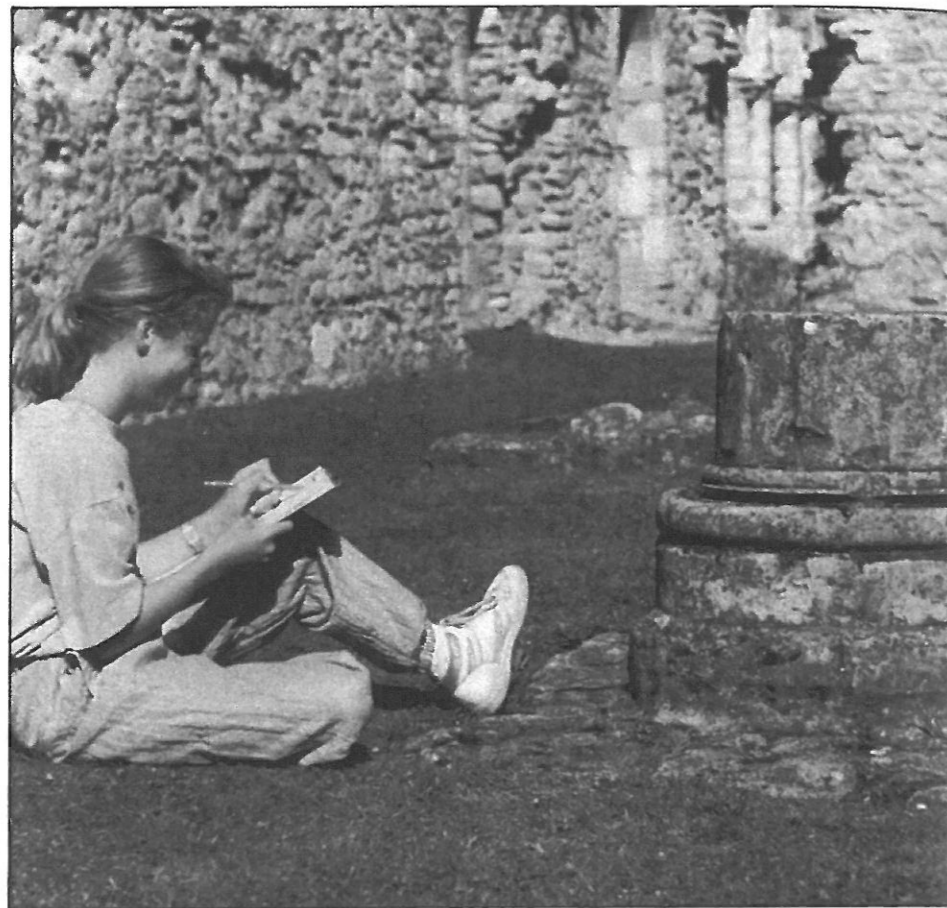


fragmentary or biased nature of archaeological and historical evidence. However, the processes of acquiring, evaluating and drawing conclusions from evidence rest at the core of all enquiry based learning.

All investigations should have the same overall strategy or framework. This will help children develop their scientific thinking by constantly reminding them of correct scientific procedure:-

- What are you trying to find out?
- What questions do you want to try to answer?
- What do you predict will happen?
- Can you give a reason for making that prediction? (Allowing hypotheses to emerge.)
- How will you test your hypothesis?
- How will you make your test fair?
- What will you keep the same? (Control variables)
- What will you change? (Independent variables)
- What will you measure? (Dependent variables)
- What equipment will you need for your experiment?
- How will you make sure your experiment is safe?
- How will you record your findings?
- What do your results tell you? Can you find any patterns?
- What is the answer to your original question?
- What other questions have been raised in view of your recent findings?



Children recording the historic environment in different ways.

English Heritage



English Heritage

- Will they make you modify your hypothesis?
- How will you go about answering the new questions?
- How will you tell others what you have found out?

There are countless ways that the historic environment can be used as the basis for scientific study. Below we highlight one or two.

Visitor erosion

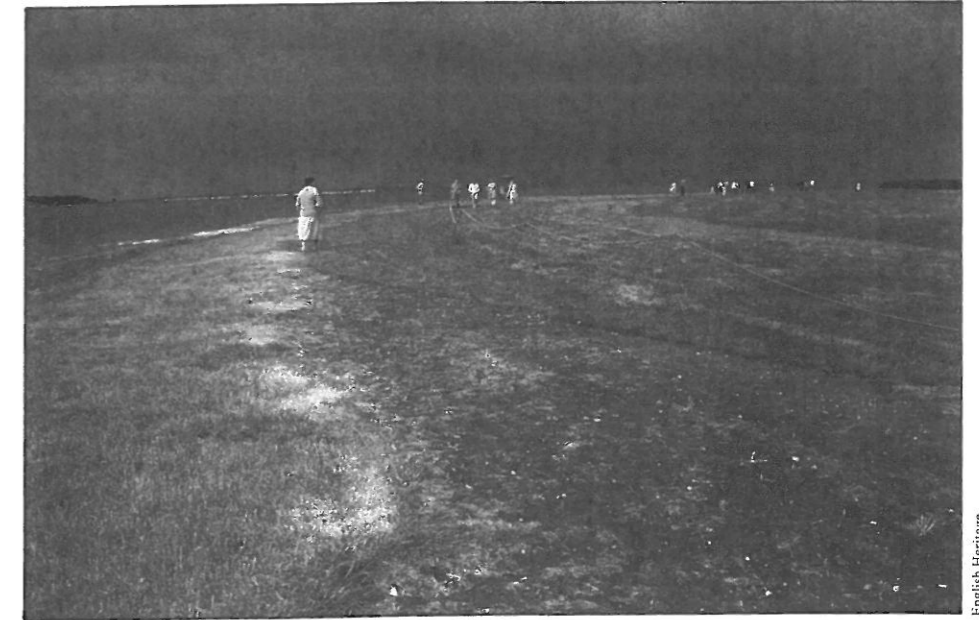
One increasingly common problem at historic sites is that the visitors are eroding the very thing they have come to see. This was one of the reasons for English Heritage reluctantly deciding to restrict access to the centre circle at Stonehenge. However, wear is still a problem around the stones and trials of different types of surface have been taking place over the last year in an attempt to find a solution. A survey of any site will reveal areas of such visitor erosion. Children could investigate the best surface for visitors to walk on at sites with different versions of the same problem. What can be done about the wearing away of grass on open sites or of historic carpets in a historic house like Osborne House on the Isle of Wight? Three factors are especially important in the historic environment.

- Aesthetics - the surface must be in keeping and look good in its surroundings
- Durability - the surface must be able to withstand the pounding of visitors' feet
- Protection - the surface must afford the greatest possible level of protection to the historic environment where it is to be laid. This may mean protecting the underground environment - as at Stonehenge - as well as the visible, above ground environment - as at Osborne.

A survey of the visitor erosion paths at an historic site should show up which surfaces are most susceptible to erosion. Children could suggest a range of possible replacement surfaces and then devise investigations to test which should be most hard wearing. Would they suggest a totally new, probably artificial surface or one that would lie over an existing natural surface? They could then carry out a survey to see if visitors would still enjoy their visits if the most hard wearing surface was laid. Would this surface be acceptable to visitors? Will the children have to compromise on which surface to use? Damage to the historic environment is also caused by localised erosion from natural elements and from modern pollution. The materials originally used in the building of the monument may be more or less susceptible to different eroding agents - for example, different types of stone used in the building of a castle may erode differently and can lead to an investigation of rock types or of the relative suitability and merits of different building materials.

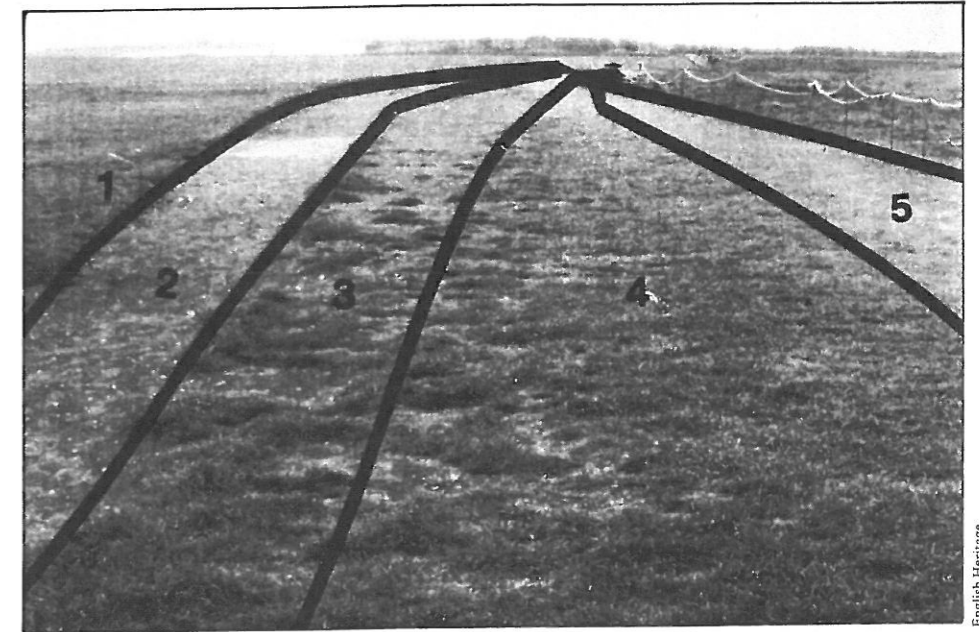
A square of my own

Historic sites are havens for all sorts of flora and fauna that don't necessarily get a chance to thrive in less sheltered conditions. Children can be encouraged to adopt a metre square of a site and to monitor the changes that take place in it



ABOVE: Turf trial area.

BELOW: Grass wear bands.



English Heritage

English Heritage

over time. What evidence is there for animals or insects? Do unusual flowers or grasses grow there? If so why - is it the micro-climate or simply because they are not trampled on? Different squares of the same site can be compared over time. Don't forget that the children should look up as well as on the ground - are there any interesting inhabitants of the nooks and crevices in the wall above their square?

Wash day blues

Clothes have always got dirty and a study of historic fabrics can lead to a comparison of cleaning techniques. Many historic houses and museums have collections of clothes that children can handle and wear and some put on special wash days using original methods and appliances. Again, children should be encouraged to formulate sets of questions for example: Why do we wear clothes? What are our clothes made from? What were clothes made from? Why was that particular fabric suitable? How were the clothes made?

How were they coloured?
How were they kept clean?
How much did clothes cost?

Investigations can follow from all of these questions - for example, on the waterproof quality of various fabrics from different periods in the past.

Food glorious food

Eating is a pastime close to the heart of all children and a study of past diet immediately catches their interest. A generally held belief is that things have always been getting better and, as part of this, that diet has always improved. This is certainly true in some instances but - as with almost everything - there have been great fluctuations over the years. Known historic diets such as a monk's main meal of the day, or a nineteenth century labourer's lunch can be compared either with what children eat today or a contemporary meal of a different section of society. Food values can be worked out with the help of computer packages such as MICRODIET and children can

compare, for example, the relative adequacy of a medieval monk's lunch with the contents of their own lunch box. Investigations have provided some rather surprising results!

A puzzle without the pieces

The work of archaeologists - trying to piece together what happened in the past from the material remains of past societies - has often been likened to trying to piece together a jigsaw puzzle without the help of a picture. To make things even more difficult in most archaeological investigations nearly all of the pieces of the puzzle have also been lost. Erosion and decay are common problems faced daily by archaeologists and children can explore the limitations of archaeological interpretation by studying the remains of objects in museums. What type of handle did that blade have? What was it made from and why did it decay before the blade? How was that pot made - and what can it tell us

about the scientific development of the society which made it? Was a pot that has a spout-like feature used for holding and pouring liquids? Even if children accept or reject their hypothesis about the pot's function, after scientifically testing a replica pot they have made, can they be sure they are correct? They must always remember that there might be other, less obvious reasons for the shape - for example, social, religious or fashion. If the pot does not work well as a pouring pot can they be sure in rejecting their hypothesis - or was it just a badly made pot?

These are just some examples of how the historic environment can stimulate scientific investigation. They are discussed more fully alongside many other examples in Science and the Historic Environment soon to be published by English Heritage. This book aims to help teachers view the historic environment with a scientific eye and to help them spot new opportunities to

bring science alive. It explicitly explores the links between science, archaeology and history and sets out to help teachers plan and carry out cross-curricular approaches to education.

Jane Pownall
Warden, Mindred Study centre.
Nick Hutson
Townhill Middle School, Southampton.
Peter Stone
Regional Education Officer, South West English Heritage.

In **Remnants 16** we will be looking at Maths and the wide variety of ways its study can be applied outside the classroom. For many more ideas on using Science see our **Resources Update** on page 13 for full details of A Teachers Guide to Science and the Historic Environment in our Education on Site series.

I've got Peacock for my Lunch!

As a historical source nothing could be more locally accessible than your own school building.

How often have you suggested to children that in order to understand how materials survive over long periods of time they try to visualise what would be left of their classroom when 100, 200 or even 400 years had passed and what information they would give about the classroom? Have you tried getting them to bury common materials and then digging them up after a month or so to see how they have decayed? Both strategies are fraught with difficulties. In the first the contents of classrooms just aren't left to rot away. The building would be broken into, the contents would be pilfered, the structure would become unsafe and be demolished and redeveloped. In the second example the time scale is too short for any appreciable decay of non-vegetable matter. Don't worry! Help is at hand in case of the Coventry Free Grammar School which had a classroom that suffered all the necessary indignities and has been archaeologically excavated.

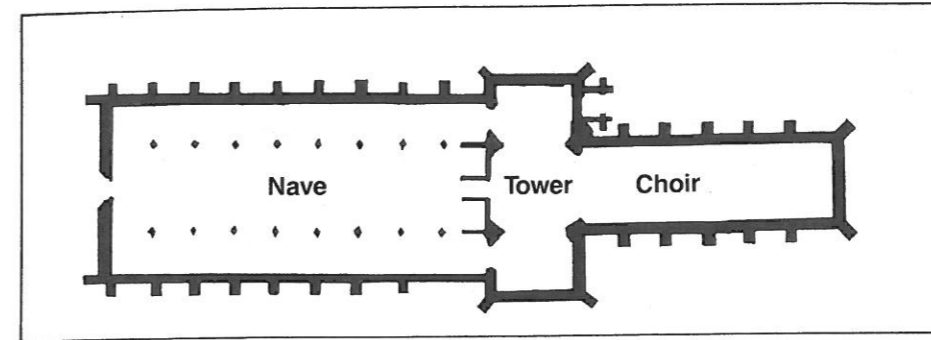
In 1538 the Carmelite Friary of Whitefriars in Coventry became a victim of the Dissolution of the Monasteries. The structure was unused until 1547 when John Hales set up the Free Grammar School in the choir of the old friary. The school was to remain on the site for eleven years after which it moved to new premises. By 1572 the church had become unsafe and was demolished. Some of the building materials were sold leaving the evidence for the school period sealed under rubble. These deposits lay under the garden of a private house until the 1960s when the threat of road construction and landscaping provoked an archaeological excavation of the monastic buildings.



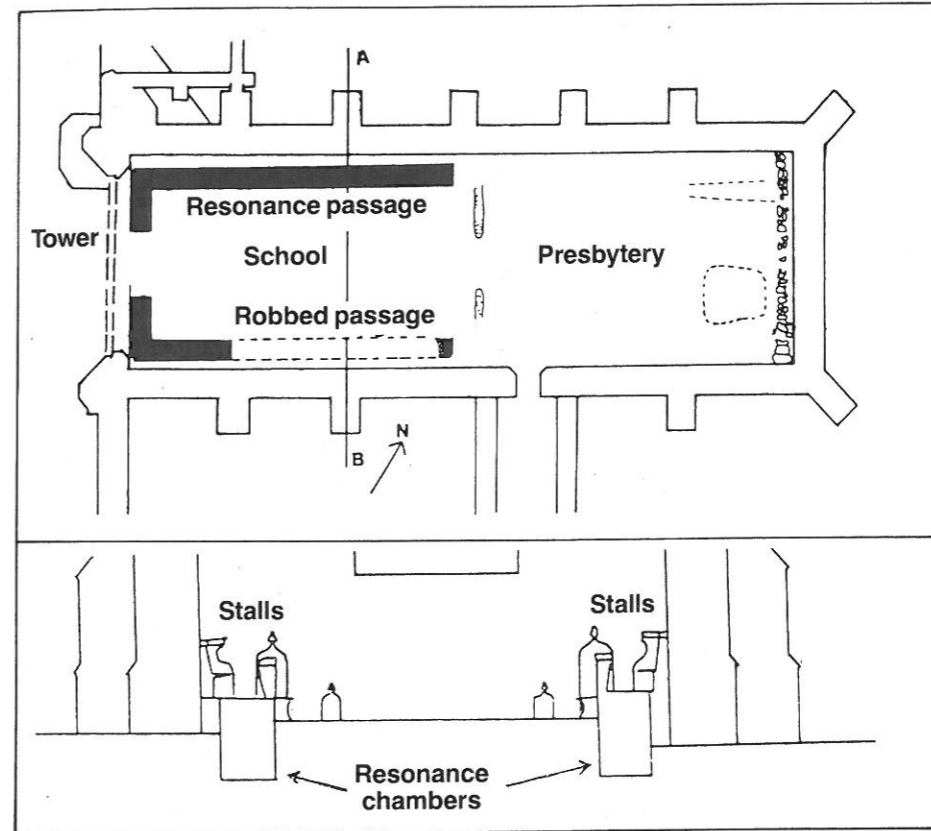
Excavating a School

The excavator, Charmian Woodfield, and her team exposed little evidence of the school's structure although it appeared that the presbytery was separated from the choir by a partition. This might indicate that there were two classrooms with one for younger children or that the partition made the choir easier to heat in winter. However a large number of finds were to prove to be a valuable, if accidental, 'time capsule'. The main reason why so many artefacts were found lay in the existence of 'resonance chambers' below the large channels which amplified the friars chanting, rather like the sound box of a musical instrument. Although this most sacred area of the church would have been kept spotlessly clean during its use as a

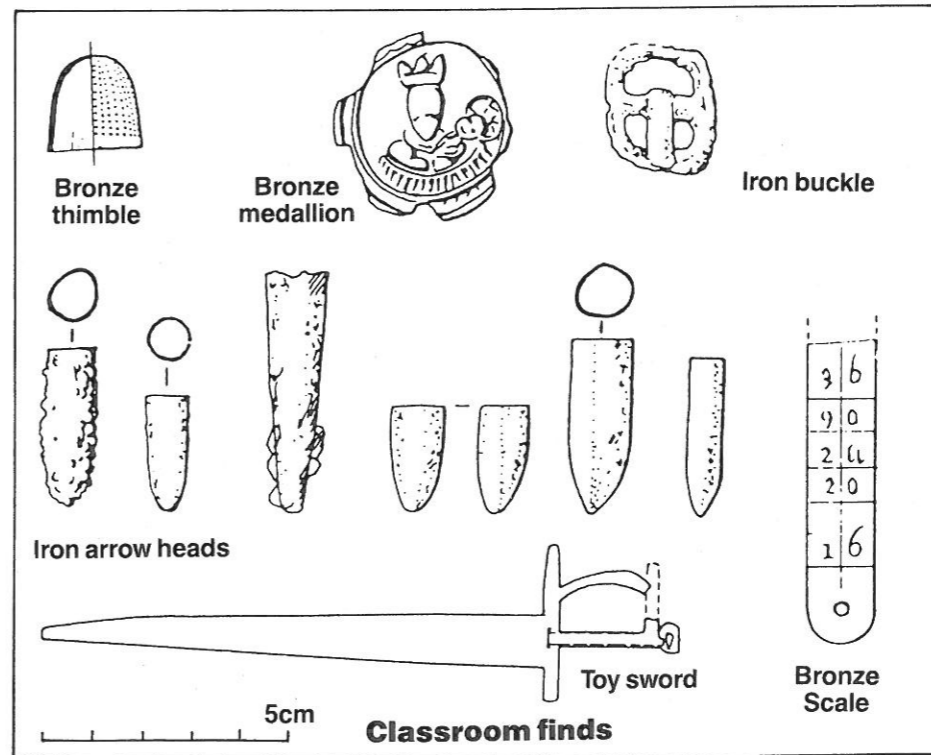
place of worship, the school boys used the chambers as an unofficial rubbish dump into which they stuffed, or lost, a wide range of objects through the floorboards. Interspersed with the objects were the remains of the classroom's floorcovering, rushes, bracken and straw, possibly also unofficially dumped by a cleaner. Unfortunately the chamber on the south side of the choir had been 'robbed' during the removal of stone in the 1570s, but the northern passage was to produce many finds made of metal, pottery, stone, bone and shell. This assemblage gives some indication of the type of materials that do survive after burial for long periods, but we cannot be sure that paper, wood, cloth, leather or other bio-degradable materials were also lost and had decayed.



ABOVE: Plan of the church at Whitefriars, Coventry.
BELOW: The choir of Whitefriars, Coventry.



ABOVE: Reconstruction of the seating arrangement in the Whitefriars school.



Classroom Finds

The list of finds is a long one and many give us insights into the everyday life of the pupils. Perhaps the contents of the boy's pockets are represented by 17 arrowheads, 5 musket balls, a Jew's Harp, 3 human teeth (1 adult), a bone comb, two small bells, numerous knives, 10 marbles, a toy sword, a pilgrim's badge and a decorative toilet article with a nail cleaner, toothpick, and ear scoop (the Tudor equivalent of the Swiss army knife?) and coins. Some idea of how the pupils were dressed can be gleaned from the many buckles of shoes, belt plates, hooks and eyes, buttons, a bronze lip for binding the end of a belt, an earring, wire twists for lacing and fastening clothing, studs, 1575 pins connected to the pleating and wearing of ruffs, and 400 tags or points for threading laces and fastening doublets and hose. What was a pair of adult spectacle frames doing in the chamber?

What about the evidence for teaching and learning? There wasn't as much as we might expect. A nest of weights, a bronze scale incised with numbers set in vertical tables that may have been a tally of some sort or even a template, 12 inkwells, bronze book mounts, an oyster shell palette with traces of blue pigment, a sewing ring and a thimble all seem to have an educational use. Forty six beads may have come from an abacus or two, pieces of circular tile might have been used as counters, 112 jettons, engraved counters could have been for computation on a counting board, a polished piece of bone might have been a reading pointer. In fact the arrowheads and musket balls mentioned above could be a part of the sports curriculum. However, many objects could not be assigned a function. What are we to make of '1 U-shaped bronze strip' or '1 oval flat sheet with raised dome pierced for a square rivet'? These items may have had an important role in the school. It is impossible for us to tell.

Medieval School Meals

The most remarkable category of finds appears to have been related to 'school meals' brought by the children and eaten in the choir stalls. Fragments of cups, bottles, mugs, storage jars, dishes and bowls were retrieved and perhaps the knives listed above were also connected with the midday meal. An amazing variety of animal bone was present and it is likely that these represent the food eaten by the pupils. Mammals included 39 deer bones, 22 hare, 5 horse, 291 ox, 145 pig, 320 rabbit, 732 sheep or goat. Bird remains comprised the bones of a duck, 208 fowl, 95 goose, a peacock (hence the title of this article), 13 pigeon, 4 swan and 61 wild bird bones. Seafood was represented by 9 fishbones, 101 oyster, 11 mussels and 3 cockles. Presumably the bones of a badger, mouse, rat and snail were part of the decay period, what about the cat and 11 dog bones?

What do these artefacts tell us about the everyday activities of the children and their social status? What evidence is there that would positively indicate that it came from a school? How could we date these materials? The evidence of children sat in

two rows of choir stalls on each side of a central space might lead to the conclusion that highly didactic methods of teaching were used at the school.

If you think about it, none of this is really surprising. Over a ten year period most classrooms would produce this amount of rubbish. Perhaps the main differences between then and now is the use of plastic which is more durable therefore not breaking so easily, the cleaning of classrooms and the use of concrete floors with lino tiles. Perhaps the most startling aspect is the lack of remains of furniture and equipment. We know that the choir stalls survived, that still exist after having been moved to new premises (experimental archaeology shows that there was room for 75 pupils on them). Probably nearly all the equipment was moved with the relocation of the school.

Documents as Evidence

So how did the excavator know that a school had been set up in this building? Documents gave important clues. There is the licence granted to John Hales on 23 July, 1545 which details the purpose of the school:

'a free school in honour of Jesus Christ, who wished little children to come to him, a perpetual school which shall be called our school, viz that the school of Henry VIII of Coventry'

This would ensure that *'a crowd of idolators, manslayers, thieves and idle mendicants which stalks everywhere, whould be diminished and disappear'*. There is the list of staff: *'Mr Sherwin, the*

chief master 30 pounds a year, to the usher 10 pounds a year, and to Mr Johnson of Oxford, Music master, 20 nobles and his board' (What happened to the musical instruments, or did they only sing?). Without these records it is unlikely that the excavator would have deduced the presence of the remains of a school. What do you think she might have concluded?

In Your Own Classroom

The classroom you work in is likely to go through the same processes of decay and dereliction as the Whitefriar's School.

Examine the classroom and consider:

- Which items of equipment and furniture are likely to be removed if the room ceases being used for an educational purpose?
- What is likely to remain after the demolition and 'robbing' of the building? Which materials could be re-used?
- If any personal or educational objects are to remain are they likely to be big or small? What might they be? Where would they be found?
- What sort of materials would they be made of if they were to survive for four hundred years?
- What period of time would they represent? Would there be any dating evidence?
- Would the remains be likely to tell the people of the future what actually occurred daily in the building?
- What documentary evidence does your school have that would tell a future

excavator the position and purpose of the building? What would happen to it when the school becomes defunct? Understanding what will happen to your classroom will give you, and the children you teach, greater insights into the historic remains you might visit as part of the history or science curriculum. The guidebook, the finds in the site museum and most important of all, the site itself will have a greater meaning for having 'demolished your own classroom'!

Tim Copeland
Assistant Director of
Professional Development
College of St Paul and St Mary
Cheltenham

A different version of this article was first published in the Council for British Archaeology's 'Education Bulletin' No 4 January 1988 as 'The Archaeology of Education'. A full account of the excavation can be found in 'Finds from the Free Grammar School, Coventry, c1545-c1557/8' *Post Medieval Archaeology* vol 15, pp81-160.

In the Spring Term we will be publishing our Teacher's Guide to Using School Buildings, and in the next issue of Remnants author Sallie Purkis will be looking at many of the practical ways you can use your own school as a teaching resource.

changed and affected by real people who have really lived there. We decided to settle for giving our children the opportunity simply to see some of what was there to see, and hopefully experience some of the strong and evocative atmosphere of the house.

Several factors helped us. It was well enough into the autumn for there to be few other visitors, and the staff were understanding enough to give us complete freedom of access to the relatively small house. A stained glass workshop had been arranged with a local artist which kept half of the children both enjoyably and valuably occupied at any given time, and we had several adults with us. This allowed us to have working groups of no more than four or five children, and these could be distributed throughout the house without significantly disrupting the atmosphere at all. Instead of rushing the children around the whole building we chose four interesting locations - a spot outside on the lawn from which you could see the ancient pele tower as well as the Tudor and Victorian additions, the Entrance Hall with its vast oak door and suits of armour, the Tapestry Room with its magnificent carved bed, and the Drawing Room, once the main room of the medieval tower but now furnished as in the Victorian period. In each one children sat, looked, asked questions, thought and worked - in some cases for more than an hour. They made detailed observed drawings (an outstanding way to direct attention and focus looking) and tried to capture their own response in free-form poetry (a strong and concise way of filtering and holding experience). Most of all however they were given time to look and reflect.

*I sat on the doorstep
drawing a statue.
I sat on the doorstep
writing a poem.
I sat on the doorstep
watching people walk past.
I sat on the doorstep
thinking
I sat on the doorstep
remembering the past*

Helen Edgar, age 9

As often happens when children are allowed to respond to strong, direct experience in their own way, both the writing and drawing the children produced was very pleasing - fresh and honest.

... on the vase is a picture of some late-summer honeysuckle and scarlet berries. There birds singing in the horse-chestnut trees, which arch themselves to tickle the chest of Turton Tower.

Anna Leeming, age 9

What was perhaps more surprising was that despite a decision not to use the visit to teach 'History' as such, it became very clear once all the children's on-site work was read, that very many of them had grasped one of the basic concepts of all history work - that of continuity and

change. I am not saying that they understood in any depth any of the particular periods involved, but they had understood very clearly that the house had been different at different times, and that what now remained represented elements from various times yet remained part of a developing whole.

*A solitary person
listening, looking
on the top of the tower
smelling, feeling
tasting the air
as it floats past, crouching down
as a single arrow
skims his head
like a flat, round stone
across a river*

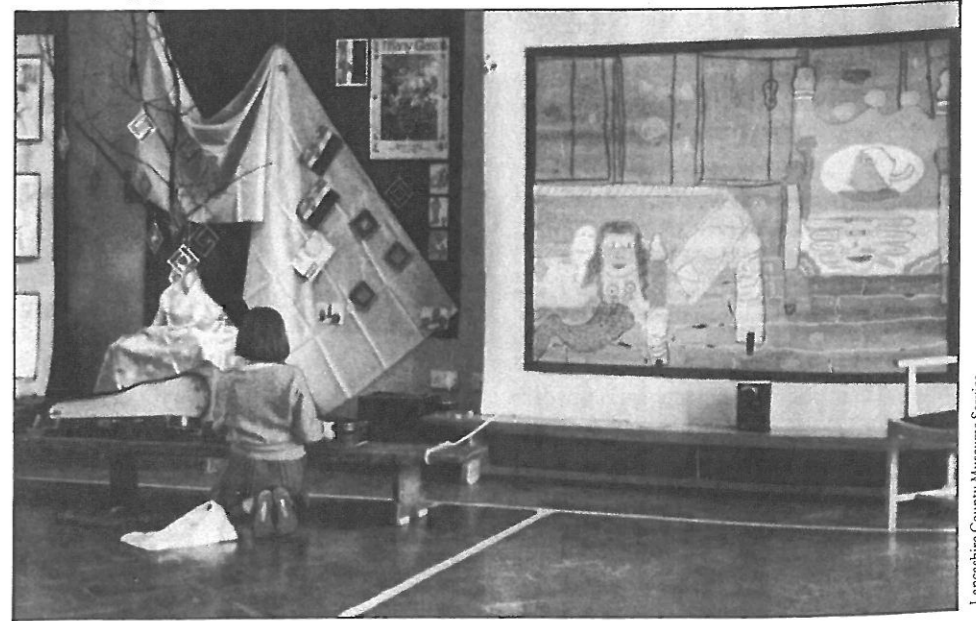
Dylan Ferley, age 11

*The panelled walls
and the ticking of
the old grandfather clock,
the spirit of little children
playing in front of the fireplace,
and the ladies writing invitations to tea,
the pictures on the walls
and the ceiling carved
like icing on a wedding cake*

David Holgate, age 10

Those few hours of looking and reflecting produced enough quality ideas and impressions for several weeks further work back at school. In the end we were able to put on a fairly large exhibition of resulting work which attracted several hundred parents and other visitors. We were also able to produce our own book of 'Turton Tower' poems and drawings - and the sale of this, incidentally, made quite a respectable profit for our school fund! One of the most pleasing of many favourable comments from visitors to the exhibition came from members of the Turton Tower staff who kindly came all the way to Whalley to see it. They said that what amazed them most was the detail of

BELOW: Setting up the exhibition at school.



Time to Look

With careful planning, visiting a historic site can be a stimulating experience for children and a perfect venue for creative and cross-curricular work, as teachers from Whalley Primary School, Blackburn found out.

I have long been an advocate of the considerable benefits gained when children visit 'historic' sites and houses. Experience is always the most powerful of educators. Yet the potential of this experience is so often missed. How often are children bored and baffled by a seemingly interminable 'conducted tour', the few who listen at all bombarded by meaningless names, dates and explanations? How often is their time filled with a manic 'treasure hunt' in pursuit of the right words to fill blanks in a sheaf of worksheets? (Anyway, you can get the answers from that swot Mary D. - She worked them out on the coach - going!) How often are they subjected, clad in dressing-up box remnants, to the most superficial and inaccurate of 're-enactments'? No wonder what would be the essence of the day becomes, to the children, an unwelcome intrusion between the real highlights - lunch, a visit to the shop, and the time in the adventure playground by the car park.



The guardians of Turton Tower.

What children need instead - but so rarely get is

- time to look
- time to experience
- time to think and ask

They need the time and they need reflective activities which will help them to take in the experience and make it part of their own. So when Maggie Simms (from the Lancashire Museums Service) and I sat down to plan for each of our four Junior

classes to make a day visit to Turton Tower, near Bolton, our first decisions were - no conducted tour, no worksheets and no dressing-up! The actual history of Turton Tower is very complex. It has been inhabited over a long period and substantially changed by so many owners that it does not consistently reflect any one period. We knew that any attempt to convey the whole history of the house to young children in one day was doomed to superficiality. Yet the house has such a lot to offer. It is a genuinely evolved building,

Eighteenth century spice cupboard.

observation of so much of the children's work. Very gratifying when what we had aimed to give them was time to look.

Turton Tower

*The past is the future
The end is the beginning,
An endless recycle.*

*A mountain of years
Adds up to the present.
This place is a part of everyone,
A place of silence
And laughter*

Victoria Tomlinson, age 10

Gordon Askew
Headteacher
Whalley C.E. Primary School, Blackburn

Copies of the booklet produced by Whalley Primary School containing dozens of the Turton Tower drawings and poems are available from the school at Church Lane, Whalley, Blackburn, Lancs, price £1.00 including postage.