction of archaeological evidence."

The announced programme is as follows:-

Friday 10th November

Assemble: Welcome to Conference. Opening address - Prof. B.W. Cunliffe

Saturday 11th November

Morning:	The Palaeolithic	Dr. M. Shackley
	Vegetational History	Dr. K. Barber
	The Mesolithic	Dr. R.M. Jacobi
	The Neolithic and Bronze Age	Mr. R.T. Schadla-Hall
Afternoon:	The Iron Age	Drs. S. & T. Champion
	The Development of Animal Exploitation in Hampshire	Miss J. Coy
	The Roman Period	Mr. D.E. Johnston

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Sunday 12th November

Morning:	Settlement History in East Hampshire	Dr. S.J. Shennan
	The Saxon Period	Dr. D. Hill
	The Development of Plant Exploitation in Hampshire	Dr. J.M. Renfrew
Afternoon:	The Medieval Period	Mr. M. Hughes
	The Post-Medieval Period	Dr. E. Course
	Concluding Discussion	

Snack lunches will be available at cost-price both on Saturday and Sunday although, for those preferring it, there is always adequate accommodation for picnic lunches at these conferences. The conference fee of £3.00 includes coffee, tea and biscuits on both days and the sherry reception on the Friday evening. The Friday reception and all the lectures will take place in the Boldrewood (Wessex Medical) Building, Burgess Road, which is easily accessible on the Basingstoke side of Southampton where there are good car parking facilities.

Advance booking is essential. Applications, together with the £3.00 conference fee, should be sent to:

Dr. S.J. Shennan,
Department of Archaeology,
The University, Southampton, SO9 5NH

Cheques should be made payable to 'The University of Southampton'.

This is an important event for the amateur and cannot be recommended strongly enough.

WESSEX FROM THE 5TH TO 11TH CENTURIES

Another conference, this time a one-day affair, which is likely to reward those making the journey is this year's CBA Group 12 Annual Conference. You will remember that last year we helped organise the 'Roman Wessex' conference in Basingstoke. This year it is the turn of the Wimborne District Society. Amongst the speakers will be Sonia Hawkes, David Hinton and Chris Arnold. There will also be a CBA bookstall.

The Conference will be held at Queen Elizabeth's School, Wimborne Minster, on Saturday 28th October, admission £1.00 at the door.

Queen Elizabeth's school can be reached from the north via Cranborne and Salisbury when, on reaching the outskirts of the town,you will pass the 'Crown and Anchor' on the right and cross Walford Bridge over the river Allen. Turn sharp right in Knobcrook Lane (take care - it is narrow!) and then right again up Stone Lane. At the top of the hill, keep straight on and the school is soon on the left. This avoids a circuitous road around one-way systems in the town itself.

ARCHAEOLOGICAL DATING: SOME BASIC CONCEPTS

Archaeology, concerned as it is with the twin aims of dating and interpretation, relies heavily on three things: sampling, uniformitarianism, purity/accuracy. Without adequate attention being given to these, there is a danger that results may be open to misinterpretation.

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The age of material, although considered to be the province of the cultural archaeologist, is fundamental to all historical research. Furthermore, most methods rely heavily on environmental data.

Sampling. Basically sampling is a selective procedure to produce results representative of the whole. Where it would be too costly, time consuming or difficult to test a whole population (or area) one takes a fraction: a seemingly simple concept, with hidden problems. To take a sample one needs to be aware of:

a) the heterogeneity of the area to be sampled

b) the nature of the material under investigation

c) the analytical techniques to be employed

d) the size of the area

e) the accuracy required.

For example, if a soil sample is required from an area, how much is enough? Depending on the variation within the soil, 1 to 2 kg. per cubic metre may considered sufficient for most analysis. However, this must vary. Samples from a stony soil need to be larger to take account of the stones, while a preliminary pollen analysis requires only a fraction of a gramme of soil.

Uniformitarianism. Uniformitarianism is here concerned with the attribution of geological processes and phenomena to forces operating continuously and uniformly. Ever since its inception by the early Victorian geologists it has proved a cornerstone of natural science research. It supposes that conditions have remained constant - in dating, that radioactive substances are, and always have been, present in constant amounts etc. Recent research shows that variations do occur. Until these have been most thoroughly investigated all dating must be considered somewhat tentative.

Purity/accuracy. The accuracy of many dating procedures relies upon the care with which the sample was taken. A contaminated sample will give false results. Whilst contamination can be a factor of the site's location, it can also be introduced by human action, especially when a procedure is not fully understood. It is a pity that in general, whilst researchers will gladly state the scientific errors of their work they do not appear to show how contamination affects the results. (Perhaps they are unaware of it? Ed.)

One of the most startling results to be published is that concerning the age of motorway verge vegetation using the Carbon-14 dating method. Although only a few years old it gave a reading of considerable antiquity - due to fossil fuel contamination. With more sites excavated in areas polluted by engine exhaust, it is interesting to wonder whether a considerable degree of error might have been introduced undetected.

Taking the above points into account, what environmental dating techniques are available for use? Broadly speaking techniques can be divided into two areas - those based on atomic instability and those based upon ecospheric variation.

Atomic instability. If one may leave aside 'charm', 'strangeness', quarks and the like, an atom is composed of three fundamental particles - the proton and neutron, combinations of which make the nucleus, and the orbiting electrons. Any atom must be of neutral charge; the protons and electrons cancelling each other. The neutrons play a significant part for us. The more neutrons there are the greater the difficulty protons will have in 'controlling' the electrons. Beyond a certain number of neutrons the atom, being no longer able to cope, will break down or decay. This decay will continue until the atom is stable. The time this takes

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an average atom can be measured although as this is not regular the 'half-life' time is used i.e. the time taken for a radioactive substance to decay to half its original mass. By analysing the ratio of original material to its decay product one can estimate its age. Although for geological dating purposes there are many common decay patterns used, most archaeologists use the Carbon-14 system because the half-life is short enough to be applicable to archaeological time scales. Compare its half-life with other systems:

System	Half-life (millions of years)
Potassium-Calcium	1,470
Potassium-Argon	11,900
Rubidium-Strontium	50,000
Uranium 238-Lead	4,500
Uranium 235-Lead	713
Thorium-Lead	13,900
Carbon-14	0.0054

The Carbon-14 half-life is of suitable length for archaeological work but it can be used only for organic materials where carbon is naturally present. (There is also the problem of equating radiocarbon years with calendar years although this problem has been largely overcome.)

Ecospheric variation. Seasonal variation is one of the fundamental aspects of the ecosphere. There are the short term events seen in plants and animals and the much longer term change of rock cycles.

a) Plant/animal seasonal variation. Organisms react to their physical environment in certain quantifiable ways. One reaction frequently used is that of growth. In a favourable year or season growth will be much greater than in an unfavourable time. The annual growth of trees is often used and the science of dendrochronology (tree-ring dating) is very well established, especially in America. The chances of every year being identical are remote and so for any given species a growth pattern emerges. From this one can construct a master plan from which subsequent readings may be calibrated. Thus any part of a timber structure can be dated accurately provided annual growth rings are present. Unfortunately no method is perfect and pitfalls exist to trap the unwary. For example tree growth depends upon: a) soil type and depth, b) climate and weather patterns, c) nutrient supply, d) location and aspect, e) competition from other trees, and f) accident/damage. Add to this the normal variation found within a species and one can begin to appreciate the problems.

Animal growth can also vary seasonally but as yet such information is only used to obtain the age of an animal. This is one area that could yield interesting results with further research.

b) Lithospheric variation. If organisms vary then could one obtain similar results by using lithospheric variation? Despite the longer term changes associated with earth processes some very reliable methods exist. One of the most common is the use of lake sediments. Each spring the rivers, swollen by rain or melting ice, bring sediment into a lake. Each summer less sediment and more organic debris is deposited. Thus the two bands (light and dark coloured respectively) represent one year. These bands or varves, with the associated human and environmental remains, can be traced back over many thousands of years. Providing the sediment has not been disturbed the accuracy is very high. The technique is, however, restricted to lake and lake-shore areas.

In other areas the rate of sediment deposition could be used. Uncertainty in the data required greatly restricts the use of this technique. In any

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area deposition depends upon:-

a) the size of the catchment area
b) the rock type
c) rate of weathering and erosion
d) climate
e) location
f) angle of slope

Weathering alone can vary from 10 to 100 tonnes/sq.km./yr. in Northern Europe and other factors can be just as variable. For example, it was once calculated that the age of the Earth was 40,000 years according to sediment deposition (the real age is nearer 4,600,000,000 years).

One earth variation constantly being refined although still restricted in use is archaeomagnetism. A ferromagnetic mineral may become atomically aligned to the earth's prevailing magnetic pole. Provided that alignment remains constant then the difference between it and the present day alignment can be measured and its age calculated. A deposit may become aligned in three ways: 1) by heating and subsequent cooling (thermoremnant magnetization) - a hot atom vibrates more quickly and can be more easily aligned than a cool one, 2) by alignment upon deposition - small particles could in theory have their ferromagnetic atoms aligned, 3) by chemical magnetization - alignment is locked when a ferromagnetic grain grows. (For more detail see Tarling D.H. World Archaeology vol.7 no.2 185-197.)

Post-alignment changes due to chemicals or lithospheric action may alter these alignments. To take a sample for archaeomagnetic dating one must obviously note its orientation.

Given the above information can one find a universal, reliable dating method? At the moment the answer would have to be no. The very nature of the material to be dated - ill-preserved, contaminated - probably precludes any easy solution. One of the best ways around this difficulty is to use two or more methods in conjunction. Usually dating by cultural evidence is backed up by environmental dating and vice versa. Providing such a combination is used to check rather than produce evidence then it can only speed up development of the subject.

Clearly the dating problem must be tackled if we are to produce an ever more sophisticated view of our past.

P.S. GANDERTON

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