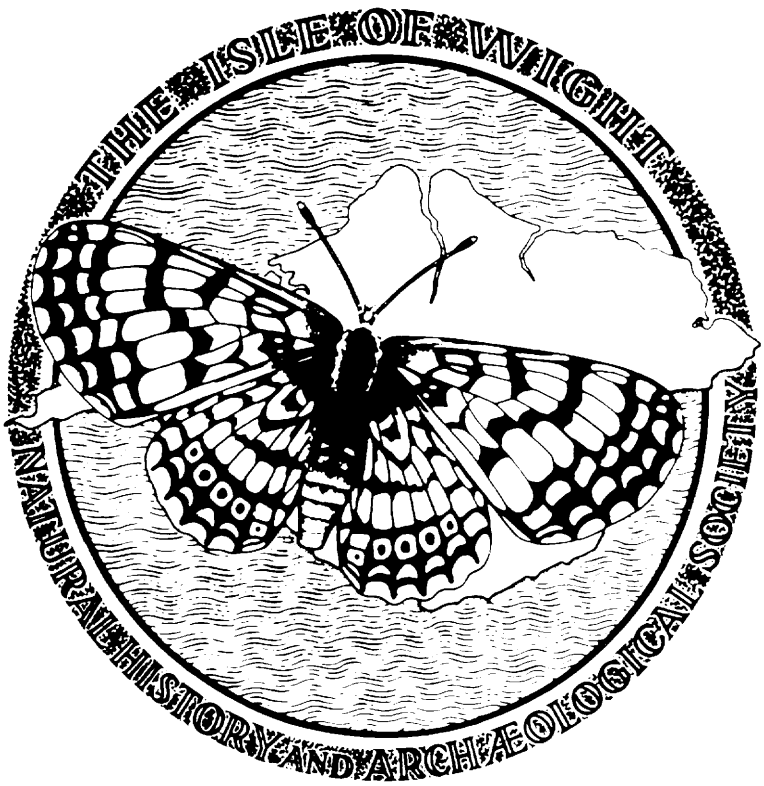
ISSN 0140-3729

PROCEEDINGS of the ISLE OF WIGHT NATURAL HISTORY and ARCHAEOLOGICAL SOCIETY

VOL. VIII Part 2 1987



Issued 1988

Printed in Great Britain by
Alan Sutton Publishing Limited, 30 Brunswick Road,
Gloucester. GL1 1JJ

PROCEEDINGS

OF THE

ISLE OF WIGHT NATURAL HISTORY AND ARCHAEOLOGICAL SOCIETY

VOLUME VIII PART 2 1987

ISLE OF WIGHT NATURAL HISTORY AND ARCHAEOLOGICAL SOCIETY

Objects

The promotion and advancement of the study of the flora, fauna, geology and archaeology of the county.

Activities

The Annual General Meeting on the last Saturday in January. General and sectional excursions on Saturdays and/or Sundays throughout the year. General and sectional evening meetings and lectures.

Publications

Proceedings and *Isle of Wight Birds* are published annually. Bulletins produced triannually. All publications are issued free to members.

Subscriptions (subject to review)

Ordinary Membership	£10
Family Membership	£15

Forms of application and other information obtainable from the General Secretary.

Officers

President	Mr F Goodley	
Vice-Presidents	Miss H Blount	Mrs D Millington
	Mr F W Bright MBE	Mr F Neat
	Lieut.-Commander J M Cheverton RN (Retd.)	Mrs M Seabroke
		Mrs L Snow
	Mr L E L Cox	Mr J Stafford MA
	Mrs D A Frazer	Mrs K Wadham
	Mr O H Frazer	Mr V Wadham
	Miss M Middelton	Miss T White
		Mr R Wyatt
General Secretary	Mrs T Goodley Ivy Cottage, New Barn Lane, Shorwell, Isle of Wight, PO30 3JQ.	
Treasurer	Mr J Edmunds Sandalwood, Gravel Pit Road, Wootton, Isle of Wight, PO33 4RB.	
Editor	Dr A Insole 56 Carter Street, Sandown, Isle of Wight, PO36 8DQ.	

Contents:

NEWTOWN SURVEY REPORT 1985

L.E.L. Cox

Before presenting the main contents of this report I would like to start by including extracts from two letters received from George Lawrence in New Zealand. They recognise the very great service paid to the interests of natural history by Bernard and Eileen Hayward and the subsequent studies enjoyed by increasing numbers of students and their contributions to the developing work at Newtown.

I tried to outline the historical background to the Newtown project in my report included in the 1982 *Proceedings* and made particular reference to the work of George Lawrence and Oliver Frazer. George's letter reminds me of the debt we all owe to the awareness of Bernard Hayward whose action set in motion the activity that culminated in the establishment of the Reserve.

Extract from letter (1):

Bernard and Eileen Hayward, 57 High Park Road, RYDE, Tel 63449

Berni and Eileen were farming the Brickfields area at Newtown during the 'fifties'. Berni had been crippled in an accident at a boat yard and managed to farm on crutches! A really tough bird. Eileen and Berni both kindly and fond of kids – used to welcome us as naturalists (mainly John Wilmott, Bill Barry and myself at first).

I haven't got the facts with me but I believe it was sometime in 1958 he 'phoned me to say,

'If you want to see this area become a nature reserve you'll need to do something about it quick. I think they are planning to put a nuclear power station here . . .'

He based this assumption purely on his observations of the behaviour of a group of surveyors working near the entrance to the harbour. How right he was!

I then 'phoned Ron Machin, Bill Shepherd, Mercia Seabroke, Oliver Frazer and one or two other folks! Between us we formed a temporary committee to discuss, investigate, and, if possible, take action. The first survey and all subsequent actions sprang from this.

Letter (2):

George Lawrence, P.O. Box 93, Russell, Bay of Islands, New Zealand.

Dear Lou,

My wife and I very much appreciated the opportunity you gave us to see the exhibition set up by your student naturalists. We are very impressed by the evidence of original, as well as scientific, thinking and by the standard of presentation. Some of the exhibits reveal artistic talents too.

The evidence of a lifetime of field work suggests to me that the future of all species of flora and fauna on this planet depends on what can be achieved by the efforts of groups of knowledgeable and determined conservationists. Here in New Zealand an increasing number of people are accepting this concept and facing up to it.

The way in which your students are following up and developing the work of Cowes pupils of the fifties, sixties and seventies promotes optimism for the future.

Molly joins me in offering our congratulations to the Newtown project and our deep gratitude for the pleasure it gives us.

Yours very sincerely—George Lawrence.

The twenty-seventh survey was held at Newtown this year from Wednesday, May 15th to Wednesday, May 29th. The advance party arrived the previous day and in due tradition the rain started as we put out from Cassey Bridge.

The advance party included Colin Newbold, Matthew Parker, Wayne Tyler and Peter Turner.

The main party was much younger this year and included a larger number of third year students attending camp for the first time. I was impressed with the way newcomers readily adapted to the daily routines and natural history studies and soon formed a cohesive, responsive and tolerant unit.

Students attending during the survey period were as follows:

Third Year students: Kathryn Bell, Vicky Biggs, Elizabeth Bownas, Justin Brett, Dale Cooch, Paul Jones, Paul Newbold, Tim Pressey, Rebecca Price, Paul Revert, Robert Stewart and Lorna Woods.
Fourth Year students: Helen Brown, Kirsty Larkin, Peter Turner.
Fifth Year students: Matthew Parker and Colin Newbold.
Sixth Form: Jeanette Norris, and Elizabeth Price.
Former pupil, Wayne Tyler and prospective pupil Emma Philo.

I was assisted by Mrs. Philo from the Mathematics Department during the first week. Her presence was invaluable. I do appreciate the ready way she adapted to the conditions and way of life in camp and proved to be such a dependable aid.

In the second week Tracy Hart, a former pupil of some years, who started in her Third Year, was my assistant. It was pleasing to have the assistance of a young woman, who came initially as a junior, returning to act as leader and adviser.

I was pleased to have the expert assistance of a number of visitors on occasions during the fortnight. Two past VIth Formers, Nick Osborne and Paul Burland joined us during the first week-end and became extensively involved in the bat watching. Clive Chatters contributed three days with the botanists. Frank Heap joined us on two occasions armed with his bat detector. He also provided us with a wattle hide for testing and evaluation. Jessica Holm joined us for two days, in the second week, armed with a radio collar which was tested out on a wood mouse. Jonathan Cox gave us two days of help and advice and Connie Pelham joined us for three days giving advice on photography and insect studies. I am again appreciative of her efforts to ensure that we always have some excellent insect photographs.

I am indebted to all these visitors for the enthusiasm and expertise which they bring for the benefit of all students and which adds so much to the variety and value of experience available to them. I am particularly pleased that we have so many able people who are members of the I.O.W.N.H.A.S. whom we can call upon for help.

We also enjoyed a brief visit from an R.S.P.B. survey team assessing the redshank and ringed plover populations.

This year we enjoyed comparatively good weather following a dry, cold spring. The improved conditions enabled the camp to proceed smoothly and effectively and enabled so much more to be accomplished. The response of the students to the blossoming of life at Newtown was most encouraging. Our main activities followed the usual pattern and were as follows:

Mammals

The usual trapping grid was set out in the camp site under the general direction of Colin Newbold and Matthew Parker. They again organised an efficient survey and presented their results accurately and effectively. The results show for the third year a steady wood mouse population. The bank voles have crashed from their very high numbers of 1984, although not as low as in 1983. We caught no common shrews this year compared with eight new catches recorded in 1984. For the standard grid the figures are:-

	1983		1984		1985	
	New	Recapture	New	Recapture	New	Recapture
Wood mouse	17	43	15	43	18	74
Bank vole	1	0	13	117	5	10
Common shrew	1	0	8	*	0	0

* not marked

Amongst the catches two wood mice and bank voles were trapped carrying marks of previous trappings.

Colin redrew his transect to show the vegetation cover in relation to the positions of the mammal traps. His survey of the rabbit population shows the increase in their numbers within the camp site and the spread of their burrows following last years removal of cover from the adjacent farm lands. This move may well prove of advantage to the site as the shift in their grazing will help to keep open existing grassy areas and perhaps limit the invasion of scrub.

Jessica Holm's visit and subsequent night vigil, tracking a wood mouse fitted with a radio collar, served to show how far those small mammals may traverse in the course of an evening. Certainly in this instance the mouse ranged from the top of the site to the waters edge, on the southern shore, in its feeding activities. Students were on two-hour stints from 10.00 p.m. to 6.0 a.m., although not responding too eagerly as the time advanced towards dawn. The wood mouse ranged extensively from its home trapping zone throughout the night until it was apparently caught by a predator in the early morning. Its signals were traced moving rapidly towards the Dark Pond until transmissions abruptly ceased, the line of the disappearing signals led towards a series of runs, presumably stoat, near the pond.

Colin Newbold has assembled a number of skeletons found within the camp site. These make an interesting addition to the display.

Frank Heap and Paul Burland continued their investigation of the bat populations and still seek to locate the roost sites. The whole student group was involved in manning observation points pinpointing the time of emergence, subsequent flights and flight paths. Bat watches were mounted on the following occasions: May 18th, 20th, 25th. Despite early posting and comprehensive placing of students to likely areas the roost sites remain unlocated. There was certainly plenty of activity commencing at 9.20 p.m. and lasting for an hour when all activity would cease.

Birds

A very encouraging year for the bird watchers this time with a further increase in species close to the site and in nearby habitats.

I was again indebted to Wayne Tyler, a former pupil, for his enthusiastic support in organising and manning the hides. He was well supported and encouraged by the interest and enthusiasm displayed by our new students. In particular the hide records prepared

by Tim Pressey and the drawing associated with habitats presented by Helen Brown and Kirsty Larkin in the display are evidence of their careful observation and recording.

The salting to the south of camp provided interesting bird watching again this year. Here I must draw attention to a mistake in my last report as I have recorded temporary bridges being built to the 'north of the camp'. Bridges were refurbished and a hide erected on the south salting. A pair of oyster catchers nested within the salting and not close to the seaward edge as last year and afforded an excellent opportunity for observation. A pair of redshank also nested on the salting.

The meadow this year was alive with birdsong and activity. We welcomed one of our school governors, Mr Colin Nicholson, on the second day of camp and in a general survey of the meadow with the intake students the following birds were observed paired and active: yellowhammer, two pairs of whitethroat, two pairs of blackcaps, three nesting pairs of linnets, three pairs of chaffinches. A general observation hide was erected in the meadow. The Tuesday following students at first reported a wren nesting near the hide. This eventually proved to be a willow warbler that hatched its first three chicks on Sunday May 28th. A cuckoo was also a regular visitor to the meadow.

An observation hide in the Dark Pond enabled students to see a moorhen with chicks and spotted flycatchers, in addition to the usual chaffinches that form part of Matthew Parker's continuing study. His three years of records are an important part of the display.

A natural hide was erected by the fresh water ponds by Peter Turner who maintained an enthusiastic watch. Birds seen from this location included heron, Canada geese, shelduck, mallard and black-headed gull. Watchers from the pond often had the opportunity to observe hares displaying in the nearby fields.

A wattle hide, loaned by Frank Heap of the National Trust, was erected on the main salting and proved to be an excellent addition, enabling students to record observation of shelduck, canada geese, redshank, black-headed gull, herring gull, common tern, sandwich tern, a black-tailed godwit and an injured Brent goose.

For the second year running there were no nesting gulls on the wall to the south of the Clamerkin.

Botany

Introductory field work was started with the help of Clive Chatters. Students were concerned with the identification of the most common species in the area and relating them to habitat. Amongst the more interesting were the presence of early purple orchids along the north cliff and green-winged orchids in the meadow and in the fields towards the fresh water ponds.

Following last year's recording of an adders tongue fern, Clive discovered patches of the plant in the meadow immediately to the west of the camp site hedge.

Insects

In keeping with the fine weather there were increased records of insects. Amongst the butterflies identified were grizzled skipper, green hairstreak, small copper and painted lady in the meadow; brimstone, holly blue and common blue within the camp site.

I was greatly helped, as usual, by Mrs Connie Pelham. Her records of finds with the students include unidentified larvae on blackthorn and hawthorn, larvae of drinker moth, figure of eight moth and yellow tail moth. Her photographs of a newly emerged damsel fly, azure damsel flies and cast skins of may fly indicate the response from the pond life to the warmer weather. Her slides are completed by the inclusion of pictures of

a gold arches moth, green wasp, cuckoo wasp, the frog hopper *Cercopsis vulnerata*, seven spot ladybird and a brown argus.

Pond dipping

An absorbing activity that provided the students with many specimens for observation and identification. The display includes some excellent work, particularly that presented by Vicky Biggs. The variety of ponds provides a range of habitats and variations in life. The Dark Pond yielded our first recording of the freshwater cockle, identified and confirmed by Jonathan Cox. A first record for Newtown associated with the Dark Pond included a grass snake seen frequently swimming in the water. In addition a grass snake was discovered on the girls' site on the first day. To my knowledge this is the first time that any snakes have been seen on the Brickfields site or associated territories. The site abounded with newts and toads. All three species of newt were seen and identified during the week.

Fossils

There were regular visits to the reef coinciding with the lowest tides. They were not very productive. Some small pieces of bison and elephant were found but nothing to measure up with some of the past finds. Certainly we were unable to reach the lowest tide level because we did not experience sufficiently low water. The furthest reefs were only just exposed at the lowest tides.

Erosion

The last four years the records have been kept by Colin Bell. Since he has departed to Portsmouth Polytechnic to study Engineering his place is taken by his sister Catherine who made a good start to her studies at Newtown. She has updated the computer file and entered it onto the school network. In addition Robert Stewart measured the movement from the datum line and with assistance from Stuart Wisbey the scrub was cleared along the length of the line and at right angles to each measuring point. The sequence of drawing in the display shows the continuing loss of material from the cliff face.

Photography

I am indebted to Mrs. C. Pelham and Tracy Hart for their photographs in the display. Most of the slides are mine this year as the student intake is in the transition period and we have to train up a new team. However, Colin Newbold has an excellent collection of prints available in the display. He has also edited 8mm film produced in the last five years, putting together the best available material. It constitutes a useful record and includes some excellent work by Peter Turner showing the grass snake swimming. Oliver Fraser gave us his full support as usual.

Wardening

We had a few visitors over the Whitsun period. It may well be that our policy of welcoming those who land and offering a conducted tour has had a good effect in terms

of good will and an appreciation of 'what is going on'. We welcomed the County Solicitor, Mr. Malcolm Lloyd, who had the opportunity to observe the camp in full swing.

Previous work on erecting fences and gateways was completed enabling the site to be excluded from poaching by cattle. Colin Newbold completed an enormous task in wiring the Eastern Boundary. The fire site was moved away from the cottage garden in order to allow the garden site to recuperate. Continuous bad weather in the past combined with poaching by cattle and students' feet has led to the loss of grass. With careful management the site should soon be restored.

Finally my annual thanks to Oliver Frazer for his ever present support. To Pat Ewbank, the Reserve Warden, who never fails in our support. To Sandy Leath for his prompt and efficient shipping of our equipment.

Considering that we had lost most of our senior students this year I believe we had a very successful fortnight's survey. It is a measure of the quality of support I have received from all those adults concerned with this survey and of the ready response and growing maturity of the students participating.

NEWTOWN TOWN SURVEY REPORT 1986

L.E.L. Cox

The twenty-eighth annual survey was held from Wednesday, May 14th to Wednesday, May 28th 1986. I present the account of this year's survey work as recorded in my diary.

The advance party arrived the day before in fine, dry, windy weather at 1300 hrs. An excellent team that included Philip Morris, Colin Newbold, Matthew Parker, David Schofield from the VIth Form, Peter Turner, a past student, and Dale Cooch, Tim Pressey and Robert Stewart from the IVth Form. They set to work with a will and in fine conditions rapidly prepared the camp site. All major items were completed and the majority of stores stowed by the evening.

Wednesday, May 14th dawned fine and sunny following a windy night with some heavy rain. The advance party completed the preparation of the site during the morning, and made some initial investigations during the afternoon, prior to the arrival of the main party at 1400 hours.

Initial discoveries were as follows: Dark Pond – moorhen with five eggs, mallard with ducklings; Top Pond – (in the meadows) moorhen with eight eggs; trees on the site were only just breaking into leaf, blackthorn was still in flower and there were early purple orchids in the meadow.

Along the north cliff there was heavy slippage along the length of the shore with a storm beach raised up two feet. Along the shoreline of the saltings were many bird bodies as the result of the lengthy cold, snowy spell in February and late spring. Never before have we had such a count of dead birds. They were: 10 teal; 4 redshank; 2 golden plover; 1 whimbrell; 2 blackheaded-gull; 1 lapwing; 1 shelduck; 1 brent goose. In addition: 1 rabbit; 1 toad; 1 wood mouse.

Primroses and violets were still in full flower, the adders tongue fern was just emerging. Lesser whitethroat and whitethroat seen in the meadow and trees. There is a lack of tree cover.

The rest of the party duly arrived comprising the following students:
3rd Year: Michael Martin, Jason Penny, Darren Taylor, Mark Young.
4th Year: Justin Brett, Paul Jones.
Mrs Philo was in charge of this group accompanied by her daughters Sara and Emma. Students were soon accomodated and camp life was in full swing with preliminary tours and instruction for new pupils. My camp diary continues:

Thursday, May 15th

Newcomers started with a tour of the meadow and salt marsh to examine the habitat and identify the birds present there. The wattle hide was overhauled, boated out and set up in the salt marsh. All plants were behind hand, primroses and violets blooming on the tumbled cliff of the North shore and early purple orchids at the cliff top. More bodies were found along the shore line. The mammal traps were set out on prebait, the usual found within the camp site and one set to the north of the house.

Friday, May 16th

Following a cold night the morning started cloudy, fine by midday. Newcomers' tour of the ponds and saltings to consider the habitat and associated animal life. The essentials of hide drill explained and the wattle hide manned using the drill. Lapwings and skylarks were evident in the meadow. More bodies discovered along the shore and some in the vicinity of the Dark Pond. Hares were observed displaying and mating in the fields adjacent to the freshwater ponds. Bird skeletons to date: 13 teal; 8 redshank; 3 golden plover; 1 whimbrell; 2 blackheaded-gull; 2 lapwing; 1 shelduck; 1 brent goose; 1 unidentified. Visit to the reef at low tide, still on neaps, but a bison jaw discovered to the north of the fascine breakwater. Rowing and engine practice in the dinghies for 3rd and 4th years at high tide. I note: Robert rams the landing stage!!

Astronomy. With clear cold nights students have a good view of the night sky and have set to identify the main constellations. Under Mrs. Philo's supervision pupils are constructing home-made theodolites to track the path of named stars. A satellite has been observed passing above our site at 2030 hours for two nights.

Saturday, May 17th

A clear morning at first light but raining by 0700 hours. Continuous rain all morning. A shelter erected over the fire to protect the cooks. Hide drill at the Dark Pond is sheltered and more rewarding as the moorhen's eggs start to hatch. Tim, Justin and Paul hard at work spreading shingle at the tents, fire site and down paths before we start to sink into our usual mud. The outboard engine on hire from the Youth Service is found to be not working. The cooling water is not circulating. The boat is proving difficult to handle in high winds as it has a lot of free board and is very light.

Mammal trapping continues with the wood mouse count proving higher than for several years. 27 wood mice captured to date compared with 17 last year. The bank voles remain steady with a catch of 5. We need to check our scales because we seem to be catching overweight wood mice. A grass snake was found on the salting immediately to the south of camp. It disappeared down a hole under a log of driftwood. Tim Pressey reported sighting a nuthatch (?) in the copse to the North of the house. He is a reliable observer and keen bird watcher but has yet to get a second sighting in company with another observer and present accurate field notes.

Sunday, May 18th

Dr. Eccles, Head of Science, arrives at 09.00 with his son, Tim. My wife Mary joins us for the day and Clive Chatters, from the NCC, also arrives. The usual boat trip was not undertaken because of rough weather. Our visitors had the extended walk via Elmsworth to reach us. Dr. Eccles takes a team to investigate the pH of different habitats. His results are of value in supplementing the information we are gathering on set transects within the site. Unfortunately Mark Young slices open his finger and has to be despatched to hospital for stitching. He returns next day on the high tide. Mark's accident activated our flag signalling to the main shore.

Fossiling. This is a keen group anxious to follow the tide down as it ebbs as we are finding a lot of bison bone.

As we gather for lunch a weasel is noticed trotting along the boundary fence twenty yards from where we are sitting. The assembled group sits quietly for twenty minutes as the weasel makes repeated journeys, carrying one of its young, from its nest to another one some yards away.

We are concerned about 'something' that seems to be lying at the bottom of our rainwater butt. The disintegrating object is removed, proving to be a sparrowhawk. Another set of bones for Colin Newbold's collection.

Monday, May 19th

A fine, sunny day. The school group is proving to be a good unit. Students have settled down to the pattern of camp life and study, each with individual interests developing in addition to the main studies. Clive Chatters takes a group to investigate the general ecology of the meadow. Pond dipping provides many specimens for identification and the pond itself another example of the zonation within a habitat.

Fossil digging proves most rewarding: femurs, tibia, vertebrae and scapula have all been found within a site. A jaw bone and teeth are discovered but remain too deep to be excavated before the tide returns.

Tuesday, May 20th

A heavy thunderstorm at 05.00 followed by a stormy day with further thunderstorms in the early afternoon. Birds song dominant in the sunny periods between the storms. Willow warblers, whitethroat, linnet and chaffinches all in full song. Oystercatcher on the saltings has two eggs and is in good view of the wattle hide.

Work continues with the excavation of the bison skull, it requires great care as parts are fragile and are deeply buried. Time is short before the tide returns each time.

Bat watching is in today's schedule as Frank Heap from the National Trust is expected to arrive with the bat detector. As dusk approaches students are placed in terms to plot the emergence and the flight path of bats. Although a careful watch is kept on the house none have been seen emerging. The bat detector plots the calls of pipistrelle and whiskered bat.

During the day the prevalence of adders tongue fern has been checked. There are numerous specimens in the meadow to the west of the site and in the field to the east that contains the ant colonies.

Wednesday, May 21st

Change over day with high winds and continuous rain. Pupils' arrival and departure goes smoothly. Those who have left are replaced by Catherine Bell, Vicky Biggs and Paul Wyeth from the 4th Year and Denise Hunnybun and Miranda Pointer from the 3rd Year. Nicholas Osborne, who left the VIth Form two years ago, joins us later in the week for three days. The supplement of stores arrives safely and is welcome, particularly the supply of fresh bread. Hides in the meadow, Dark Pond, beside the pond and in the saltings are manned and active. Two pairs of nesting oystercatcher are under observation in the saltings located at its western extremity, a pair at the northern tip has three eggs, the pair at the southern tip has four.

Bat watch again at dusk; particular observation is kept on the house but no emerging bats are seen. Colin and Matthew have covered the rafters with polythene sheeting and this has yielded results as bat droppings are found on the clean sheeting the following day. It is the first time that any evidence has been obtained indicating that some bats do use the house for roosting.

Thursday, May 22nd

A close watch was kept on the meadow as the weather improved. A pair of male yellowhammers were sighted and the flight displays of a pair of skylarks was observed.

An all-out attempt was made to complete the excavation of the bison's skull and proved successful. The site of a second skull was identified by Paul Wyeth but it was in such a crumbly state that we did not attempt to dig it out.

Friday, May 23rd

The activities of observation and recording are in full swing. Students have a routine and are pursuing their individual studies. A chaffinch nest has been located near the Dark Pond and contains five eggs. During the day a survey team has been at work

plotting a transect in the meadow to the west of camp and at right angles to the datum line. The transect line runs southwards to the lower shore on the edge of the salting. This line is to be marked for permanent use and may prove useful in plotting vegetation changes.

Saturday, May 24th

Jonathan Cox and Clive Chatters from the NCC join us today and will assist students in their identification of the vegetation down the new transect line. Tracy Hart has already done the ground work and has a record. The task took the whole of the afternoon.

Sunday, May 25th

Mrs. Connie Pelham from the Isle of Wight NHAS joins us today and maintains the contact established over the last few years. Pupils have been prepared for the insect studies that Connie will supervise. Fortunately the warm corners of the field provided an abundance of insects for observation and photography. As usual Connie's tips to candidates on photography are most welcome and her own photographs are an essential part of our display.

Monday, May 26th

A bright but windy, cold day. Catherine Bell and Vicky Biggs checked and measured the datum line on the North cliff originally laid down by Colin Bell five years ago. The computer record and graphic display shows the rate of erosion and change of vegetation in that time.

A check of orchid sites revealed a group of pink spotted orchids on the eroded cliff, approaching the waters edge close to the reef on the North shore. They were also located, in bud, at the edge of the cliff pond adjacent to the 'football field' where scrub had been cleared the year before by the farmer. Green-winged orchids were plotted in the fields below the ponds and in the fields between camp and the lower pond.

Moth traps set up at night but a fault in the trap meant no catches. The great black-backed gulls nested again on the wall beside the Clamerkin. Colin took the dinghy and camera to film the bird life along the wall. Tracy and David put down permanent markers along the newly established transect.

Paul Bright, who is completing research on dormice, joined us for an all night session radio tracking wood mice. Teams were prepared and ready to start at 21.30 with the intention of tracking in relays throughout the night. Unfortunately the radio collar provided difficulties that eventually proved insurmountable. The project was abandoned at midnight.

Tuesday, May 27th

A fine, windy day with a rough sea by the afternoon. The last opportunity for the canoists. Final observations for the bird watchers before dismantling the hides and a last search of the shore for fossils. Some good bones were collected by Paul W, Denise and Miranda.

Further filming was completed of the great black-backed gull. Oystercatchers were observed mating on the saltings. During the day preliminary work was started for breaking camp the following day.

Wednesday, May 28th

A vast amount of cleaning, packing and dismantling to be completed throughout the day in order to meet the tide and return to Cassey Bridge at 16.00 hours.

I complete my report with the following observations that impress upon me. There is an increase in the oystercatcher population near to our site, two pairs following a period

when we have seen none. There is an increase in species and numbers of small birds in the scrub-encroached meadow. Few ringed plover, although occasionally seen, no longer nest in the shingle of the north shore. At least one pair was always present. Pheasants have been heard in the meadow. Adders tongue fern seems to have particularly increased. The great black-backed gull has become a regular feature. We thought we had seen the end of bison and elephant bone on the north shore but this year found some magnificent specimens of bison bone. Grass snakes not previously seen by students have been recorded in the last two years.

Finally my annual thanks to Pat Ewbank, the Reserve Warden, who continues with his help and support. To Oliver Frazer for his ever present support. To Connie Pelham and Barbara Philo. Barbara joins us from the Mathematics Department. She brings enthusiasm and support and a love of Newtown that is evident in all the work she does.

I previously recorded the loss of mature students who have left for higher education but as ever they have been replaced by equally good students whose enthusiasm, growing expertise and maturity is good to see. I am particularly indebted to Colin Newbold and Matthew Parker who conducted the Open Evening last February (1986) in my absence. They have since presented our work to outside assessors and we are hopeful of obtaining a Schools Curriculum Award in recognition of the work completed by students at Newtown and in the community.

ADDITIONS TO THE FUNGI OF THE ISLE OF WIGHT, 1986

Oliver Frazer

The following is a list of fungi not previously recorded in the Island which were determined by Dr. Derek Reid and Mrs. Audrey Thomas on the occasion of the Society's annual Fungus Foray on the 18th/19th October 1986:
From America Wood (AW) and Apse Castle Wood (ACW) near Shanklin.
Ascomycetes
Claussenomyces prasinulus (ACW)
Pezizellaster transiens (ACW)
Agaricales
Russula ionachlora (AW)
Aphyllophorales
Ceriporiopsis gilvescens (AW)
Cristinia helvetica (AW)
Hymenochaete corrugata (AW)
Mycoacia stenodon (ACW)
Phlebia hydnoides (AW)
Tomentella echinospora (AW)
Trechispora farinosa (ACW)
Gasteromycetes
Calvatia utriformis (ACW)
In addition the following Agaricales were recorded from the places named:
From Bembridge,
Hygrophorus subradiatus
From Medina Valley Field Centre, Dodnor, Newport,
Agaricus augustus
From Mottistone Mill, Brighstone,
Coprinus domesticus
Ozonium aureum (sterile form of above)
In addition to the above, the following was also recorded in 1986:
From Kingston Copse (Grid ref. SZ 47/81),
Nitschkia confertula (Schw.) Nannf., an uncommon ascomycete found on hazel by Colin Pope on 15th December, 1986, and determined by Dr. B. M. Spooner.

AN HISTORIC FLORA OF TWO ISLAND COMMONS

C. Chatters

Until the emergence of the scientific study of habitat, biological recording has invariably been associated with the identification and location of species. Where comprehensive records are available for individual locations, it is possible to generate an impression of former habitats. The majority of readily available historical information is botanical and may be found in county floras.

In the past it has not been considered the purpose of a flora to describe the extent and variation of vegetation within a county. A flora identifies species, their abundance and distribution. Fortunately floras frequently refer to notable localities of the most interesting species. By gleaning a flora from records relating to specific sites one may begin to create an historical flora for those sites. This historical flora in turn may be interpreted using current knowledge of habitat preference and management tolerances of those species. By such a process one may accumulate sufficient information to produce a description of an historic habitat.

In his *Flora of Hampshire* (Townsend 1904) Townsend published a large number of records relating to Common lands at St. Helens and Colwell, Isle of Wight. Since publication of the *Flora* in 1904 both Commons have been modified by urban expansion and changes of management practices. The habitats, and consequently the floras, of both Commons are now very different from those implied by Townsend. It is necessary to exercise caution as to what the habitat was at any specific date. Townsend recorded a number of species which by the time of publication were probably already extinct. Similarly it is possible errors in recording or ambiguity in location may confuse matters. For example the re-assessment of A.G. Mores herbarium of 1864 by R.W. David revealed the presence of the rare dotted sedge *Carex punctata* at Colwell. More had erroneously labelled this specimen distant sedge *Carex distans* (Shepard 1984). Another case in point is the recording of western gorse *Ulex gallii* by Townsend. All material is now considered to be dwarf gorse *Ulex minor*. At St. Helens the majority of botanical records published by Townsend and others relate to the Duver (Shepard 1971). In collating records for St. Helens it was necessary to select those with precise locations such as The Green or The Common.

The location and boundaries of the Commons at St. Helens and Colwell may be accurately identified through the Parish Tithe Commutation Surveys of the 1840s and the Ordnance surveys of the 1860s (figs. 1 and 2). The species lists are drawn from Townsend (Tables 1 and 2); the botanical Latin has been updated to correspond with Dandy.

Table 1. Species list for St. Helens Green.

Apium nodiflorum	fools watercress
Carex echinata	star sedge
Carex ovalis	oval sedge
Carex pulicaris	flea sedge

Chamaemelum nobile	chamomile
Chenopodium urbicum	upright goosefoot
Drosera rotundifolia	round leaved sundew
Eleocharis multicaulis	many stalked spike-rush
Eleocharis quinqueflora	few flowered spike-rush
Epilobium palustris	marsh willow herb
Hydrocotyle vulgaris	marsh pennywort
Juncus bulbosus	bulbous rush
Mentha pulegium	pennyroyal
Moenchia erecta	upright chickweed
Myosotis secunda	creeping forget-me-not
Potamogeton polygonifolius	bog pondweed
Pulicaria vulgaris	small fleabane
Ranunculus parviflorus	small flowered buttercup
Scirpus cernuus	slender club rush
Scirpus setaceus	bristle club rush
Scutellaria minor	lesser skullcap
Trifolium glomeratum	clustered clover
Trifolium micranthum	slender trefoil
Trifolium ornithopodiodes	fenugreek
Ulex gallii	western gorse
Viola canina	heath dog violet

Table 2. Species list for Colwell Common.

Agrostis curtisii	bristle bent
Anagallis minima	chaff weed
Anagallis tenella	bog pimpernel
Apium nodiflorum	fools watercress
Aquilegia vulgaris	columbine
Blackstonia perfoliata	yellow-wort
Carex flava	large yellow sedge
Carex hostiana	tawny sedge
Carex panicea	carnation sedge
Carex paniculata	greater tussock sedge
Carex pulicaris	flea sedge
Chrysanthemum segetum	corn marigold
Eleocharis quinqueflora	few flower spike-rush
Epipactus palustris	marsh helleborine
Erica tetralix	cross leaved heath
Erigon acer	blue fleabane
Eriophorum angustifolium	common cotton grass
Eriophorum latifolium	broad leaved cotton grass
Filago germanica	common cudweed
Genista anglica	petty whin
Gentianella campestis	field gentian
Gymnadenia conopsea	fragrant orchid
Hydrocotyle vulgaris	marsh pennywort
Mentha aquatica × *arvensis*	hybrid mint

Mentha aquatica × *arvensis* × *spicata*	hybrid mint
Mentha rotundifolia	round leaved mint
Menyanthes trifoliata	bogbean
Pedicularis sylvatica	louse wort
Pinguicula lusitanica	pale butterwort
Platanthera bifolia	lesser butterfly orchid
Radiola linoides	allseed
**Rubus pulcherrimus*	bramble
**Rubus selmerii*	bramble
**Rubus thyresoidus*	bramble
Samolus valerandi	brookweed
Scirpus cernuus	slender club rush
Senecio sylvaticus	heath groundsel
Silene gallica	small flowered catchfly
Thesium humifusum	bastard toadflax
Trifolium micranthum	slender trefoil
Ulex minor	dwarf gorse

* *Rubus* nomenclature follows Townsend

St. Helens

Using the species list drawn from Townsend one may make a number of inferences as to the habitat and management of the Common and Green. All of the plants listed are tolerant of soils that are neutral to acidic. Similarly all of the plants are tolerant of relatively hard grazing. Hard grazing, combined with the poaching of seasonally wet, acid grassland, is a major prerequisite for the persistence of species such as small fleabane and pennyroyal. In addition to the presence of wet grassland, the recording of fenugreek, clustered clover and upright chickweed testify to the presence of short, dry acid grassland. Broken ground species are represented by bulbous rush and small flowered buttercup. Wet peat associates include the sundew and bog pondweed; the wetter areas were probably drained by small runnels in which the club rushes would have grown. Dunging, either directly by Commoners' stock, or through the presence of dung heaps would have supported the upright goosefoot.

The above generates the impression of a tightly grazed green with close similarities to a heathland lawn. This may be combined with the known geology and drainage of St. Helens to produce the following. The highest lands of the Common were dry, being associated with the gravel capping. Upon the upper green lay a large pond. Passing down the slope springs and wells rose from the junction of the gravel cap and the Bembridge Marls. These flushed areas would have been peaty and crossed by a number of rivulets. As the influence of the flushes declined the land probably became increasingly dry.

One may see greens and commons similar to the above on the fringes of The New Forest, Hampshire (Ibsley, Cadham, etc). Whereas small fleabane and pennyroyal are now extinct on the Island, the hard grazed greens of The New Forest still support vigorous populations. The regular recording of small fleabane from St. Helens until 1918 (pers. comm. T. Hare) suggests the green was being grazed until at least this time.

Although nearly all the species listed by Townsend have been lost, St. Helens Green retains an interesting relic flora. The western green and the Common now lie under scrub. The upper Green is mown. Recent botanical surveys of the mown area have revealed the persistence of chamomile as well as the discovery of the glabrous rupturewort *Herniaria glabra*.

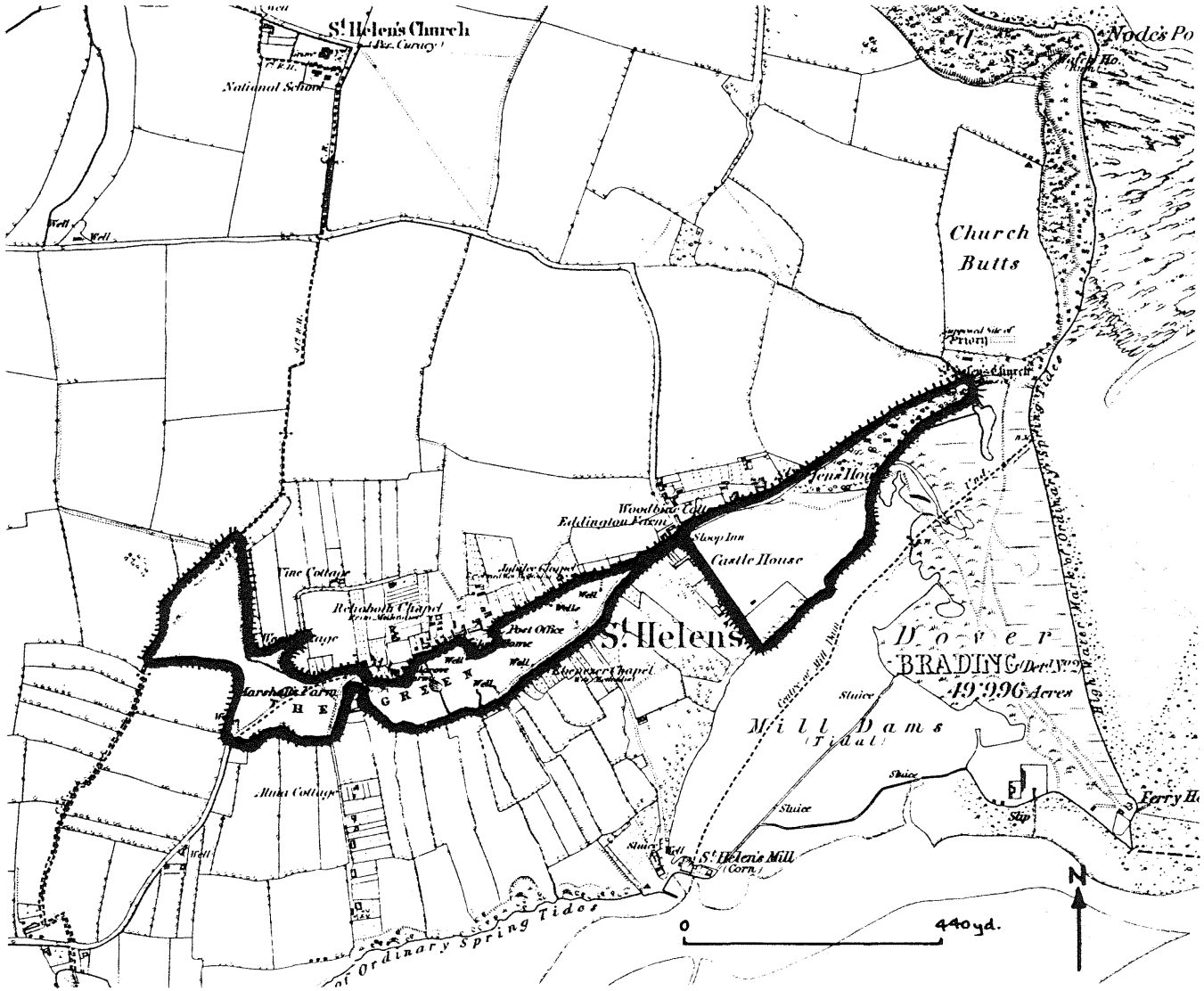


Figure 1. The boundary of St. Helens Common outlined on the Ordnance Survey 1862 6 in. map.

Colwell

The records pertaining to Colwell suggest a far more complex site than St. Helens. Species are present that are associated with habitats ranging through a wide variety of conditions of drainage and soil chemistry. The presence of a number of relatively tall herbaceous species also indicates that the Common was not as uniformly hard grazed as St. Helens Green.

One may allocate the majority of species recorded by Townsend at Colwell as being associated with five broadly defined habitats: namely, dry heathland, moist heath grading into poor fen, dry calcareous grassland and neutral marsh. Associates of these habitat types are as follows:

Dry Heath
Bristle bent
Chaff weed
Heath groundsel
Field gentian
Allseed

Moist Heath
Carnation sedge
Flea sedge
Few flowered spike-rush
Pettywhin
Marsh pennywort
Lousewort
Cross leaved heath
Lesser butterfly orchid

Poor Fen
Bog pimpernel
Large yellow sedge
Tawny sedge
Marsh helleborine
Common cottongrass
Broad leaved cottongrass
Fragrant orchid
Bogbean
Pale butterwort

Dry Calcareous Grassland
Yellow wort
Small flowered catchfly
Bastard toadflax
Columbine

Neutral Marsh
Greater tussock sedge
Fools watercress
Brookweed

It is probable that these habitats were not present in discrete areas but formed a matrix of communities, one grading into the next.

One may tentatively draw together a picture of the cliffs and coastal slopes of Colwell Common rising towards the present day Golden Hill. The Common had dry ridges composed of sands and gravels as well as broken limestones and calcareous clays from the underlying Headon Beds. Within these ridges lay a number of wet hollows which varied in water chemistry depending on the surrounding land and sources of water.

Such a complex of ridges and hollows persists on the northern slopes of the adjacent Headon Hill. Although locally much modified by the lack of grazing, Headon Hill and the former Colwell Common may be considered as comparable. The wetter areas apparently present on Colwell Common are not well developed on Headon Hill. The coastal slope is too severe at this point, and the principal inland wet hollows have been lost to scrub invasion. Nonetheless species such as cross leaved heath, fragrant orchid and marsh helleborine persist on the slopes of Headon Hill.

From following the history of records for species such as the butterwort, broad leaved cottongrass and field gentian, it appears that Colwell Common was destroyed between 1879 and 1929. The site of the Common is now under housing with a small urban park. The coastal slope and cliff remains partially intact and may reward a diligent botanist by sustaining a relic flora.

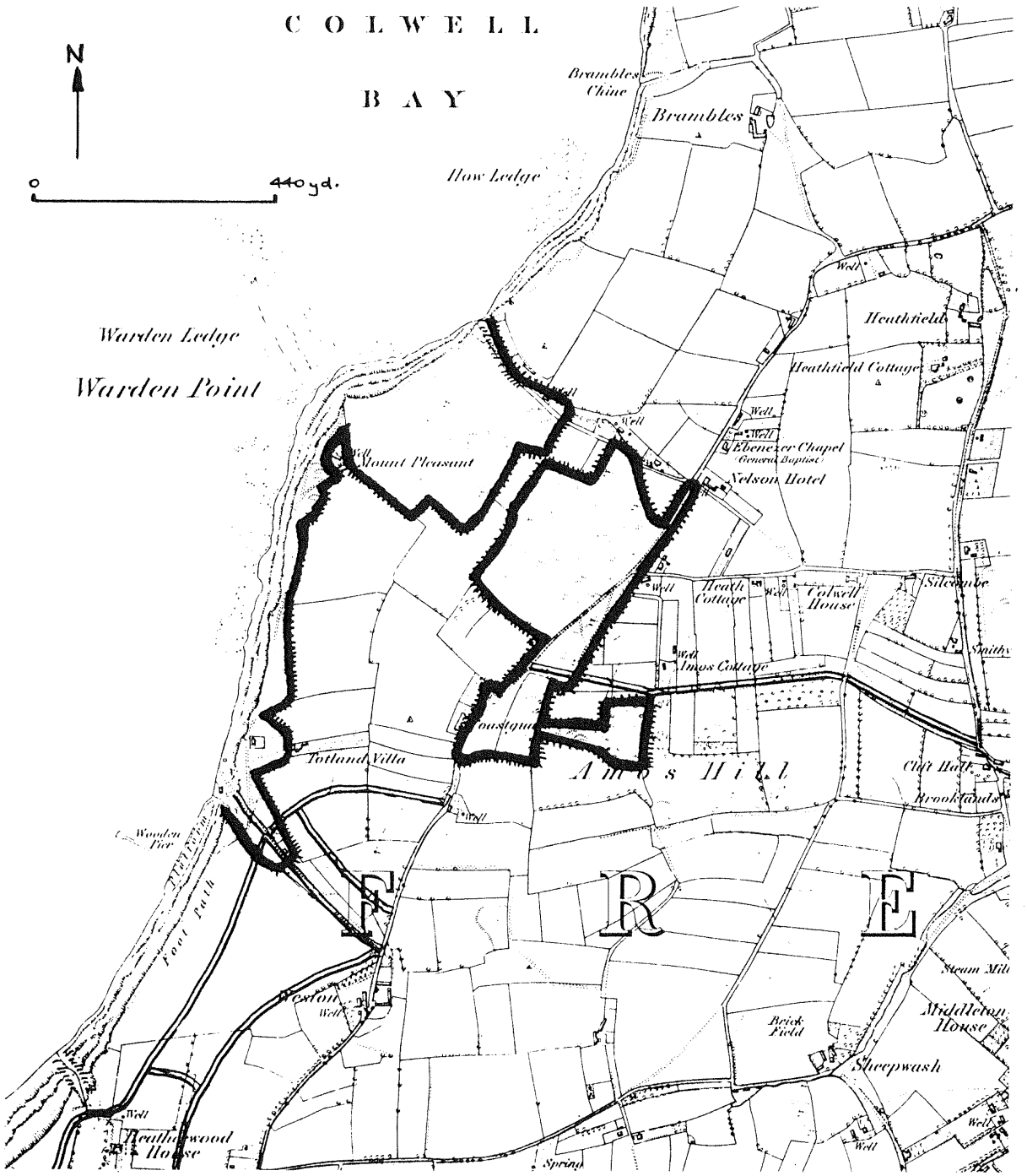


Figure 2. The boundary of Colwell Common outlined on the Ordnance Survey 1862 6 in. map.

A continuing trend

The vegetation of St. Helens and Colwell both exhibited characteristics of heathland. The Island's heaths have been dramatically reduced from a dominant land use in the late Tudor to a scattered remnants persisting today. It is noteworthy that of all the species recorded from St. Helens and Colwell by Townsend, nine are now extinct; of the remainder, ten are very rare, being found only in two or fewer Island localities. Those heaths which survive today are botanically depauperate relics of once more extensive and diverse habitats. Even the surviving heaths are becoming further impoverished by lack of management leading to the consequential dominance of the more robust species and the invasion of scrub. It is likely that future generations will be able to draw on floras such as the *Flora of the Isle of Wight* (Bevis *et al.* 1978) to catalogue the further loss of species, indicative of a continued loss of habitat.

Acknowledgements

The author would like to thank Dr. T. Hare of the Greater London Ecology Unit for information on *Pulicaria vulgaris*; and Mr Bill Shepard for his comments on the draft text.

References

Bevis, J., Kettell, R. & Shepard, B. 1978. *Flora of the Isle of Wight*. Yelf Bros.
Shepard, B. 1971. St. Helens Duver. *Proc. Isle Wight nat. Hist. archaeol. Soc.* **6** (5) (for 1970): 320—28.
Shepard, B. 1984. Supplement to the *Flora of the Isle of Wight. Proc. Isle Wight nat. Hist. archaeol. Soc.* **7** (8) (for 1983): 569—76.
Townsend, F. 1904. *Flora of Hampshire including Isle of Wight*. Reeve.

CECIDOLOGY ON THE ISLE OF WIGHT

D.T. Biggs

Cecidology – the study of plant galls (from *kekis*, the Greek word for oak-apple) – has been neglected as much on the Isle of Wight as elsewhere in England this century. Not since E.W. Swanton (1938) published a list in the *Proceedings* has a systematic Island record been made. Only two accounts of new finds have been published since that time (Biggs 1977; Frazer 1984: 643). Reports of plant galls (*galla* in Latin, the word having the sense of a bile- or venom-induced swelling) as with other less familiar branches of natural history have depended on occasional visits by enthusiasts from other areas, although Frank Morey did contribute to Swanton's list.

One of the problems contributing to this apparent lack of enthusiasm for the study of these interesting phenomena has been the dearth of literature in English on the subject over the past seventy years. The Dutch and Germans seem to have led the field and there has been only one book on the subject in English published since Swanton's own work in 1912 (Darlington 1968). Partly to remedy this situation the British Plant Gall Society was formed in 1985 and has published a key to British plant galls (Stubbs 1986). It is hoped that records can be made in a systematic way based upon the classification of the gall-causer.

I append a short list (Table 1) of galls found recently on the Island and not recorded by Swanton (1938).

References

Biggs, D.T. 1977. *Andricus quercus-calicis* – A new gall on the Island. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **7** (1) (for 1976): 45–46.

Darlington, A. 1968. *The Pocket Encyclopaedia of Plant Galls*, Blandford.

Frazer, D. 1984. New gall record for the I.W. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **7**(8) (for 1983): 643–4.

Stubbs, F.B. (ed). 1986. *Provisional Keys to British Plant Galls*, British Plant Gall Society.

Swanton, E.W. 1912. *British Plant Galls*, Methuen.

Swanton, E.W. 1938. A preliminary annotated list of plant galls found on the Isle of Wight. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **2**(8) (for 1937): 654–669.

TABLE 1. PLANT GALLS RECENTLY FOUND ON THE ISLE OF WIGHT.

Group	Species	Host	Date	Grid Reference	Frequency
Bacteria	*Corynebacterium fascians*	*Forsythia suspensa*	Summer 86	SZ 476955	Main stem of one bush
Fungi	*Gymnosporangium juniperi* (*Aecidium* generation)	*Sorbus aucuparia*	11.8.86	SZ 581789	Single specimen
Fungi	*Taphrina pruni*	*Prunus domestica insitita*	Summer 86	SZ 476955	Single specimen amongst many hundred bullace
Fungi	*Taphrina ulmi*	*Ulmus glabra*	21.10.86	SZ 503910	Frequent
Fungi	*Taphrina carpini*	*Carpinus betulus*	14.7.86*	SZ 402898	One witche's broom on a single tree.
Acari	*Eriophyes megalonyx*	*Acer pseudoplantanus*	2.8.86	SZ 527948	Frequent
Acari	*Eriophyes lionotus*	*Betula pendula*	10.8.86	SZ 431905	Single specimen
Acari	*Eriophyes axillare*	*Alnus glutinosa*	18.9.86	SZ 502905	Occasional
Acari	*Eriophyes fraxinivorus*	*Fraxinus excelsior*	January 83**	SZ 423836	Single specimen
Acari	*Eriophyes tetanothorax*	*Salix caprea*	23.5.87	SZ 526947	Frequent on one tree
Acari	*Eriophyes itenia*	*Salix caprea*	23.5.87	SZ 526947	One leaf of one tree
Acari	*Epitrimerus trilobus*	*Sambucus nigra*	29.5.87	SZ 476955	Several leaves on one tree
Acari	*Aceria pseudoplatanus*	*Acer pseudoplatanus*	26.10.86	SZ 527948	Frequent
Hemiptera	*Eriosoma lanigerum*	*Malus sylvestris*	Summer 86	SZ 476955	Frequent on old trees
Hemiptera	*Erisoma campestricola*	*Ulmus glabra*	2.10.86	SZ 503910	Frequent
Diptera	*Phytomyza ilicis*	*Ilex aquifolium*	2.5.87	SZ 476955	Most leaves on the single tree present.
Diptera	*Lipara lucens*	*Phragmites communis*	2.5.87	SZ 492755	Frequent
Hymenoptera	*Andricus lignicola*	*Quercus robur*	Summer 86	SZ 476955	Frequent on the older of two trees
Hymenoptera	*Andricus quercus-calicis*	*Quercus robur*	Summer 86	SZ 502905	Very common
Hymenoptera	*Neuroterus albipes*	*Quercus robur*	29.7.86	SZ 519958	Frequent

Observers - *B. Shepard
**D. Frazer
Otherwise D. T. Biggs

ALIEN GALLS AND THE MEDIA

D.T. Biggs

Gall-wasps of the Cynipid genus *Andricus* have made a considerable visual impact on the English countryside over the past one hundred and fifty years.

The Marble Gall (fig. 1a) of the oak caused by *Andricus kollari* was introduced into Devon during the early 1830s after several unsuccessful attempts to introduce the Aleppo Gall (caused by *Andricus gallae-tinctoriae* on *Quercus infectoria* from Turkey). The Aleppo Gall had long been a commercial source of tannins used in dyeing, ink-making, the tanning of leather and as a source of astringent drugs. It seemed at the time a step in the right direction for the dyeing and tanning industries but it nearly had disastrous consequences. Such was the success of *A.kollari* in becoming established that many people were apprehensive that the spread of this insect and its gall would lead to substantial damage to oak twigs with a consequent failure of the acorn crop, acorns at this time being an important source of winter feed for pigs. A press campaign was held encouraging agricultural workers to 'rally round the pig' and destroy the alien Marble Gall. In fact the tannin content of Marble Galls is relatively low (Leach 1986) compared with the Aleppo Gall and it is improbable that they were much used for dyeing, making inks or tanning. Subsequently they have become an established feature of our countryside, silhouetted against the winter sun on bare twigs and our oaks have not suffered.

A second new alien gall – the Knopper Gall (from the Dutch word for gristle or cartilage, referring to its consistency) – caused by *Andricus quercus-calicis* was discovered in England in Devon in 1962 and first recorded from the Island in 1976 (Biggs 1976). Subsequently this caused a great deal of attention from the media as it is a more obvious and a rather more bizarrely-shaped object than most plant galls (fig. 1b). '*Tiny wasp threat to the mighty oak*' was a typical newspaper heading to columns which threatened that '*Britain's entire acorn crop has nearly been destroyed . . .*' (Brown 1983). In fact it is true that, of all our oak galls (and there are at least thirty-five species of oak-gall producing insects some of which produce two totally different galls), it is the only one which develops from and subsequently destroys the acorn. It will be many years, however, before we are in a position to say whether the invasion of the gall-wasp has in fact affected our future population of oaks. Not all acorns are affected and of course only a very small percentage of acorns go on to develop into the 'mighty oaks' of the future. All successful parasites have evolved *pari passu* with their hosts and no doubt a balance will be achieved.

The Knopper Gall by 1984 had been recorded from each English county, except Durham and Northumberland which means that in just over twenty years this new-comer has spread from the South Coast to the Scottish border – an average of seventeen miles per year. Taking its somewhat peculiar life-cycle into account this seems a remarkable achievement and at the very least is surely a classic example of the exploitation of an empty ecological niche.

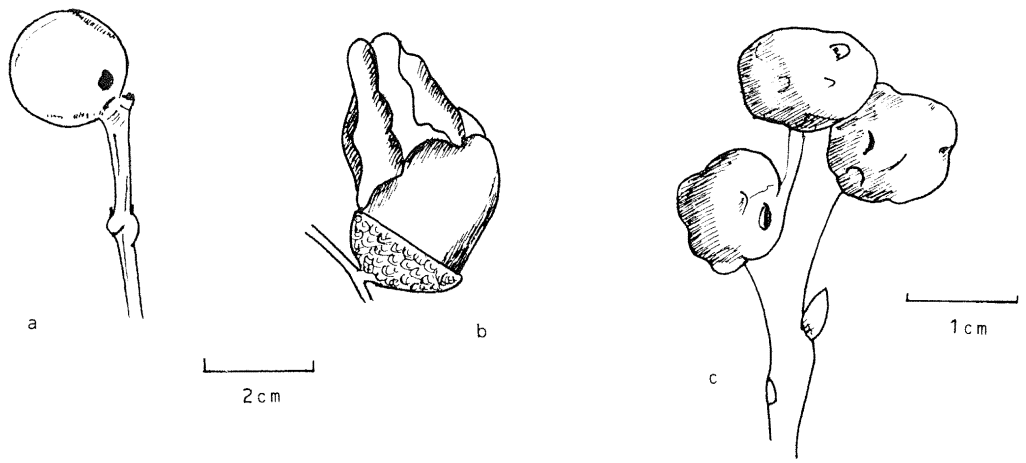


Figure 1. Andricus spp. induced oak-galls.
a. *Andricus kollari*
b. *Andricus quercus-calicis*
c. *Andricus lignicola* (after Darlington 1968)

The third recent arrival is the gall known as the Cola-nut Gall from its resemblance to the stimulant-containing nut of the West African tree *Cola acuminata*. It too is caused by a gall-wasp of the same genus, *Andricus lignicola*. This is a far less noticeable object than either *kollari* or *quercus-calicis*. It affects the bud as does *kollari*. At first it could be mistaken as an aborted Marble Gall but closer examination will reveal differences. It is smaller (7mm diameter, compared to 15mm.) and not smoothly spherical (fig. 1c). In fact it is oddly flattened – an oblate spheroid rather than a sphere; it starts green and rapidly turns grey and scaly and by autumn there are red flecks on the surface where the scales have come away.

It was described from Jersey in 1902 but did not reach the mainland until 1972 when it was found in the New Forest. I noticed it first on the Island in 1985 in Gurnard and at Osborne. It seems to have spread across England since 1972 even more rapidly than *quercus-calicis*. It has yet to interest the media.

Each of these three galls is produced by a gall-wasp of the family Cynipidae of the order Hymenoptera. Each is a member of the genus *Andricus*. Altogether twenty-three species of *Andricus* gall-wasps parasitise oak in England (*Quercus robur, petraea* and hybrids). One of the characteristics of Cynipid wasps is that they demonstrate an alternation of generations. One generation consists only of females which lay unfertilised eggs and promote the growth of one type of gall. From that gall emerge both male and female insects which mate, the female then laying fertilised eggs which result in the growth of a second sort of gall, morphologically quite distinct, always on a different part of the host, often on a different species. From this second gall hatch the females which lay the parthenogenetic eggs. However, in England so far males of *A. kollari*, *quercus-calicis* and *lignicola* have not been found in the wild, although on the continent of Europe they exist and indeed they have been identified emerging from artificially cultured galls of *A. lignicola*. The bisexual generation seems not to function in England, and each species apparently subsists here without male intervention. Is this perhaps a factor somehow involved in their recent rapid and successful spread in this country?

Table 1. Characteristics of *Andricus* spp. induced oak-galls

Causer	*Andricus kollari*	*Andricus quercus-calicis*	*Andricus lignicola*
Name	Marble Gall	Knopper Gall	Cola-nut Gall
Host for agamic generation	*Quercus robur* *Quercus petraea*	*Quercus robur* *Quercus petraea*	*Quercus robur* *Quercus petraea*
Host for bisexual (Europe) Generation	Axillary buds of *Quercus cerris*	Male catkins of *Quercus cerris*	Buds of *Quercus cerris*
Size	15–25mm	20mm	up to 10 × 8mm
Shape	Sphere	Pyramid	Oblate spheroid
Colour	Green becoming brown	Green becoming dark brown	Green rapidly becoming grey with reddish patches later
Texture	Smooth	Knobbly and very sticky	Scaly
Number of cells	Unilocular	Unilocular	Unilocular
Number of larvae	Unilarval	Unilarval	Unilarval
Persistence	Persistent	Falls with the acorn	Persistent
Secondary parasitism	Frequently parasitised	?	?

References

Biggs, D.T. 1977. *Andricus quercus-calicis* – A new gall on the Island. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **7**(1) (for 1976): 45–6.

Brown, G. 1983. *Daily Telegraph*, Thurs. Oct. 13th. 1983.

Leach, C.K. 1986. The phenolic content of some British cynipid galls. *J. Brit. Plant Gall Soc.* **1**(1): 10.

ODONATA OF THE ISLE OF WIGHT

J.M. Cheverton

Two lists have been published detailing sightings of dragonflies and damselflies in the Isle of Wight, one compiled by W.J. Lucas (Morey 1909) and the other by Dr. K.G. Blair in 1951 (Table 1). After ten years of intensive investigation into the distribution of these insects in the Island, this paper has been written to summarise their present status. Some smaller ponds have still to be visited but most areas thought to be suitable for dragonflies or damselflies have been searched thoroughly. An exception is the area below the cliffs between Blackgang and Ladder Chine where a colony of *Orthetrum coerulescens* (Keeled Skimmer) may still be extant (Blair 1951). The comparative lack of running streams and large sheets of water (Blair 1951) means that Odonata are poorly represented in the Island, but the situation has been further aggravated by the extensive dredging of rivers and rills and the in-filling of ponds in farmland that has taken place since the end of World War Two. Another cause for concern is the decline in the ability of remaining sites to support these insects because of pollution or eutrophication. Records and sightings of dragonflies or damselflies are always welcome, as are dead specimens forwarded for identification.

Discussion

Calopteryx virgo (=*Agrion virgo*), Beautiful Demoiselle. As this damselfly prefers a clean fast-flowing river it is not surprising that Island records are sparse. Seen only once, in a rill at Blackpan in 1979.
Calopteryx splendens (=*Agrion splendens*), Banded Demoiselle. This species requires a slow-running river with a muddy bottom such as the Eastern Yar. Common on this river between Sandown Water Works and Newchurch and in the smaller tributaries at Budbridge and Munsley.
Lestes sponsa, Emerald Damselfly. A species that prefers the wet surroundings of ponds and small streams. Seen only near ponds at Brickfields, the pond at Porchfield rifle range and by the Medina at Werrar.
Platycnemis pennipes, White-legged Damselfly. Another damselfly that prefers the vegetation adjacent to muddy rivers and ponds. Found at Leechmore Pond; Stag Lane Reservoir; the pond in the Parkhurst Forest small-holding; ponds at Brickfields; the pond on Idlecombe Down and by the author's garden pond at Shanklin. Also near the Yar at Bembridge, Brading, Alverstone and Merstone.
Pyrrhosoma nymphula, Large Red Damselfly. Common and widespread. Found by a pond at Redcliff; along the Yar from Brading to Newchurch; in rills at Blackpan; in the Wilderness by the Medina; in garden ponds at Shanklin; in marshes near Centurion's Copse; in Parkhurst Forest and near the pond at Barton Manor.
Ischnura elegans, Blue-tailed Damselfly. Common and widespread. Found near the ponds at Harbour Farm, Bembridge; in rills on Brading Marshes; along the Yar from Sandown Water Works to Newchurch; in rills at Blackpan; in Parkhurst Forest; by the

pond at Redcliff; at Elmsworth Farm pond; from the Causeway at Freshwater through the Afton Reserve to Freshwater Bay; at Yafford; near Werrar; at Brighstone; by garden ponds at Shanklin; by the pond in Ventnor Botanic Garden; by the pond at Woolverton; near Burnt Wood and at the reservoir at Stag Lane. Form *infuscans-obsoleta* has been seen at Gurnard (Dr. D.T. Biggs) and form *rufescens* at Woolverton (personal observation).

Ischnura pumilio, Scarce Blue-tailed Damselfly. Seen once only, in 1981, near the dismantled rail track at Bembridge.

Enallagma cyathigerum, Common Blue Damselfly. Common and widespread. Found at Brickfields; Hamstead Duver; Parkhurst Forest; by a pond at Redcliff; near Sandown Waterworks; in Burnt Wood; by a pond at Wydcombe; in the Wilderness; Afton Marsh Reserve; by ponds on Bleakdown; by a pond in Godshill Park; at Harbour Farm, Bembridge; by garden ponds at Shanklin; by a pond at Porchfield Rifle Range; near a pond on Idlecombe Down; at Barton Manor; by a pond in Dickson's Copse and a reservoir in Stag Lane.

Coenagrion mercuriale, Southern Blue Damselfly. This very rare damselfly has been seen once, in 1983 at Harbour Farm, Bembridge.

Coenagrion puella, Azure Damselfly. Common and widespread. Found at Brickfields; Harbour Farm, Bembridge; from Brading Marsh along the Yar and its side streams through Blackpan and Alverstone to Newchurch; ponds at Osborne; pond at Redcliff; garden ponds at Shanklin; in Atkie's Copse; pond on Porchfield Rifle Range; Ventnor Botanic Gardens; in Parkhurst Forest; pond at Leechmore; pond at Woolverton and pond on Idlecombe Down.

Aeshna juncea, Common Hawker. Scarce. One or two most years since 1979. Seen in Parkhurst Forest; at Bembridge; Alverstone; Walter's Copse; in the Botanic Gardens at Ventnor; along the dismantled rail track near Haven Street, and at Shanklin, where one was watched emerging from the author's garden pond.

Aeshna grandis, Brown Hawker. Seen only twice: over Main Bench in 1977 and at Bembridge in 1982.

Aeshna cyanea, Southern Hawker. Probably our commonest dragonfly. Seen at Alum Bay; Parkhurst Forest; Clamerkin; Osborne; Afton Marsh; Yarmouth; the Landslip; Bembridge; Ryde; Shanklin; Bathingbourne; Lower Hamstead; Hamstead; Brook; St Lawrence; Pigeon Coo Farm; Newtown; Barton Manor; Alverstone; Lowtherville; Luccombe Farm; Werrar; Dodnor; Blackpan; Tennyson Down; Bleak Down; St Georges Down; Yaverland.

Aeshna mixta, Migrant Hawker. This migrant from Southern Europe was seen on three occasions: on Brook Down in August 1979; near the dismantled rail track at Bembridge, where a pair were seen mating in October 1985, the female subsequently laying eggs; and at Dickson's Copse and Dodnor Creek in August 1986.

Anax imperator, Emperor Dragonfly. Widespread and common. Seen at Shanklin; Brighstone; Bembridge; Elmsworth Farm; Brook; Atherfield; Porchfield Rifle Range; Chale Green; Barton Manor; Leechmore Pond; Dickson's Copse; reservoir in Stag Lane; Dodnor Creek.

Cordulegaster boltonii, Golden-ringed Dragonfly. Scarce. Only nine seen in 10 years; at Hamstead; Shanklin; St Catherine's Point; Brighstone; Shide Pit; Windmill Copse; and Parkhurst Forest.

Libellula depressa, Broad-bodied Chaser. Common and widespread. Seen at Upper Hyde; Bembridge; Newchurch; Alverstone; Newtown; Elmsworth Farm; Brading; Botanic Gardens Ventnor; Shanklin; Morton Marsh; Blackpan; Parkhurst Forest; Osborne; Atkies Copse; Burnt Wood; Newchurch; Yarmouth; Chessel Down; Knighton; Newport; Munsley; pond on Idlecombe Down; Rowridge; Barton Manor; Norris Castle; Havenstreet; Dodnor.

Libellula fulva, Scarce Chaser. Rare. Seen three times: female at Harbour Farm, Bembridge; pond west of Botanic Gardens, Ventnor; Shanklin.

Libellula quadrimaculata, Four-spotted Chaser. Surprisingly scarce. One reported over the pond at Mottistone Mill in 1955 (Frazer 1956); one at Corfeheath in 1976; one at Blackpan in 1976; 14 on pond at 'Butterfly World' in 1984 (Butterfly Keeper pers. comm.).
Orthetrum coerulescens, Keeled Skimmer. Rare. A female was photographed near Whale Chine by Mr. B. Angell in June 1983. The site was not far from that of the colony located between Blackgang and Ladder Chine (Blair 1951).
Orthetrum cancellatum, Black-tailed Skimmer. Seen near St Lawrence; in Firestone Copse; at Harbour Farm, Bembridge; and Barton Manor.
Sympetrum striolatum, Common Darter. Common and widely distributed. Seen in Whitefield Wood; at Alum Bay; Parkhurst Forest; Bembridge; Afton Marsh; Clamerkin; Knighton; near Centurion's Copse; Hamstead Duver; Osborne; Brook; Burnt Wood; Atkies Copse; cliffs near Bembridge School; Walpen Chine; Firestone Copse; Alverstone; Shanklin; Werrar; Dodnor; from Sandown Waterworks to Newchurch along Yar; dismantled rail track at Havenstreet; pond in Dicksons Copse; reservoir in Stag Lane; Bleak Down; near Shide; Blackwater; St Georges Down; Bembridge Marsh.
Sympetrum sanguineum, Ruddy Darter. Scarce. Seen at Harbour Farm, Bembridge; Parkhurst Forest; at author's garden pond in Shanklin.
Sympetrum flaveolum, Yellow-winged Darter. A migrant from the Continent. None since the one reported on a pond at Mottistone Mill in 1955 (Frazer 1956).

Listed previously and not found

Coenagrion pulchellum, Variable Blue Damselfly. Isle of Wight (Longfield 1949: 215)
Brachytron pratense, Hairy Dragonfly. Freshwater Marsh (Blair 1951)
Sympetrum danae (=*S.scoticum*), Black Darter. I have one probable sighting of a female at Bembridge in September 1979. A confirmed sighting is required before this species can be added to the current list.

Table 1
Current status of Odonata on the Isle of Wight compared with earlier records

Species	Lucas	Blair	Current
Caleopteryx virgo		X	X
Caleopteryx splendens	X	X	X
Lestes sponsa		X	X
Platcynemis pennipes	X	X	X
Pyrrhosoma nymphula	X	X	X
Ischnura elegans	X	X	X
Ischnura pumilio			X
Enallagma cyathigerum	X	X	X
Coenagrion mercuriale			X
Coenagrion pulchellum		X	
Coenagrion puella	X	X	X
Brachytron pratense		X	
Aeshna juncea			X
Aeshna grandis			X

Species	Lucas	Blair	Current
Aeshna cyanea	X	X	X
Aeshna mixta	X	X	X
Anax imperator	X	X	X
Cordulegaster boltonii	X	X	X
Libellula depressa	X	X	X
Libellula quadrimaculata		X	X
Orthetrum coerulescens	X	X	X
Orthetrum cancellatum	X	X	X
Sympetrum striolatum	X	X	X
Sympetrum flaveolum	X	X	X
Sympetrum sanguineum	X	X	X
Sympetrum danae	X	X	
TOTAL	16	22	23

References

Blair, K.G. 1951. Neuroptera of the Isle of Wight. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **4**(5) (for 1950): 157–162.

Frazer, O.H. 1956. Dragonflies at Brighstone. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **4**(10) (for 1955): 400.

Longfield, C.E. 1949. *The Dragonflies of the British Isles*. Warne (2nd edn.).

Morey, F. (ed.) 1909. *A Guide to the Natural History of the Isle of Wight*. Newport.

THE STATUS OF THE GLANVILLE FRITILLARY ON THE ISLE OF WIGHT

C.R. Pope

Abstract: Members of the Isle of Wight Natural History and Archaeological Society surveyed the main Island breeding sites of the Glanville Fritillary between 1983 and 1987. The results of these surveys are presented together with additional information on the present and past distribution of the insect. This information is discussed with reference to the main factors affecting the distribution and frequency of the Glanville Fritillary on the Isle of Wight.

Introduction

The Glanville Fritillary, *Melitaea cinxia* L., is a butterfly of Central and Southern Europe which is on the edge of its range in this country, where it is confined to the Isle of Wight. It is one of Britain's rarer butterflies and is listed as a national rarity in the *IUCN Invertebrate Red Data Book*. Many reports this century have expressed concern at its declining numbers. This concern has been based upon subjective observations and there has been no quantitative data available to fully assess its status. In 1979, the Institute of Terrestrial Ecology carried out an intensive survey of the Glanville Fritillary on the Island (Simcox & Thomas 1980). They used the novel approach of estimating the size of the populations from the larval numbers; this proved possible because the larvae live gregariously in conspicuous webs. The results were encouraging and the survey was repeated in 1980.

Our Society has always shown an interest in the Glanville Fritillary and it was adopted on the logo in 1969, the year of the Society's Fiftieth Jubilee. We were anxious to learn of the survey and, in April 1982, Dr Jeremy Thomas addressed members of the Society and others at a two-day symposium on the insect, held at Noah's Ark, Newtown. From discussions at this meeting, it became apparent that our Society could help by monitoring the butterfly on a year by year basis and a group of volunteers were set up to this effect. The survey has now been in operation for five years and this paper is a summary of our findings to date.

History and status of the butterfly

The Glanville Fritillary is named after Eleanor Glanville, a remarkable lady who startled society in the late seventeenth century by collecting butterflies and moths, even paying her servants to collect insects for her. Shortly after 1700, she sent her collections, taken in various parts of the west of England, to London in order to be named. They included several new to Britain at the time, including the Glanville Fritillary. On her death in 1709, her will was contested by some of her relatives on the grounds of insanity, for it was held that only those who were deprived of their senses would go in pursuit of butterflies. In fact, these allegations were not upheld (Bristowe 1966).

Butterfly collecting became more popular during the eighteenth century but some of

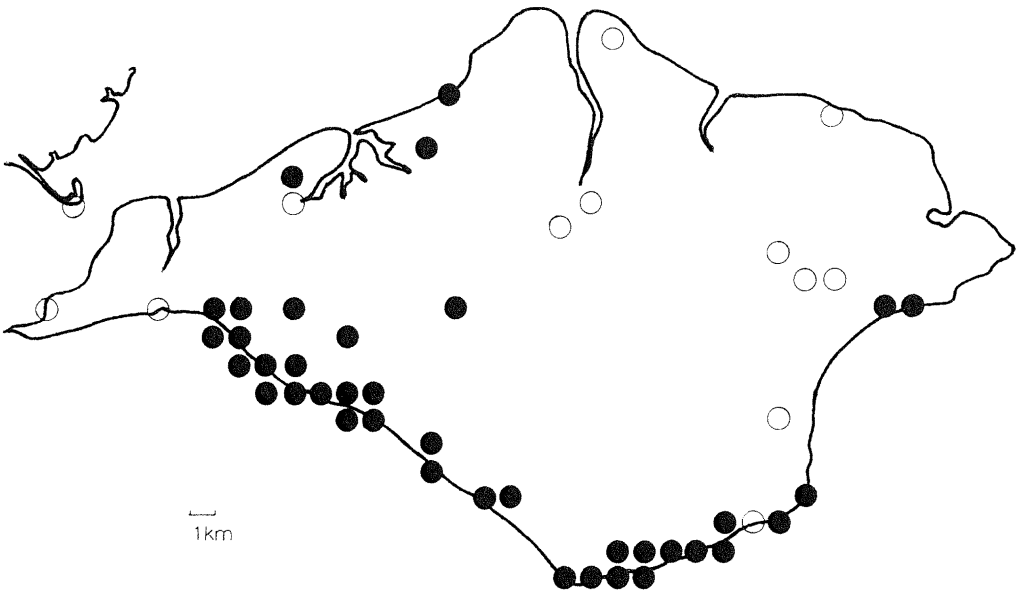


Figure 1. Recorded distribution of the Glanville Fritillary this century. Plotted by 1km squares of the National Grid. Open circles – pre 1982; Closed circles – post 1982.

the early collectors confused the present species with the Heath Fritillary, so that not all the records of this period are reliable. However, it was clear that at this time and in the nineteenth century, the butterfly was not confined to the Isle of Wight. Between 1858 and 1863, the Glanville Fritillary was locally common on the Kentish coast between Folkestone and Sandgate (South 1906). It was first recorded in the Isle of Wight by Edward Newman in 1824 from Sandown, where he described it as '*most abundant*'. Stephens, writing in *Illustrations of British Entomology* (1827) says '*recently the places where it has been chiefly observed have been near Ryde and the Sandrock Hotel, in the latter place in plenty.*' In the present century, British colonies have been virtually confined to the Isle of Wight and the Channel Islands, apart from occasional, short-lived introductions to the mainland. In the Channel Islands the butterfly remains frequent around the coasts of the larger islands. On the Isle of Wight, colonies of the butterfly have been largely confined to the south coast, which remains its stronghold, but it has also been reported elsewhere (fig. 1). It has been recognised for many years that numbers of the butterfly fluctuate considerably from year to year. It was considered to be at a low ebb in the early 1900s but increased considerably up to the 1920s (Goater 1974), a period of fine summers. After the Second World War it was abundant, even breeding alongside The Cascade in Ventnor (O.H. Frazer pers. comm.).

The butterfly is fairly mobile; indeed it is recorded in some years from Hurst Castle Spit on the Hampshire mainland (M. Burnhill pers. comm.), presumably as wind-blown individuals. In favourable years, the species is able to expand its range considerably and colonies have been reported from the central Chalk ridge and the northern half of the Island. These colonies tend to be short-lived and Fearnehough (1972) considers that many of them were introductions made by the release of surplus insects bred by entomologists. Thomas (pers. comm.) also has evidence of vast numbers being released both on the Island and the mainland.

Early records give Sandown and the Undercliff as strongholds but these areas were more frequented by entomologists. It may well be that the southwest coast has always

been the stronghold of the species but that it was overloaded. Old records are rarely comprehensive but those which we have, together with comments like '*widespread on the chalk and north*' and '*on the railway banks near Shanklin and between Brading and Ryde*' (Frohawk 1913), suggest that it was at one time widespread in suitable sites throughout the Island. What constitutes a suitable site is unclear. J. Thomas comments, '*My incomplete understanding of a "suitable site" is one with an extremely warm microclimate, almost by definition a sheltered southerly facing slope, where the sward is also sparse and fairly but not very short (say 10cm tall), allowing tens of thousands of ribwort plantains to grow as fresh young leaves, although not necessarily on young plants (many of the regrowths from old stumps that are nibbled down each year are just as palatable as now plants).*' Today the populations are almost exclusively coastal, but a few inland colonies were reported during the study period on open, south-facing Chalk slopes such as quarries, and such sites must have satisfied many populations in the past. Along the coast, the Undercliff stretch has suffered the most change and consequently the greatest reduction in population. Much of the coastline here has become overgrown with scrub during this century, severely limiting suitable breeding sites for the insect. Populations survive in more suitable spots on the sheltered face of the Upper Greensand cliff behind.

Today populations on the Island are reduced and much fragmented. At present it seems unlikely that the butterfly will ever be able to regain its former high status. Fig. 1 gives a false impression of abundance as it is a cumulative record of reports received between 1983 and 1987. Not all of these are breeding sites and in no one year would all these extant sites be occupied. Simcox and Thomas (1980) have demonstrated by marking that there is some movement of butterflies from one colony to another but some sites, particularly at the east end of the range, are sufficiently isolated to be vulnerable to local extinction with little chance of replenishment naturally.

Life cycle

The Glanville Fritillary is single-brooded in this country, although it has two broods in Southern Europe. The adults fly in late May and June. In good years, butterflies can be found in mid-May or occasionally earlier; exceptionally, they can be found much later than June. One was seen at Gore Cliff on 21st July 1985 (pers. obs.) and Lobb (1954) reports seeing several on the wing in a chalkpit at Upper Ventnor during the first week of August. These later butterflies may be the result of a partial second brood in good years. Interestingly, in the Channel Islands, the butterfly emerges almost a month later than ours (J. Peet pers. comm.).

The female lays batches of usually 100 to 200 eggs on the undersides of leaves of ribwort plantain (*Plantago lanceolata*). This is a common and widespread plant but Sincox and Thomas (1980) have found that only small, young plants in sheltered, sunny sites are selected. Hatching occurs in July and the young larvae live gregariously, spinning a conspicuous silk nest over their foodplant. In the autumn, a dense hibernation nest is made and the larvae retreat into this amongst the vegetation and are very difficult to find. They re-emerge in the spring and again spin conspicuous webs and feed communally. The mild, sunny climate along the south coast of the Island enables the larvae to emerge early in the year and they have been seen sunning themselves on their webs in sheltered spots when snow is lying on nearby exposed ridges.

During the spring the larvae feed and grow rapidly and it is at this time that they are most easily found. Many insect books repeat the myth that the larvae feed on sea plantain (*P. maritima*). This is not so. The plant is absent at most of the sites where the butterfly occurs and extremely scarce at the others. A problem faced by the developing larvae is that they frequently eat all the available foodplant to which they have ready access. Under these conditions they will sometimes feed on buckshorn plantain (*P.*

coronopus). During the study period, this was reported from Sandown and Chilton Chine. Buckshorn plantain is clearly not a favoured species. Larvae will occasionally nibble the leaves of other plants if no plantain is available. They have been seen to take the leaves of daisy (*Bellis perennis*) (pers. obs.) and Stokoe (1944) mentions hawkweeds (*Hieracium* spp.) and speedwells (*Veronica* spp.) as foodplants. It is most unlikely that they can survive for long on these alternative foods.

The rate of development of the larvae in spring appears to be related to the available warmth. Microtopography is important and sheltered, sunny sides of hummocks and ridges are favoured. Grove-Smith (pers. obs.) reports that on 19 April 1986, larvae were considerably larger and better developed in the sunny, west-facing Shepherd's Chine than in the colder, shady Cowleaze Chine. 1986 was a particularly cold, late spring and larvae at all sites emerged later than usual.

As the larvae near maximum size they disperse from the webs in search of food and pupation sites. It is at this time that they tend to be noticed by the public. Very locally, the hairy black, red-faced caterpillars swarm over the vegetation and footpaths. They pupate during late April and early May amongst dense vegetation and are very difficult to locate. Emergence depends upon conditions and those larvae which have developed rapidly will appear first. It is possible to find both larvae and adults at the same time. Herbert (pers. obs.) found a full-grown larva at the top of Gore Cliff in mid-May (1985) when butterflies were flying at sea level.

Method of survey

Commencing in the spring of 1983, estimates of larval numbers have been carried out at all the main breeding sites by members of the Society. The method used and the selection of areas covered is based on the work by Thomas and Simcox in 1979 and 1980. Counts are made by traversing the ground, zig-zag fashion, for a fixed period of time which is constant for each observer and for the site. All the webs seen are counted. In addition, an estimate is made of the number of larvae per web for a small sample of the webs. Each observer works an area at his or her own speed. Some may be more astute at spotting webs than others; very rough or recently slipped land may not always be covered thoroughly. It would be unrealistic to pretend that the counts reported reflect the total number of webs present at a site. This does not matter because it is the comparative figures from year to year rather than the actual numbers which are important. Provided the same observer surveys the same site in the same manner each year then he or she should be able to pick up trends from one year to the next. Comparisons between sites can be made although a certain degree of caution is necessary in interpreting these figures.

Eleven areas covering most of the insect's coastal breeding range were selected. These were based on the survey areas used by Simcox and Thomas (1980). Eleven observers or pairs of observers covered the ground (Table 1). Inevitably, with a survey of this nature using volunteers, some people were unable to continue for various reasons or missed a year and replacements had to be found. Where this has occurred, comparisons from one year to the next cannot always be made. Nevertheless, the observers are to be congratulated on the results which have been obtained.

Results

Our results illustrate the relative size and importance of the different colonies, in line with the findings of Thomas and Simcox (1982). Fig. 2 shows the number of webs counted at each survey site during one spring and illustrates the great importance of sites






Plate 1. Life cycle of the Glanville Fritillary.

a. Eggs on underside of ribwort plantain leaf.
b. Larvae in silken nest in April.
c. Fully grown larvae.
d. Chrysalis.
e, f. Adult butterfly.

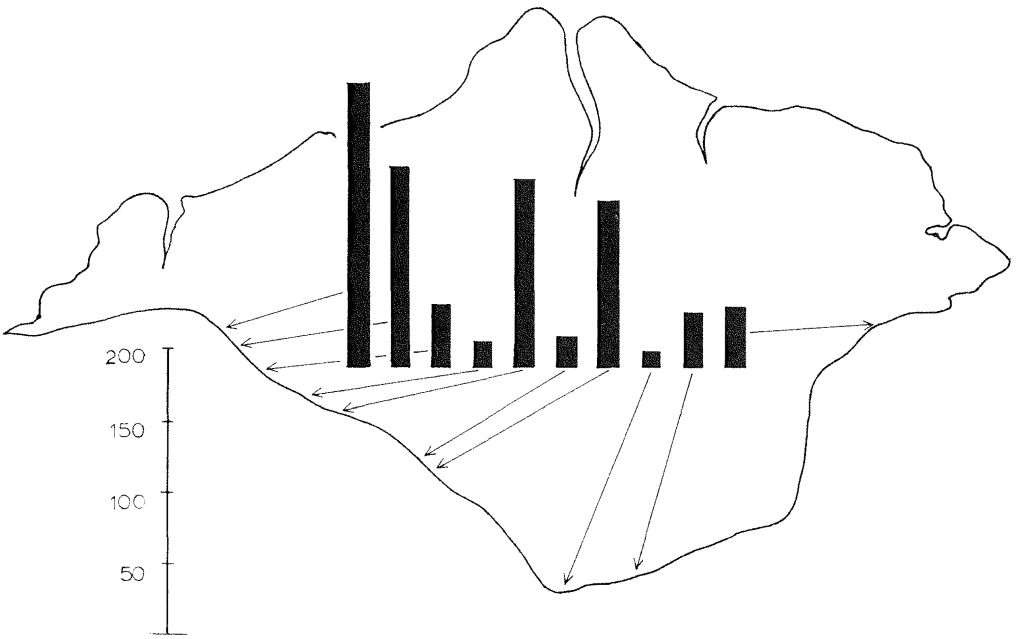


Figure 2. Recorded number of spring larval webs at each survey site in 1985.

at the western end of the range which hold a large proportion of the total population. Each of the sites indicated on the map held viable populations during the study period but the butterfly undoubtedly bred in small numbers at other sites which were not surveyed. The survey period has shown considerable fluctuations in the number of larval webs from one year to another. Fig. 3 illustrates the change in counts of spring webs at those sites for which we have a continuous series of observations from the same recorders. It is interesting that at most of these sites similar trends are recorded during the five year period. In the spring of 1983, numbers were considered to be slightly above average according to the results of surveys in 1979 and 1980 by Thomas and Simcox. 1984 counts showed a considerable increase, with very high densities recorded. These figures reached, and in some cases exceeded, the counts made in 1979 which was generally considered to be a particularly good year. In 1985, numbers were generally lower although perhaps still somewhat above average, but the 1986 counts were well down and gave rise to fears for the continued survival of the butterfly at some of its smaller sites. These fears were shown to be groundless in 1987 when numbers had picked up again. The same trends were evident at many but not all of the sites. In particular, those colonies in the Ventnor/St Catherine's area consistently behaved differently. The terrain used by the butterflies in these areas is different from other sites and tends to be more stable. Suitable breeding sites are very localised and scattered over wide areas so that it is particularly difficult to survey all the area used by the insects. The fluctuations recorded may, in part, be due to the butterfly occupying less accessible spots within a site to a greater or lesser degree and escaping detection.

Many recorders remarked on the fluctuating use of subsites from one year to the next. Sometimes a subsite becomes unsuitable for the butterfly, or lost through erosion, but other apparently suitable subsites were well utilised in some years and hardly used at all in others. This was not necessarily related to the overall numbers using a site, but it appeared that, if other suitable areas for egg-laying were available close at hand, then a particular subsite was not necessarily favoured.

Figure 3. Recorded number of spring larval webs at eight sites for each of the years 1983 to 1987 inclusive.

Table 1. Recorders for each of the survey sites from 1983 to 1987.

Site Number	Corresponding site no. in Simcox & Thomas 1980	Recorders
1	1 A,B,C	1983–1985, 1987 F. & M. Heap
2	1 D,E	1983–1987 F. Basford
3	2 A,B,C	1983 O. Frazer; 1984–1987 R. Herbert
4	3 A,B	1983–1987 O. & D. Frazer
5	4 A,B,C,D	1983–1987 J. & M. Cull
6	5 A	1983–1984 R. Hodgson; 1985 C. Pope; 1986–1987 D. Grove-Smith
7	5 B	1983–1985 F. & M. Lee; 1986–1987 M. Lee
8	7 A,B,C	1983–1984 A. Wilkinson; 1985–1987 C. Pelham
8	8	1983–1987 C. Pelham
9	9	1983–1987 R. Edmonds
10	12	1983–1987 J. Cheverton
11	13	1983–1987 C. & J. Pope

Average counts of the numbers of spring larvae per web were made at each site. Numbers within sites varied greatly but were generally in the order of 25 to 150 larvae. The lowest counts may have been made from dispersing or split webs. Although it is

difficult to generalise from the results of these counts, there seems to be a tendency for webs containing fewer larvae to be more prevalent in:
a) The smaller colonies
b) At many sites in poor years.
Considerable fluctuations within sites were recorded from year to year.

Factors affecting the populations of the Glanville Fritillary

From the results of our survey to date, it is clear that a number of quite different factors have an influence on the distribution and population size of the butterfly. The interaction of these factors is undoubtedly complex.

1)*Weather*

The distribution of the Glanville Fritillary in this country suggests that it is on the very edge of its climatic range. Certainly the coasts where it occurs experience mild winters and high sunshine levels. Cold winters are probably not damaging to the insect. It is widespread in continental Europe where winters are far more severe than ours and, during our study period, the highest larval numbers were recorded in spring 1984 after a particularly cold winter. Numbers also showed an increase over the previous year in 1987, following the coldest January since 1962–63.

It is unclear what components of the weather are particularly significant. Clearly, settled, sunny weather in May and June is beneficial when the butterflies are flying. In recent years, the weather at this time of year has been poor. We have also experienced a succession of cold, late springs. 1986 was particularly remarkable. Caterpillars are susceptible at this time because they emerge early, sunning themselves in warm weather. Warmth will accelerate the rate of development of the larvae. Even with our uncertain springs, conditions are ameliorated along the south coast of the Island.

Plantago lanceolata produces evergreen rosettes, but cold, windy winter weather can burn-off the vegetation as happened in 1984–85, severely limiting the amount of foodplant available before the spring flush of leaves. A late spring prevents the rapid growth of the plants and consequently the food supply is used up sooner and many larvae will starve. In adverse conditions, the larvae feeding on a good supply of plants in the most sheltered spots are the ones likely to survive. Thomas (pers. comm.) has demonstrated a good correlation between the abundance of young plantains and the size of neighbouring colonies in any one year. Widespread deaths through starvation are probably the main way in which population growth is limited on individual sites and may well account for some of the local (often temporary) slumps in numbers that occur. This is certainly the case with Heath and Marsh Fritillaries, which have been better studied.

2) *Coastal erosion*

Most of the colonies are located along actively eroding stretches of coastline and indeed erosion creates suitable conditions for the invasion of *Plantago lanceolata*. Populations are highest in areas where bare ground is being created and declines have been greatest where the cliffs have become stabilised by vegetation. Erosion is a naturally occurring process essential to the survival of the species. However, excessive erosion combined with other factors can result in a reduction of suitable habitat. Slumping of prime areas brought about by winter wet or freeze and thaw can bury winter webs and isolate larvae from their food source. In Guernsey, the butterfly is confined to a cliff-top habitat which is less prone to erosion but it only occurs where the soil is thin and warms quickly and where the foodplant is under stress for much of the growing season (pers. obs.).

3) *Predation*

Little is recorded of natural predators but in the spring the larvae are conspicuous and can be numerous. They present an easy food source. The caterpillars' hairs probably prevent them from being taken by many birds although recently arrived cuckoos have been seen feeding on the caterpillars (R. Ford pers. obs.). R. Herbert reports an adder very close to a depleted web of spring larvae. Adders are frequent in many of the sites where the butterfly occurs and they may be predators. Hymenopterous parasites can take a heavy toll of larvae and R. Ford considers them to be a major factor in controlling numbers. He also (1973) records a fungus disease which killed numbers of larvae in the dry spring of 1970.

4) *Man's activities*

This is a large category which covers many different practices.

a) Insect collectors. Amateur entomologists still come over to the Island to collect larvae in the spring to breed. This is illegal without a permit on most sites because they are in the ownership of the National Trust. Sometimes the adults are returned to the site and it is argued that this helps to conserve the species by ensuring that a large number of larvae reached adulthood. The scientific evidence for this is unclear and in practice this can result in saturating an area with adults.

Commercial entomological suppliers should no longer collect the insect from the wild in this country but at least one supplier offers larvae bred in captivity which have originated from Island stock but are now maintained artificially. Under the 1987 amendments to the Wildlife and Countryside Act, it has become illegal to collect *M. cinxia* for sale, although not to sell old stock taken into captivity before the act was passed.

b) Farming. The current practice of farmers to plough and cultivate almost up to the cliff edge severely restricts the extent of semi-natural cliff-top habitat. Frequently a very narrow strip remains, occupied by the coastal footpath. The butterfly will breed on these cliff-tops but become susceptible to trampling in the spring. The immediate reaction of the larvae to disturbance is to curl up and drop into the vegetation. Simcox and Thomas (1980) have demonstrated that this behaviour saves many of them from being squashed, but this protection would be greater in longer vegetation than on the very short vegetation on and around footpaths. Thus modern farming practices can bring the insect into conflict with the visiting public.

c) Coastal protection works. Erosion maintains the rich biological diversity of the undercliff habitats but causes severe problems for people who choose to set up home or maintain roads on or alongside this unstable substrate. This leads to all manner of coastal protection schemes being implemented of varying success but all having some impact on the area as a wildlife habitat. The major works during the study period have been at Small Chine, Compton, designed to slow down erosion threatening the Military Road. It has resulted in the destruction of a prime area of breeding habitat and no butterflies have used the area for breeding since the work has been carried out. However, the open ground created has subsequently become invaded by *P. lanceolata* and in 1987 represented a good breeding habitat.

d) Tourism developments. Some important breeding sites are established around existing holiday camps outside of National Trust land. Planning applications to extend and develop facilities sometimes impinge upon breeding sites. At Chilton Chine, dumping on the cliffs from the camp above and inadequate sewer drainage has destroyed and rendered unsuitable a significant area of habitat.

Conclusions

The future for the butterfly on the Island seems fairly secure at present. Fortunately, many of the best sites are assured some form of protection by being in the ownership of the National Trust. Habitat management is largely taken care of by natural erosion. The butterfly fluctuates considerably in numbers from year to year but is able to capitalise on favourable years. However, although the species is likely to survive on the Island, it is by no means so sure that all existing colonies are able to do so. The more isolated colonies less liable to recruitment from outside are particularly vulnerable and need special attention. This applies particularly to those colonies at the eastern end of the range. The annual monitoring programme has yielded valuable information and is an important measure to keep a check on populations and as a basis on which to formulate conservation measures where appropriate. It should be continued and perhaps extended to other sites.

One conservation measure adopted by recorders has been to move spring larvae onto nearby foodplants when they are found to have eaten out all their available supply. At some sites this can involve translocating large numbers of larvae. It is assumed that this will result in a higher survival rate for individuals although we have no data to substantiate this. Another measure has been to introduce plantain seed onto freshly slipped sites. This has not however resulted in the expected flush of young plants and perhaps more work should be done along this line in suitable sites.

A considerable benefit of our work has been a much greater appreciation and understanding of the insect by those persons involved in the annual counts. The knowledge gained has been and will continue to be increasingly valuable.

Acknowledgements

Particular thanks go to those members of the Society who have taken part in the annual surveys of the Glanville Fritillary and without whose help this work could not have been done. I am grateful to Dr Jeremy Thomas of the Institute of Terrestrial Ecology for kindly reading through and commenting on the manuscript of this paper. I am also grateful to many people, some of whom are mentioned in this paper, who have shared their experiences of the insect and to Barry Angel for the use of his fine set of photographs depicting the life cycle of the Glanville Fritillary.

References

Bristowe, W.S. 1966. The life of a distinguished woman naturalist, Eleanor Glanville (*circa* 1654–1709). *Ent. Gaz.* **18**: 202–211.

Fearnehough, T.D. 1972. The butterflies of the Isle of Wight. *Ent. Gaz.*, **24**: 57–64.

Ford, R.L.E. 1973. *Studying Insects.* Warne.

Frohawk, F.W. 1913. *Natural History of British Butterflies.* Vol. 1. Hutchinson.

Goater, B. 1974. *The Butterflies and Moths of Hampshire and the Isle of Wight.* E.W. Classey Ltd.

Lobb, J. 1954. Entomological notes for 1952/3. *Proc. Isle Wight nat. Hist. archaeol. Soc.* **4** (7) (for 1953): 283–284.

Simcox, D.J. & Thomas, J.A. 1980. *The Glanville Fritillary Survey 1979.* Joint Committee for the Conservation of British Insects.

South, R. 1906. *The Butterflies of the British Isles.* London.

Stokoe, W.J. 1944. *The Caterpillars of the British Butterflies.* London.

Thomas, J.A. & Simcox, D.J. 1982. A quick method for estimating larval populations of *Melitaea cinxia* L. during surveys. *Biol. Conserv.* **22**: 315–322.

TRACHYSPHAERA LOBATA RIBAUT, A MILLIPEDE NEW TO BRITAIN FROM BEMBRIDGE, ISLE OF WIGHT

A.N. Keay

On 27th June, 1984, Mr.R.Jones and myself were in a small coastal woodland at East Cliff, Bembridge (40/648888) where we were sieving soil samples for centipedes. During this exercise we found a number of small whitish millipedes from soil samples taken from a depth of about 23 cm. At first sight these millipedes looked similar to 'ribbed' seeds, about 2mm in diameter, as they were curled in a similar manner to the millipede, *Glomeris marginata*. The 'ribbed' appearance was derived from the existence of transverse rows of tubercules at the posterior margin of each segment (see fig. 1).

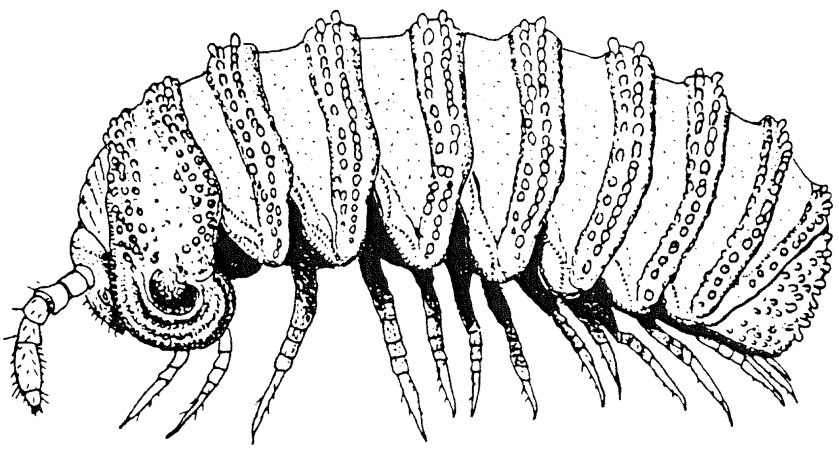


Figure 1. *Trachysphaera lobata* (Ribaut) from Bembridge, Isle of Wight, 1984 (length 4mm).

Closer examination of the specimens shows that they are largely colourless with a small amount of pigmentation on the head and antennae. There are 11 segments in adults, including the collum, shield and telson. Tergite 2 has additional rows of tubercules at the anterior as well as the posterior margins. Tergite 2 has a characteristic large 'ear-shaped' lateral depression on each side. Tergite 11 (the telson) is rounded and is covered randomly with tubercules apart from the posterior border where they are arranged into rows. There are 17 pairs of legs in the female and to date there have been no males found at the site which indicates that this species is parthenogenetic at this site, which is probably the limit of its distribution. Other records of this species are from central France.

The site is a coastal woodland, dominated by Sycamore (*Acer pseudoplananus*) with a ground flora of nettle (*Urtica dioica*) and blankets of ivy (*Hedera helix*). There are small patches of Dog's Mercury (*Mercuralis perennis*). The soil consists of sand with shingle which gives way to clay at about 30cm. Soil pH ranges from 5.5 to 6.0. To the east the woodland gives way to the sea and to the west is bordered by a cliff of Bouldnor Formation clay.

During September, 1984, a further record of *T. lobata* was obtained from the Duver on the far side of Bembridge Harbour where it was sieved from leaf litter on sand under scrub.

The records from Bembridge indicate that the species is well established and that it could well be native in the south of Britain. Being so small it is possible that it has been overlooked, but diligent searching could well produce more records. Other species from Britain which could be confused for *T. lobata* are *Stygioglomeris crinita* Brolemann and *Adenomeris gibbosa* Mauries. *S. crinita* however has smooth tergites and so would not give the 'ribbed' appearance. *A. gibbosa* has 12 segments and also lacks ocelli, whereas *T. lobata* has five ocelli in a vertical row down each side of the head. All three species are similar in size (about 4mm maximum).

Bibliography

Demange, J-M. 1981. *Les Mille-pattes*. Editions Boubee. Paris.

Ribaut, J. 1954. Nouvelle espece francaise du genre *Gervaisia*. *Bull. Soc. Hist. nat. Toulouse*. **89** : 239–240.

NATIONAL SMALL MAMMAL SURVEY AT WALTER'S COPSE, NEWTOWN, ISLE OF WIGHT, 1983–1986

Oliver H. Frazer

Abstract

The aims and objects of the National Small Mammal Survey are outlined, and the preparations necessary for the Isle of Wight Natural History and Archaeological Society to take part are explained. The methods for carrying out the survey are given in detail for the benefit of future workers.

The results of eight surveys carried out in the same area for four years from 1983 to 1986, inclusive, are presented in tabulated and graphical form, together with a vegetation survey of the trapping area and details of the annual assessment of tree seed and fruit production covering the period of the survey. Note is also taken of the weather conditions between each of the surveys.

Attention is drawn to some of the interesting features disclosed by the results obtained, and an attempt is made to correlate the population dynamics of wood mice, *Apodemus sylvaticus*, and bank voles, *Clethrionomys glareolus*, with their food supply and habitat preferences, together with interspecific reactions. Suggestions are made for further investigation.

Introduction

Following the severe winter of 1981/2 a drastic decline in numbers of small mammal species was noted in many areas of Great Britain. At the same time the Mammal Society instigated a series of national small mammal surveys in different parts of the country to monitor the fluctuating populations of small rodents in woodland. The aim of the surveys was to assess the relationships between population dynamics and habitat types as well as other influences such as weather conditions, food supply and competition. It was also the intention to look for similarities in the population fluctuations from the various study areas such as the decline generally noted from winter to summer 1982.

In order to compare results from different study areas a strict method of procedure was suggested which involved the use of 98 Longworth mammal traps, as recommended in Gurnell & Flowerdew (1982). The Mammals, Reptiles and Amphibians Section of the Isle of Wight Natural History and Archaeological Society was anxious to take part, but could only muster 36 traps at that time. However, the organiser of the national survey, Dr. John Flowerdew, very kindly arranged for the supply of 70 additional traps in need of repair at a nominal cost. These were delivered to Southampton University in the autumn of 1982 and brought over to the Island, a few at a time, by John Stafford. The necessary repairs were carried out during the winter, so that we had sufficient traps ready to take part for the first time in early summer, 1983.

In the meantime, however, other arrangements had to be made. To meet the requirements laid down an area of mature woodland, deciduous or coniferous, of 10ha or more had to be chosen. Within this woodland a trapping area (90m × 90m square) had to be selected, so that it provided a good variety of the habitats present in the wood. After considerable investigation a site in Walter's Copse, Newtown, as shown in fig. 1, was

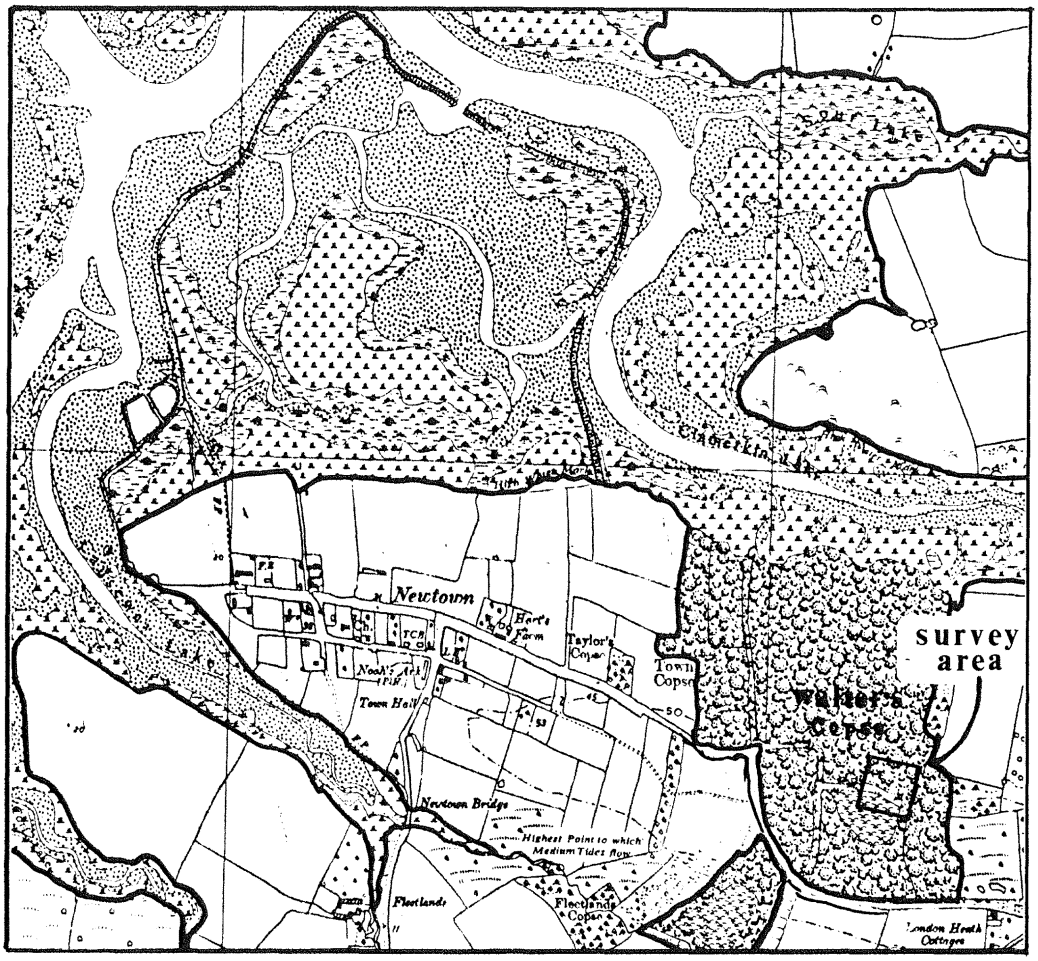


Figure 1. Map of Newtown, I.W., showing position of survey area in Walter's Copse.

considered to be the best, being rich and varied, and likely to remain reasonably undisturbed for some years. Together with Town Copse adjoining, the woodland area comprises some 34 acres or 13.8ha, and is owned by the National Trust. Most of Town Copse and the northern part of Walter's Copse consists of pre-1810 hazel/ash coppice with oak standards, somewhat neglected, but now being progressively coppiced on a 15-year cycle. The main part of Walter's Copse, including the survey area, is post-1810, but pre-1866, and predominantly ash/hazel coppice with scattered, uneven oak standards. Many coppice stools have degenerated and have been replaced by field maple, hawthorn, dogwood and privet, with more recent incursions of pine, birch and cypress. Some areas have degenerated into dense, windblown blackthorn scrub. Permission to use this area was kindly granted by the National Trust and the Management Committee of the Newtown Local Nature Reserve, of which it forms a part. It was felt that the knowledge gained by such a scientific investigation would be useful to those responsible for managing the Nature Reserve in the interests of its wildlife.

Early in 1983 the trapping grid, as shown in fig. 2, was laid out. This consists of 49 trapping points in a 7 × 7 configuration, each point being 15m from the nearest adjacent points. This might seem to be a fairly simple task, but in practice it was not at all easy as,

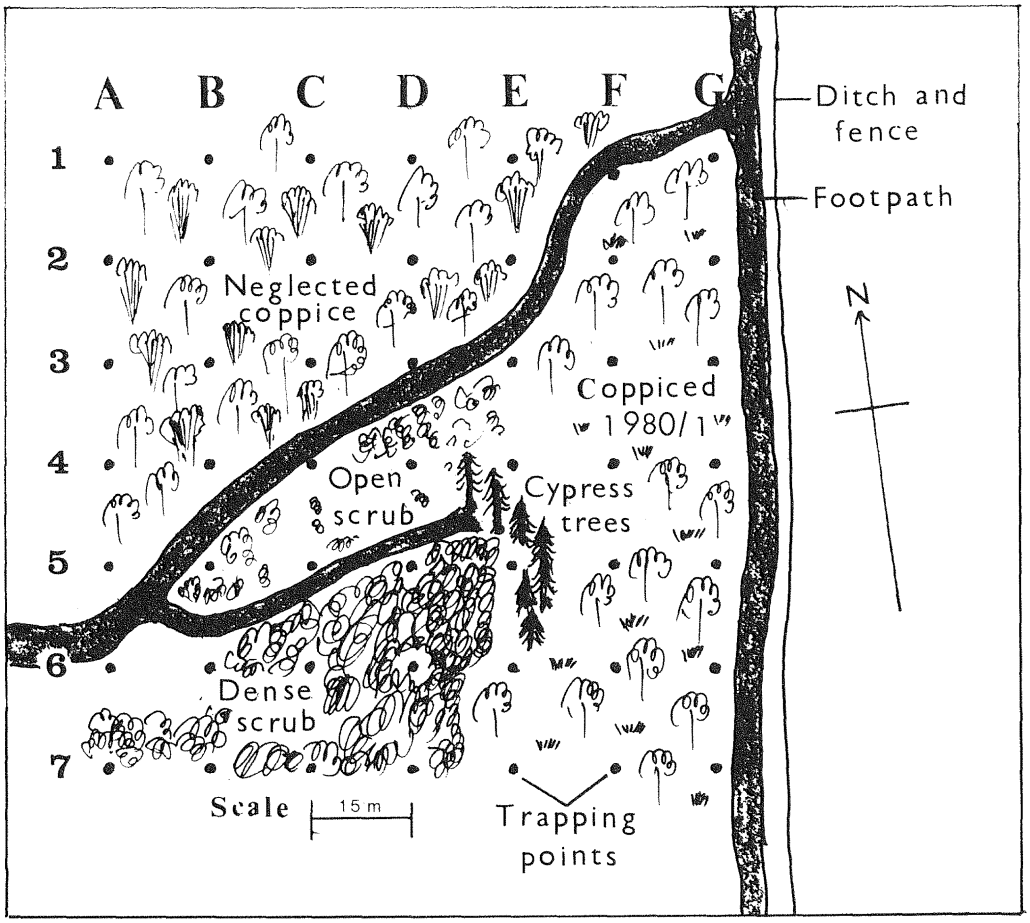


Figure 2. Sketch map of survey area in Walter's Copse, Newtown, I.W., showing trapping grid and woodland cover.

when sighting and measuring, there always seemed to be trees in the way, and in the southern part paths had to be cut through the thick thorn scrub. However, with the valuable help of Frank Heap and his volunteers, Jonathan Cox and pupils of Cowes High School, the work was completed and each of the 49 trapping points was marked by a length of metal water pipe driven into the ground with a label indicating the co-ordinates of the point on the grid, e.g. A1, A2, A3, etc. to G7. Tall flagged canes, similarly labelled, were placed in these pipes to make them more clearly seen, when carrying out each survey. One point, F1, had to be moved a metre or so to the south, as it fell in the middle of a footpath. There were some cases of interference, such as pulling up the markers and throwing them into a ditch. One trap was stolen, but in general eight surveys over a period of four years have been carried out without further trouble.

Method of procedure

As the success of such a long-term project would depend upon the continued help of trained volunteers, a well-attended meeting was held at the Lord Louis Library on 19th March, 1983, at which the methods of procedure were fully explained. This was followed

ISLE OF WIGHT NATURAL HISTORY AND ARCHAEOLOGICAL SOCIETY

NATIONAL SMALL MAMMAL SURVEY - RECORDING SHEET

RECORDERS: 1. F. Heap 2. K. Burrows 3.

LOCALITY WALTER'S COPSE, NEWTOWN, I.W	DATE 1/6/86	TIME 07·00
WEATHER DURING LAST 12 HOURS RAIN/DRIZZLE - MIST		CLOUD COVER 8/8

Notes and abbreviations to be used:

1. Trap number - enter number as on trap, e.g. A1a, A1b, etc. to G7a, G7b.
2. Species - enter As (Wood mouse), Af (Yellow-necked mouse), Cg (Bank vole), Ma (Field vole), Mm (Harvest mouse), Mus (House mouse), Sa (Common shre Sm (Pygmy shrew). O (no catch)
3. Sex - enter M (male), F (female) or U (undetermined)
4. New/Recapture - enter N (new) or R (recapture): T.P.C.= Times previously caught.
5. Age - enter A (adult), S (subadult), J (juvenile) or U (uncertain)
6. Breeding condition - Males - enter TL (testes large & scrotal), TM (testes obvio but not large) or TA (testes abdominal).
   (Also Bank Vole only) Females - Pg (obviously pregnant), Lact (nipples enlarged), Perf (vagina open), Imp (vagina closed), Imp/par (vagina closed, but showing signs of having been reproductively active).
7. Weights - all to the nearest gram. (a) Weight of bag + litter + specimen.
   (b) Weight of bag + litter only.
   (c) a-b = weight of specimen
8. Comments - enter anything important for which no provision has been made.

Trap number	Species	Sex	New/Recap.	T.P.C.	Age	Breeding condition	Weights in grams a	b	c(a-b)	Comments
A1a	As	M	R	1	A	TL	40	8	32	
A1b	As	M	N	-	A	TL	39	8	31	
A2a	O									
A2b	As	F	R	1	A	Perf	31	8	23	
A3a	O									
A3b	As	M	R	2	A	TM	27	8	19	Small
A4a	Cg	M	R	1	A	TL	34	8	26	
A4b	O									
A5a	Cg	M	N	-	A	TL	37	8	29	FLEAS
A5b	O									
A6a	Cg	F	R	2	A	Imp	33	8	25	
A6b	Cg	F	N	-	A	Perf	28	8	20	
A7a	Cg	F	R	1	A	Perf	29	8	21	
A7b	O									

Figure 3. Sample of Recording Sheet.

by practical sessions, also well attended, on 30th April and 1st May, 1983, at Lock's Copse, Porchfield, by kind permission of the Range Warden, Mr. T. Rolf, of the T.A.V.R. Rifle Ranges, when a survey was carried out using the procedures to be adopted. For the benefit of those who might wish to continue this work in the future, the methods used are explained in detail.

Surveys were carried out twice a year, in late May or early June, and again in late November or early December. For carrying out each survey two Longworth live mammal traps, prepared with dry bedding (e.g. hay) and a handful of wheat as food, were placed in suitable positions within about a metre of each trapping point. A handful of hay was placed over each trap and a little wheat was sprinkled near the entrance. The traps were not pre-baited, but were set out to catch on the evening before the survey was due to start. The traps were inspected in the morning and late afternoon of each day over a period of three consecutive days, thus making six sessions for each survey. It was understood that once the survey started, it must continue irrespective of the weather, unless this was seen to be having an adverse effect on the mammals, when the survey would be terminated, although this has not yet been necessary. All captures were identified, sexed, weighed and marked by clipping the fur, before being released, and all details were recorded on special Recording Sheets, as the sample in fig. 3.

From experience it has been found best to work in teams of three. No. 1, the handler, wearing gloves, emptied the trap into a plastic bag, examined, identified, sexed and noted the breeding condition of the specimen, calling this information out to No. 2, who entered the details on the Recording Sheet, clipped the fur and weighed the specimen, while No. 3, with a fresh supply of hay and food, re-set the trap and placed it back in position. On completion of the survey, all the details of captures were copied on to Summary Sheets for each session, as the sample shown in fig. 4, and also on special forms for each species, as shown in fig. 5, which were sent to Dr. Flowerdew, who compared the records from various areas and commented on the results.

The primary purpose of the survey was to monitor the variations in the numbers of wood mice and bank voles, but inevitably some shrews were caught. In order to comply with the Wildlife & Countryside Act (1981) precautions were taken to keep shrews alive if they were trapped. Insect food was provided in the traps and in the later surveys intermediate inspections at approximately two-hourly intervals were carried out during the day. Any shrews caught were recorded and released, and the trap re-set.

In addition a vegetation survey was carried out in the spring, detailing the ground cover in each of the 15m squares surrounding each trapping point, as shown in fig. 6. In practice this remained much the same throughout the four years of the survey, except for the removal of some logs and brushwood and the regrowth up to about 3m of the coppiced stools surrounding trap lines F and G. In the autumn an assessment of tree seed and fruit production was carried out by taking samples from 21 trapping points, which were sorted out and air-dried for a month before being weighed, but in recent years it was felt that the extra work involved added little of significance to a visual assessment, which in many respects was more meaningful.

A new activity carried out in 1984 was the taking of 'brushings' of specimens with special sterilised plastic 'toothbrushes' supplied by the School of Hygiene and Tropical Medicine, to whom they were returned for investigation into parasitic fungus diseases, such as ringworm.

Results of surveys

There are many different ways in which the results of a series of eight surveys can be tabulated, according to what one needs in order to make meaningful deductions. Tables have been constructed showing details of all captures in each session of each of the eight surveys, and another giving details of captures at each trapping point throughout the

ISLE OF WIGHT NATURAL HISTORY AND ARCHAEOLOGICAL SOCIETY

NATIONAL SMALL MAMMAL SURVEY - SUMMARY OF RECORDS

LOCALITY: WALTER'S COPSE, NEWTOWN/NW	DATE: 1/6/86	TIME: 07.00
WEATHER DURING LAST 12 HOURS: Rain / drizzle		CLOUD COVER: 8/8

Notes and abbreviations as on Recording Sheet.

Trap number	Species	Sex	New/ Recap.	T.P.C.	Age	Breeding condition	Weight grams	Comments
A1a	As	M	R	1	A	TL	32	
A1b	As	M	N	-	A	TL	31	
A2b	As	F	R	1	A	Perf	23	
A3b	As	M	R	2	A	TM	19	Small
A4a	Cg	M	R	1	A	TL	26	
A5a	Cg	M	N	-	A	TL	29	Fleas
A6a	Cg	F	R	2	A	Imp	25	
A6b	Cg	F	N	-	A	Perf	20	
A7a	Cg	F	R	1	A	Perf	21	
B1b	Cg	F	N	-	A	Imp	21	
B3a	As	M	N	-	A	TM	22	
B3b	Cg	F	N	-	A	Perf	21	
B4b	Cg	M	R	2	A	TA	22	
B6a	Cg	M	R	1	A	TL	27	
B6b	Cg	F	R	3	A	Perf	26	
B7a	Cg	F	R	1	A	Perf	29	One eye only Smaller right ear Yellowish fur
B7b	As	M	R	1	A	TL	26	
C1a	Cg	M	N	-	A	TL	28	
C2b	Cg	F	R	1	A	Perf	23	
C3a	As	F	R		A	Perf	24	
C3b	Cg	F	N	-	S	Perf	18	
C4b	As	F	R	1	S	Imp	21	
C5b	Cg	M	R	2	A	TM	28	
C7b	Cg	M	R	2	A	TM	25	
D1b	Cg	F	N	-	S	Imp	20	Tick
D2a	Cg	M	R	3	A	TL	28	
D2b	Cg	M	N	-	A	TL	26	(Contd)

Figure 4. Sample of Summary Sheet.

MAMMAL SOCIETY NATIONAL SMALL MAMMAL SURVEY

Species: BANK VOLE | Year: 1986 My/Jn | Locality: WALTER'S COPSE, NEWTOWN, ISLE OF WIGHT | Grid Ref E 432 N 904

Session Dates & Times:
1 30/5/86 07.00 | 3 31/5/86 07.00 | 5 1/6/86 07.00
2 30/5/86 18.00 | 4 31/5/86 18.00 | 6 1/6/86 18.00

Comments on weather in 12hr before Session; please add general comments e.g. snow cover
1 Clear - occasional showers
2 Dry, fine and mild
3 Rain
4 Rain / drizzle
5 Rain / drizzle
6 Drizzle - mild and humid.

Dominant or co-dominant tree species: neglected - Oak, Ash, Hazel

High forest | Coppice | (Coppice with standards) | Plantation

Session	New Animals m	f	m+f	Recaps m	f	m+f
1	0	6	6	0	0	0
2	8	9	17	1	3	4
1+2	8	15	23	1	3	4
3	11	3	14	3	3	6
4	9	15	24	8	10	18
3+4	20	18	38	11	13	24
5	5	6	11	15	12	27
6	7	7	14	18	15	33
5+6	12	13	25	33	27	60
TOTAL	40	46	86	45	43	88

g	MALES NUMBER m	TA	TM	TL	J	S	A	U	FEMALES NUMBER Imp	Imp Perf	Perf	Pg	Pg Lact	Lact	J	S	A	U	f
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15	1	1				1													
16																			
17									1		1					2			2
18									1		3					3	1		4
19											1						1		1
20									1	1	5					1	6		7
21	3	2	1				3		2		1						3		3
22	2		2				2		3		4						7		7
23	2		2				2		2		6						8		8
24	7	1	5	1			7		1		3						4		4
25	5		5				5				2						2		2
26	9		5	4			9				1	2					3		3
27	4		4				4				1	1					2		2
28	4		2	2			4		1			2					3		3
29	2		1	1			2												
30	1		1				1												
TOTAL	40	4	28	8		1	39		12	1	28	5				6	40		46

A most remarkable recovery, following a steady decline since 1983/4 when the Acorn crop failed.

Heavier weights here or over page

Figure 5. Sample of Species Recording Sheet.

JUNE, 1984 NATIONAL SMALL MAMMALS SURVEY - WALTER'S COPSE, NEWTON, I.W.

ASSESSMENT OF COVER UP TO 2m. AT EACH TRAPPING POINT

Trapping point	Main species in field layer	Main species in ground zone	Cover
A1	Bramble, brier, apple	Ivy, Enchanter's-nightshade	5
A2	Bramble, honeysuckle, brier	Ivy, Wood Spurge, Bugle	5
A3	Bramble, brier	Ivy, Enchanter's-nightshade, ash	5
A4	Bramble, brier	Ivy (seedlings	5
A5	Bramble, brier, hawthorn	Ivy	5
A6	Bramble, honeysuckle	Ivy, Giant Fescue	4
A7	Blackthorn, brushwood	Ivy (5%) very wet	5
B1	Hawthorn, Privet, Honeysuckle	Ivy, Wood Spurge, Moss	5
B2	Brier, Honeysuckle, Ash	Ivy (Greater Butterfly Orchids)	5
B3	Bramble, Brier, Privet	Ivy	5
B4	Blackthorn, brushwood	Ivy, moss	5
B5	Blackthorn	Ivy, moss, grass, saw-wort	5
B6	Blackthorn, Bracken, Bramble, Sallow)	Ivy	5
B7	Blackthorn, brushwood	Ivy (5%) fairly wet	5
C1	Bramble, honeysuckle, Hazel seedlings)	Ivy, wet	5
C2	Bramble, black bryony	Ivy	5
C3	Bramble, brier, dogwood	Ivy, honeysuckle	5
C4	Blackthorn, brier	Ivy, moss, grass, saw-wort	5
C5	Hawthorn, Dogwood, brier	Grass, Saw-wort, moss	5
C6	Blackthorn, brier	Moss, wet	5
C7	Blackthorn, hawthorn	Moss, wet (almost bare earth)	5
D1	Guelder-rose, honeysuckle	Ivy	5
D2	Bramble, brier, honeysuckle	Ivy, honeysuckle, ash seedlings	5
D3	Hawthorn, brushwood	Ivy, grass, saw-wort	5
D4	Blackthorn (50%), brier	Moss, saw-wort, bugle, grass, sedge	5
D5	Blackthorn (90%)	Ivy (40%), Moss (50%), grass	5
D6	Blackthorn	Moss, saw-wort, ash seedlings	5
D7	Blackthorn (100%)	Ivy (90%), Moss (10%)	5
E1	Bramble, brier, hawthorn	Ivy	5
E2	Hawthorn, brier	Ivy	5
E3	Blackthorn, hawthorn	Ivy, moss, saw-wort, grass, logs	5
E4	Blackthorn, hawthorn, guelder-rose)	Ivy, grass, saw-wort)	5
E5	Blackthorn	Ivy (15%), ~~brushwood~~, ~~logs~~ } Taken away	4 2
E6	Honeysuckle, blackthorn, sallow	Ivy, ~~brushwood~~, ~~logs~~ }	4 2
E7	Sallow, honeysuckle, blackthorn	Ivy, brushwood, guelder-rose	5
F1	Ash/Oak saplings, hazel	Ivy, wet	5
F2	Oak/Ash/Hazel saplings	Rush, ivy, sedges - wet	4
F3	Hawthorn, Ash saplings	Ivy, rush, brambles, brushwood, wet	5
F4	Oak/Ash saplings, brier	Ivy, rush, saw-wort, grass, wet	5
F5	Sallow/Ash/Oak saplings	Rush, ivy - very wet	4
F6	Ash/Sallow/Oak saplings	Rush, brushwood/logs - very wet	4
F7	Ash/Sallow saplings	Ivy, sedges, brushwood/logs, wet	5
G1	Bramble, brier, ash	Wood Brome, Anemone, Sedges	5
G2	Ash/Hazel saplings, brier	Rush, sedge, ivy	5
G3	Field maple, Ash/Hazel, bracken	Grass, Sedge	5
G4	Ash/Sallow/Hazel	Ivy, sedges, brushwood	5
G5	Hazel, honeysuckle, ash	Ivy, wood spurge, anemone, giant	5
G6	Hazel, bramble, bracken	Ivy, honeysuckle, sedges (Fescue	5
G7	Oak saplings, bramble, hazel	Ivy (80%)	5

KEY TO COVER

0 = less than 1% cover
1 = 1-5% cover
2 = 6-25% cover
3 = 26-50% cover
4 = 51-75% cover
5 = 76-100% cover

Oliver H. Frazer
(checked by Clive Chatters)
3rd June, 1984.

Figure 6. Vegetation survey as recorded in June, 1983 and revised in June, 1984/5.

			1983		1984		1985		1986	
			M/J	N/D	M/J	N/D	M/J	N/D	M/J	N/D
Wood Mice	New	Male	6	14	6	21	8	19	15	10
		Female	4	8	2	15	7	18	10	11
	Recaps	Male	2	27	1	24	3	6	8	11
		Female	7	8	0	21	5	6	4	7
Bank Voles	New	Male	19	24	20	14	11	2	40	27
		Female	17	31	19	14	9	9	46	17
	Recaps	Male	13	36	16	6	10	0	45	23
		Female	23	19	6	6	7	1	43	24
Field Voles	New	Male				1				1
		Female				0				0
Common Shrews			0	15	0	2	1	9	1	2
Pygmy Shrews			0	3	0	1	0	1	0	0

Figure 7. Table showing details of captures in eight surveys at Walter's Copse, Newtown, I.W., 1983 to 1986.

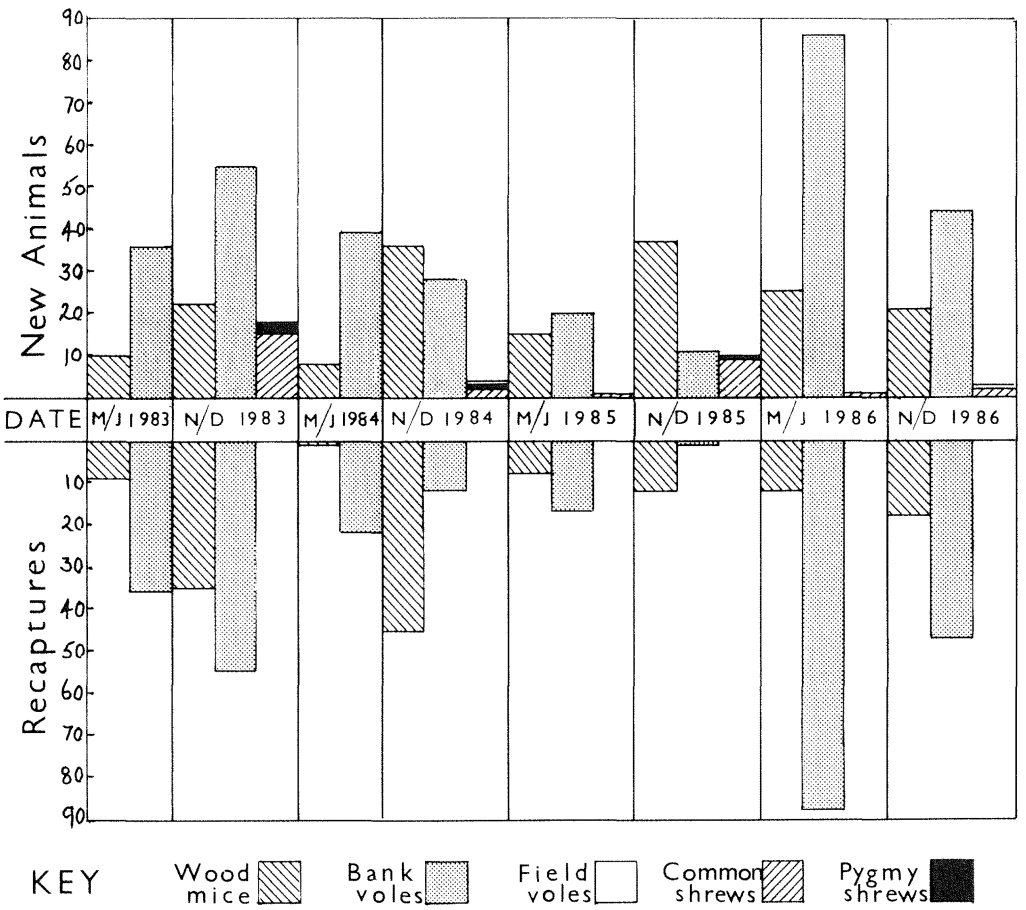


Figure 8. Graph showing captures of new animals and recaptures of each species in each of the 8 surveys, 1983 to 1986.

Species	Year 1983	1984	1985	1986
Oak	Failed	Heavy	Heavy	Very Poor
Ash	Fair	Fair	Fair	Fair
Hazel	Poor	Heavy	Poor	Fair
Field Maple	Good	Heavy	Fair	Good
Hawthorn	Good	Good	Heavy	Fair
Blackthorn	Poor	Good	Good	Failed
Rose	Good	Fair	Good	Good
Cypress	Fair	Fair	Good	Good

Figure 9. Table showing details of annual assessment of tree seed and fruit production as recorded in the autumn of each year, 1983 to 1986.

eight surveys. Neither is reproduced here, as they are both complicated masses of figures expensive to reproduce, but both are necessary for the purposes of interpreting the results in a meaningful way, and may be obtained at cost from the author. In broad terms the numbers of new and recaptured animals of each species recorded in each of the eight surveys is shown in fig. 7, and represented graphically in fig. 8. It is interesting to note how often the number of recaptures equals, or in some case exceeds the number of new animals caught, which puzzles some people, but it is easily explained by the fact that some individuals may be recaptured several times. For the sake of completeness the numbers of shrews caught are shown, but the numbers of these are not sufficient to be able to draw any useful conclusions with regard to their population dynamics or habitat preferences. Likewise the two isolated captures of field voles are interesting but not significant.

The results of the annual assesment of tree seed and fruit production is shown in fig. 9. There are some things, however, which no amount of statistical information can convey. In the first survey in June, 1983, the weather was fine until the last session, when the heavens opened and, in a violent thunderstorm, a bank vole gave birth to young in one of the traps, which, of course, had to be left in position to act as a nesting box. In December of the same year, following the failure of the acorn crop, the animals were clearly very short of food and lost no time in getting back to the food in the traps, resulting in unusually high numbers of recaptures. In June, 1984, we were surprised to find that the clip marks from the previous survey were still clearly visible. Whatever happened to the spring moult? This phenomenon had not previously been encountered by other workers, but has been confirmed since from elsewhere.

As the primary object of the survey is to monitor the numbers of wood mice and bank voles, these have been separated out and represented in graphical form, together with brief details of seed crop and weather conditions throughout the four years of the survey, in fig. 10, from which we are able to draw some conclusions and advance possible suggestions for further study.

Interpretation of results

In both wood mice and bank voles the population structure normally shows an annual fluctuation with high numbers in late summer and autumn declining through the winter and reaching a trough in April-May (Flowerdew 1984). By reference to fig. 10, it can be seen that for the first year of the survey this pattern was followed by both species, with

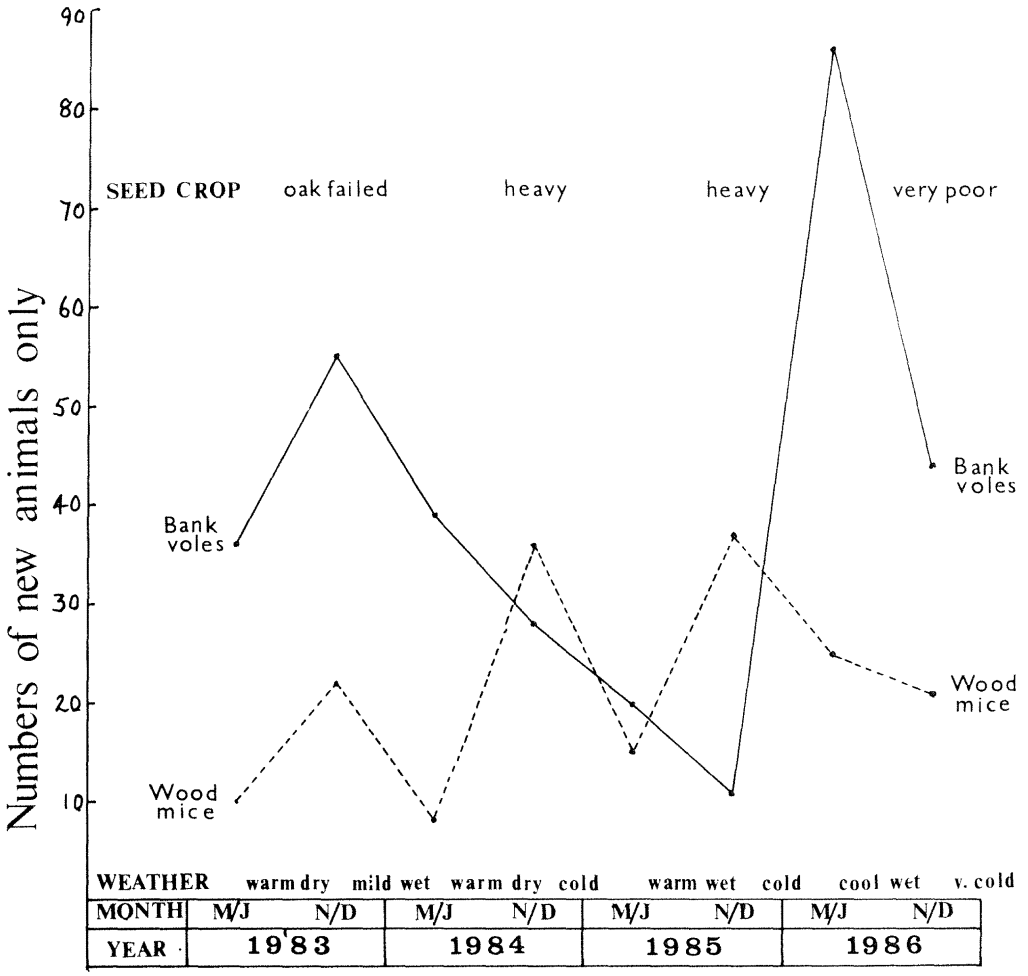


Figure 10. Graph showing the variation in numbers of new animals of wood mice and bank voles caught in 8 surveys, 1983 to 1986, together with indications of seed crop and weather conditions.

numbers of bank voles at a higher level than the numbers of wood mice. In the case of wood mice this pattern continued until June, 1986, but, from June, 1984, bank voles steadily declined for a period of two years until they returned in unusually high numbers in June, 1986. The decline in numbers from December, 1983, to December, 1985, appears, as it is shown, to be a steady reduction in numbers, but it is likely that increases due to breeding between June and November did occur in both summers, as evidence of breeding and the presence of juvenile individuals testified. The timing of the sample in spring was too early to assess the detailed nature of any increases due to breeding between June and November, but, whatever these may have been, the end result was a lower population in winter 1984 and 1985. It is tempting to speculate that following the relatively late start to breeding in both these years (only a few or no juveniles present in June) the survival rate of these young was likely to have been poor, so effecting the observed decline. The poor acorn crop in autumn, 1983, and the cold weather in winter 1984 may have prevented an early start to breeding, but the cause of the decline each year is uncertain. The heavy acorn crop in autumn, 1985, seems very likely to have

supported winter breeding for much or all of the period December-May, 1985/6, and it is interesting to note that the cold weather in January and February of this winter did not seem to have any strong effect on breeding; a similar interaction has been described for rodent winter breeding at Wytham woods, near Oxford (Smyth, 1966). Following the winter breeding and increased production of young in early 1986 numbers were unusually high in June; this is again similar to the pattern observed in many past studies (Corbet & Southern, 1977).

It is curious that the wood mice were not similarly effected by the change in acorn crop from one year to the next and the answer may lie in the different diet of the two species. It is known that the bank vole is more strictly herbivorous than the wood mouse, which often resorts to earthworms, snails and arthropods, if necessary. Or it may be that the two species favour seeds of different tree species. One cannot, of course, rule out a completely different cause, such as migration, a diurnal predator, such as stoat or weasel, or disease being responsible. It is interesting to note, however, that the spring/summer numbers were highest in 1986, following the heavy acorn crop in 1985, and the decline from the higher winter numbers was least severe in 1985/6. Juvenile wood mice were only caught in summer 1985 and 1986, again suggesting relatively early breeding following the previous autumns' heavy acorn crops. The low numbers of wood mice in winter 1986 may have been a direct response to the very poor acorn and/or failed blackthorn crop (see Flowerdew, 1985) or possibly the result of interspecific interactions with bank voles, which were at high numbers over the summer. The responses of both species to the near failure of the acorn crop in 1986 will be interesting to note in future surveys.

As the series of surveys progressed it became possible to make some predictions with increasing accuracy. There seemed to be fewer captures along the F and G rows, where it had been coppiced in 1980/1, and there had been no captures at all at Trapping Point F5 until December, 1985, when a shrew was caught. One seemed to catch more wood mice in the area of dense scrub. In some cases, however, the pattern did seem to change and this was made easier to detect by Frank Heap preparing an enlarged sketch of the trapping grid on which the species recorded were indicated with coloured dots as the survey progressed, enabling comparisons to be made with previous survey results. There certainly seemed to be some hint of a correlation between the species caught and the various habitats within the trapping grid, which was worth further investigation.

If one takes into consideration the detailed Vegetation Survey, shown in fig. 6, combined with a closer look at the area, it is possible to identify five more or less distinct types of habitat, as shown in fig. 11. These can be described as follows:

1. (16 Trapping Points) – Neglected ash/hazel coppice with irregular oak standards. Field layer: bramble, brier, honeysuckle, with some hawthorn, blackthorn, dogwood, guelder-rose and apple. Ground layer: almost continuous ivy with scattered wood spurge, enchanter's nightshade and greater butterfly orchids.
2. (16 Trapping Points) – Coppiced in 1980/1, leaving mostly oak standards with some ash and a few birch. Field layer: slow, but later increasing, regrowth from coppiced stools of hazel, ash and sallow, with bramble, brier and hawthorn. Ground layer: rush, wood brome and sedges, with some ivy, saw-wort and wood anemones. Varies from wet to very wet in places.
3. (7 Trapping Points) – Dense overgrown blackthorn scrub with occasional oak standards, some hawthorn and bramble. Much of it wind-blown. Ground layer: rather dark, some ivy, but mostly moss in spring and bare earth later. Tends to be wet and cracking when dry.
4. (7 Trapping Points) – Largely open area, lacking standards, with irregular, but slowly increasing, clumps of hawthorn and blackthorn scrub, bramble and brier. Ground layer: grass, moss, saw-wort, green-winged and early purple orchids.
5. (3 Trapping Points) – small area under the influence of seven well-grown Monterey

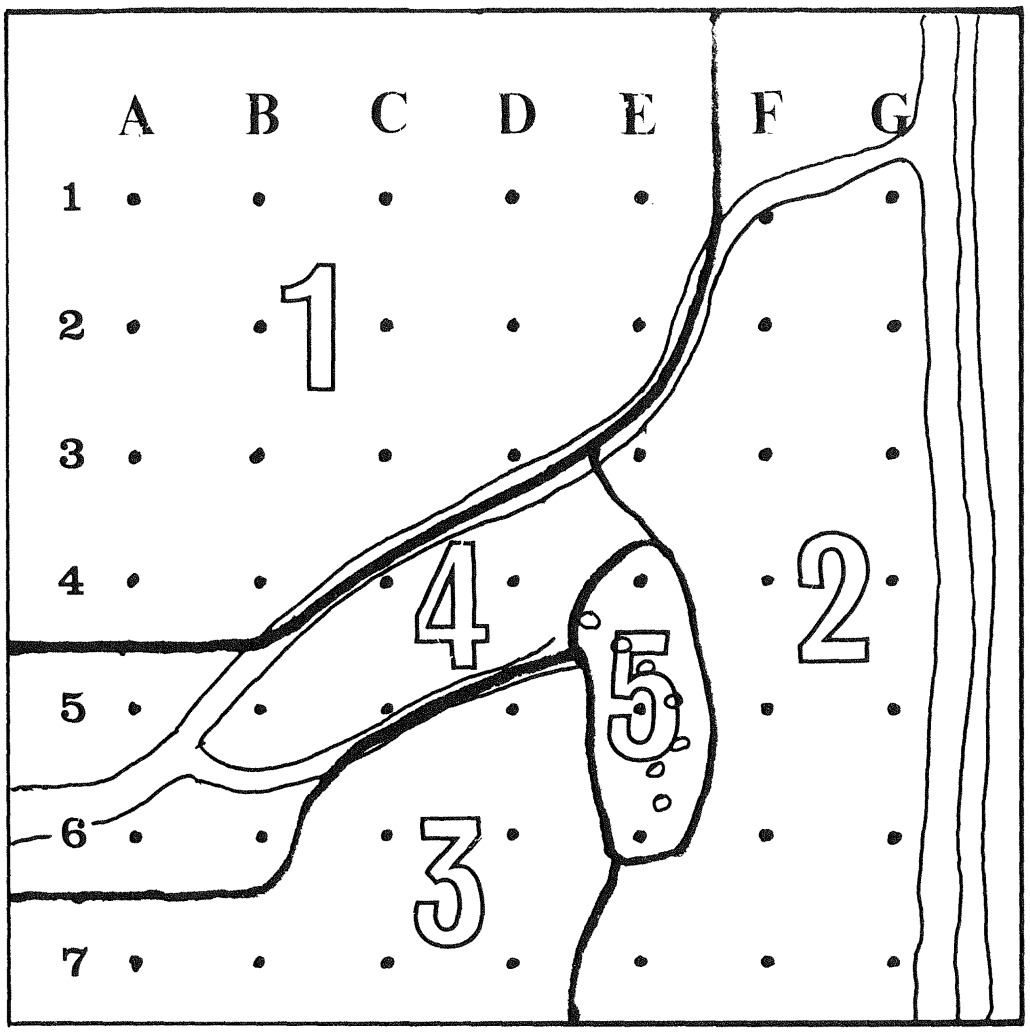


Figure 11. Sketch map showing the survey area divided into five distinct habitat types, as described in the text.

cypress trees. Ground layer: some ivy, but mostly bare earth after removal of logs and brushwood from coppicing in 1980/1. Dry.

There are a number of variables to be taken into account, chief among which is the varying number of trapping points in each area and also the subtle changes which have occurred in some areas, as indicated above. The average number of catches of both species per trapping point in each habitat area per year are shown for the four years in fig. 12. A close study of this will show that the only area which has changed its position in relation to the others is area 5, where the removal of logs and brushwood leaving bare earth has resulted in a reduction of habitat use. In all other cases the relative degree of habitat use remains remarkably constant, with most use being made of area 3, the dense scrub, and least use being made of area 2, which was coppiced in 1980/1, although starting to recover in 1986. There is little to choose between areas 1 and 4, except that area 4 seems to be inproving in 1986, probably due to the increasing clumps of thorn scrub.

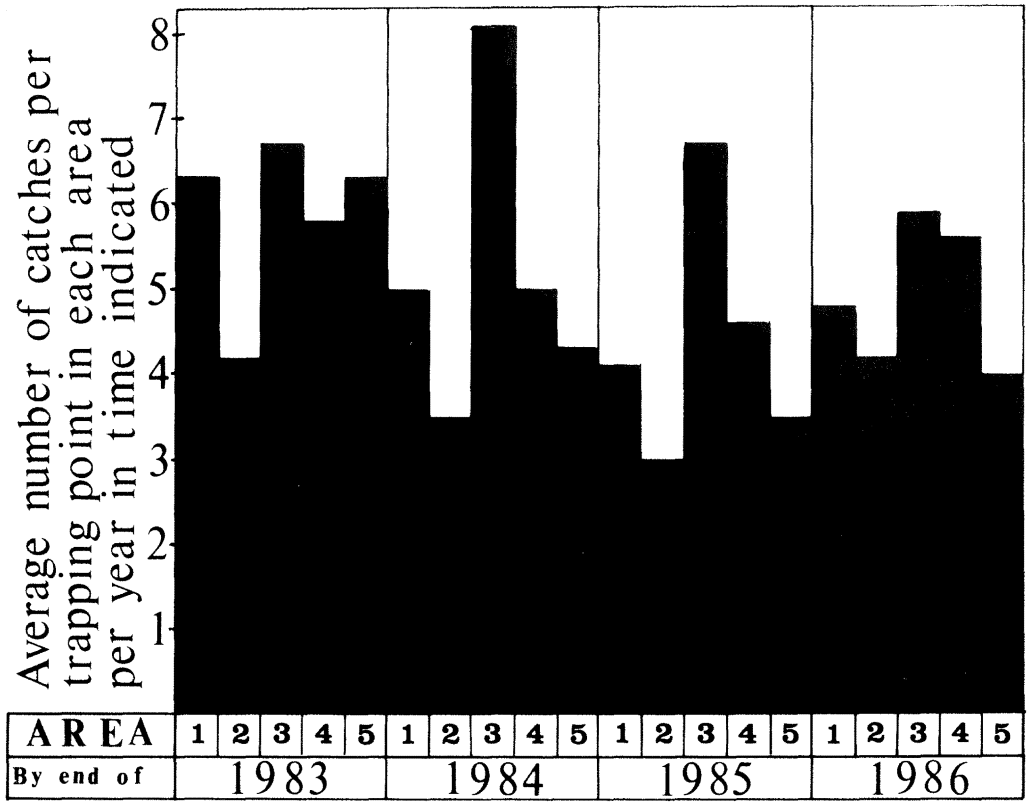


Figure 12. Graph showing variations in degrees of habitat use in each area during the course of the survey, 1983–6.

To assess the habitat preferences of each species the average number of captures of bank voles or wood mice per trapping point in each of the habitat types were calculated for the period of the survey (fig. 13). This would seem to indicate that, although both species are found in all areas, area 3, the dense scrub, is that most favoured by wood mice, while area 4, the open area with scattered scrub and good ground cover, seemed to be favoured by bank voles and was least attractive to wood mice. When this exercise was first carried out in 1984, however, area 1, also with good ground cover, was that most favoured by bank voles, but with the fall in their numbers during 1984/5, the wood mice increasingly colonised the area indicating possible inter-specific reactions. It has been stated that wood mice, being nocturnal, do not require the protection of good ground cover as is essential for the more diurnal bank voles (Corbet & Southern, 1977), and the evidence shown here supports this view. It is also possible that habitat preference is related to food supply, and it may well be that the preferred food of the wood mouse is the fruit of the blackthorn, which is abundant in area 3, and, except for only a fair crop in 1983, is normally a good and reliable food source, but completely failed in autumn, 1986, coincident with the first positive signs of a reduction for this species since the survey began in 1983. With the present state of our knowledge, it is not possible to make any positive assertions, but the evidence provided by this survey does suggest some lines of enquiry which might well be followed up by further studies both here and elsewhere.

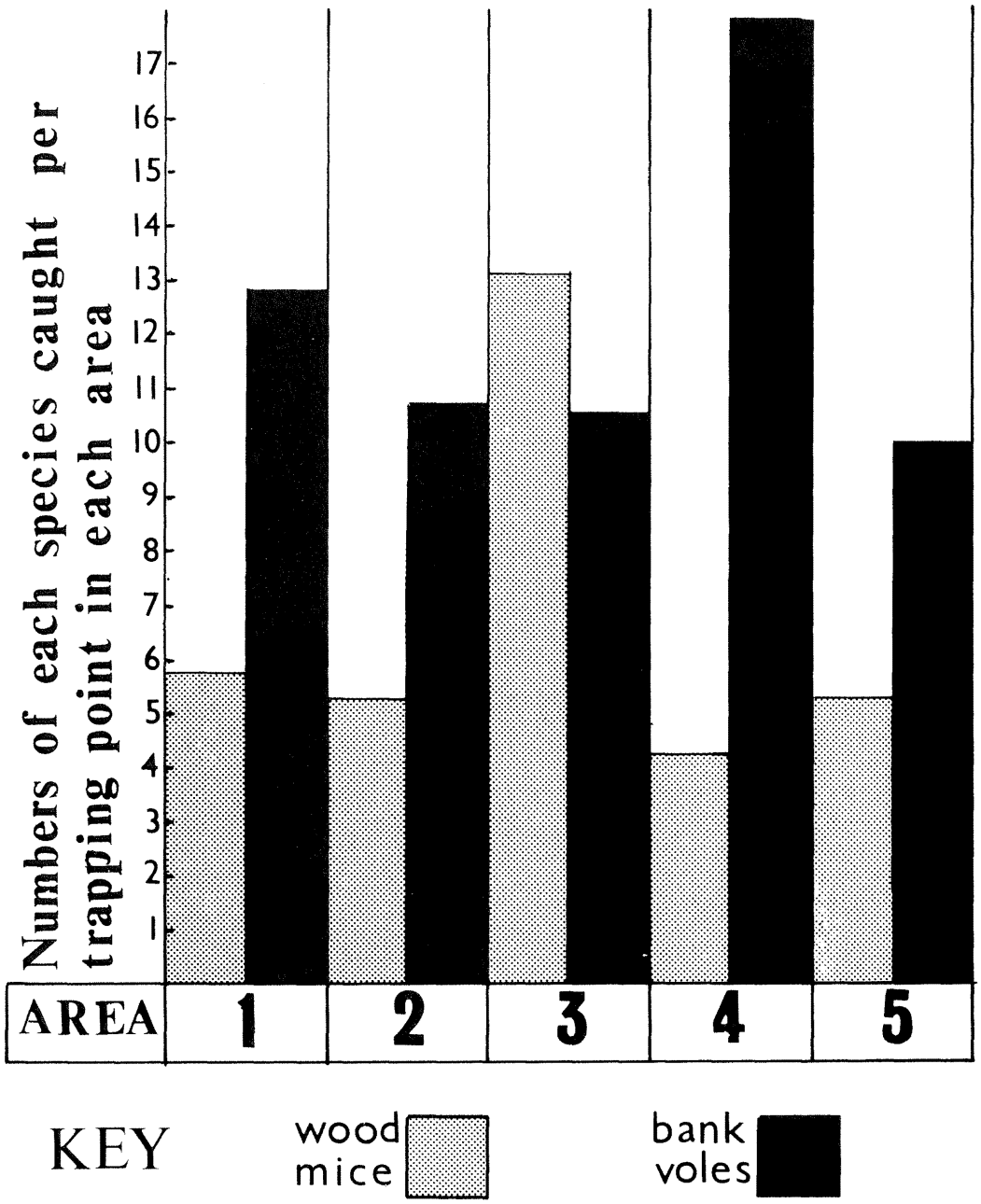


Figure 13. Graph showing the relative habitat preferences of wood mice and bank voles in each habitat type.

Summary

A series of eight surveys over four years at Walter's Copse, Newtown, disclosed a normal annual fluctuation of wood mice and a larger number of bank voles for the first year, after which the wood mice made a slight but steady increase until they declined in June,

1986. The bank voles, however, steadily declined throughout 1984 and 1985, only recovering to greatly increased numbers in June, 1986.

The habitat preferences of each species were assessed, showing that wood mice preferred the area of dense thorn scrub, with little or no ground cover, while the bank voles preferred the areas with continuous ground cover, although there was clear evidence of some interspecific reactions as the numbers of each species increased or decreased.

Possible reasons for these observations were suggested for further investigation, as follows:-

1. That the decline of the bank voles was due to the failure of the acorn crop in the autumn of 1983, and their subsequent recovery was linked to the unusually heavy acorn crop in 1985, leading to very successful winter breading.
2. That the numbers of wood mice were not similarly affected due to differences in diet, and, in particular, that as their preferred habitat was the thick blackthorn scrub, this provided their preferred food, which failed in 1986, when the numbers of wood mice seriously declined for the first time.

Acknowledgements

My special thanks are due to Dr. John Flowerdew for his unfailing encouragement and help, and also for vetting this paper. My thanks are also due to all those, too numerous to mention, who have helped with the surveys in one way and another, but especially to Frank and Maretta Heap, Peter Gibson, Pat Ewbank, Kathy Burrows, Tracy Hart, Jessica Holm, Steve Whitbread, Richard Grogan, Colin Newbold and Matthew Parker, Bill and Toni Goodley, and many others. Frank Heap has undertaken to organise future surveys, and deserves full support.

References

Corbet, G.B. & Southern, H.N. 1977. *The Handbook of British Mammals* (2nd Ed.). Blackwell Scientific Publications, Oxford.

Flowerdew, J.R. 1984. *Wood mice and yellow-necked mice.* Mammal Society Series. Anthony Nelson Ltd., Oswestry.

Flowerdew, J.R. 1985. The population dynamics of wood mice and yellow-necked mice. *Symp. zool. Soc. Lond.* **55**: 315–38.

Gurnell, J. & Flowerdew, J.R. 1982. *Live Trapping Small Mammals.* Mammal Society.

Smyth, M. 1966. Winter breeding in woodland mice, *Apodemus sylvaticus*, and voles, *Clethrionomys glareolus* and *Microtus agrestis*, near Oxford. *J. Anim. Ecol.* **35**: 471–85.

COWES BAT SURVEY, 1986 – 87

M. J. Parker

Before 1985 very little information was known about the distribution of bats in the Cowes region of the Isle of Wight. At this time only two roosting sites had been located and there were only a handful of other recent records – although ironically these included a record of the very rare Bechsteins Bat in 1981. In 1986, in an attempt to find out a great deal more about bat distribution in the Cowes area, it was decided to carry out a comprehensive bat survey, which continued through 1986 and 1987. This survey resulted in eleven new roost sites being located and also in the location of major feeding areas where the bats were identified with the aid of bat detectors. Public relations were not neglected and posters and displays about bats were put up in schools and in the local library. A total of nearly ten people took part in the survey, a high proportion of them sixth formers from Cowes High School.

The attempts to locate roost sites included searches made of potentially productive buildings, such as churches and farm buildings. This resulted in several new colonies and a variety of different species being found, including Serotine, Whiskered and Natterer's Bats. Door to door enquiries were also made asking people if they knew of any bat colonies, although these proved to be futile and no positive information regarding the location of colony roost sites was gained from them. Encouragingly though, quite a large number of people volunteered information about bats after seeing the 'Help Save Bats' posters and a total of over twenty enquiries were received in the course of 1986 and 1987, several of which resulted in new colonies being located.

Bat detector records were also collated, most of which were predictably Pipistrelles, although there were several records made of Noctules, a species thought to be fairly rare on the Island. Several other species were also recorded.

One of the most exciting aspects of the survey was the formation of a 'bat hospital' at the home of a Cowes bat group member, Mrs. Sheila Cooper. The 'hospital' dealt with an increasing number of patients and encouragingly had quite a high success rate with many injured bats later being re-released where they were found. One female Pipistrelle gave birth at the hospital and, to the delight of bat group members, both mother and baby were later successfully released back into their colony.

A number of bat problems and enquiries were dealt with, which included the demanded immediate expulsion of a large colony of Pipistrelles from one house, and the proposed selling and renovation of another house thought to house a bat colony. In another incident one lady had rather a shock when she came down to breakfast one morning to find a live Whiskered Bat in her kitchen sink! Although very wet, the bat was later released successfully.

The response of members of the public to the survey varied in degrees from considerable interest to complete disgust. Those who were disgusted included one woman who, when we were making door to door enquiries, slammed the door in our faces with the words 'Of course we haven't got bats in our roof – it's private property!' At another house the householder was terrified of the bats in her roof and, on my calling to

her from the loft that there were bats present, she decided that the only escape route was to run outside into the garden. Unfortunately the bats, annoyed by the disturbance that they had suffered from me, had the same idea of escape and soon the lady was running even faster back to the house with dozens of Pipistrelles swooping around her. Such incidents may be amusing, but are also serious, as they underline the fear that some people still have of bats. However, on the other hand, many householders were not at all disconcerted at the sight of six bat group members turning up on a roost visit and in many houses we were supplied with welcome cups of coffee and biscuits! We also encountered a lot of light-hearted leg-pulling from people, including the inevitable jibe of 'batman'!

On a number of occasions talks about bats were given to children, including a visit to a primary school, an organised count of bats emerging from a roost at a 'Wildlife Workshop' for under-privileged children and visits to two Island libraries where we had the task of supervising more than forty high-spirited youngsters between the ages of five and nine years in making bat mobiles! The public relations campaign was completed with coverage in local newspapers and on local radio.

Overall the survey was a success and is a foundation for further study in the area. Evening bat surveys in the centre of Cowes were very enjoyable as there proved to be high numbers of both bats and pubs! Many interesting people as well as interesting bats were encountered and we hope that many of these people are now sympathetic to the cause of bat conservation.

The main participants in the survey were: Matthew Parker, Matthew Arnell, Colin Newbold, Vicky Biggs, Helen Brown and Sheila and Clive Cooper.

BECHSTEIN'S BAT IN THE ISLE OF WIGHT

Oliver Frazer

At the time when Morey's *Guide to the Natural History of the Isle of Wight* was published in 1909, Percy Wadham was not able to include Bechstein's Bat, *Myotis bechsteini*, in his list of Chiroptera recorded in the Isle of Wight up to that time, which comprised eight other species. However, in 1935, Percy Wadham recorded that *Two of these rare bats were taken by me in 1909, flying over a marshy meadow between Westmill and Priory Farm, Carisbrooke. One, a female, was obtained in the month of July; the other, a male, early in August.* It was not until the latter part of that year that he was able to get the identifications verified.

Writing in connection with this record J.E. Harting (1909), one of the foremost authorities on bats at that time, stated:

> *The instances in which it* [Bechstein's Bat] *has been met with and recognised in this country are so few in number that they may be easily mentioned. The first British examples, preserved in the Natural History Museum, South Kensington, were taken many years ago in the New Forest, where subsequently, in July 1886, Mr. E.W. Blagg captured two others out of a dozen or more which he found in the deserted hole of a woodpecker. When this announcement was made by him in the Zoologist for 1888 (p. 260) an editorial note was appended to his communication to the effect that two examples of Bechstein's bat, taken at Preston, near Brighton, were in the possession of Mr. F. Bond (of Fairfield Avenue, Staines), since deceased; but some years later I had an opportunity of examining them in the company of Mr. J.G. Millais and of comparing them with specimens of Natterer's bat, when it was evident that they were both referable to that species. Mr. Millais himself, however, was fortunate enough to capture a specimen of Bechstein's bat in March, 1901, when visiting a chalk cave on the property of Mr. Heatley Noble at Henley-on-Thames. Of this specimen he gave a description with a figure in the Proceedings of the Zoological Society, June, 1901; and has since published an excellent coloured plate of it in his British Mammals. Until August of the present year no further example of this bat was known to have been met. On Sept. 21 Mr. H.G. Jeffery, the well-known taxidermist, of Newport, Isle of Wight, sent for my inspection a bat which had been captured with another like it in the island, and which was new to him, but which, from published descriptions of this species, he thought might be Bechstein's bat. The rarity of that species, however, and its general resemblance to Natterer's bat, occasioned him some doubt in the matter. On examining the specimen forwarded I found that his surmise was correct. It was undoubtedly Bechstein's bat, and he subsequently informed me that my identification of the species had been confirmed at the Natural History Museum. It only remained to ascertain more about it, when and where captured, and by whom. For this information I was referred to Mr. Percy Wadham, also of Newport, Isle of Wight, who in reply to my inquiry courteously informed me that he had himself captured the two bats in question . . .*

Plate 1. Close up of Bechstein's Bat, *Myotis bechsteini*, which emerged from a hole in a pear tree at Lock's Farm, Porchfield, I.W., on 6th June, 1965. *Photograph Barry Angell*

Although a specimen of the Natterer's Bat was recorded from the railway between Newport and Cowes, by the Cement Mills, on October 7th, 1965, by John Stafford (1957), there were no further records of Bechstein's Bat until a dead specimen, thought to be of this species, was found at Northwood by Clive Burland in August, 1981. This was sent to Dr. R.E. Stebbings, at Monks Wood Experimental Station, who confirmed the identification.

Bearing in mind the rarity of this species, the events of 1986 were quite exceptional. On 1st June I was brought a specimen which had been caught by a cat at Newbridge. There was little doubt in my mind that, with ears some 23 mm long, this must be a Bechstein's Bat, so I sent it off to Dr. Stebbings, who again confirmed the identification. On 19th June, an almost identical specimen, also probably injured by a cat, was found freshly killed at Copse Lane, Freshwater. In November I was handed a bat skull, which had been extracted from a Barn Owl pellet, which from certain measurements and arrangements of the teeth seemed to be that of a Bechstein's Bat, but this certainly needed confirmation so I sent it to Dr. Stebbings, who once again kindly confirmed the identification and asked me to obtain more details. On enquiry I found that the pellet from which the skull came was from a resident Barn Owl at Lock's Farm, Porchfield. On discussing this with the farmer, Barry Angell, I described the characteristic features of the Bechstein's Bat and this put him in mind of a bat which emerged from a hole in a pear tree many years ago, in 1965, and of which he took a number of photographs. He promised to look them out and let me have some copies later. These were sent to Dr. Stebbings, who once again was able to confirm '*Bechstein's Bat without any doubt at all*'. One of these photographs is reproduced here (plate 1), the only record of a *live* Bechstein bat that we have, thanks to Barry Angell.

Dr. Stebbings informs me that there are something like 60 records of the Bechstein's Bat, mostly from the southern counties, since records began, so the total of seven records from the Isle of Wight since 1909 is pretty good, and the fact that three of those records were in 1986 is quite remarkable by any standards.

References

Harting, J.E. 1909. *The Field*, 20th Nov. 1909.

Morey, F. (ed.) 1909. *A Guide to the Natural History of the Isle of Wight.* Newport.

Stafford, J. 1957. Mites found on bat. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **5**(1) (for 1956): 42.

Wadham, P. 1935. Notes on the fishes, reptiles, and mammals of the Isle of Wight. *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **2**(5) (for 1934): 395–401.

Footnote:

Since writing the above paper a further record of the Bechstein's Bat in the Isle of Wight has come to light. On 25th September, 1985, I was called to see an injured bat in the centre of Freshwater (Grid Ref. SZ/337870) by Mrs. Hartley. It had a severely torn wing, but took food readily. Measurements were taken and the bat was photographed. I rang Dr. Hutson for advice on treatment, but the bat had escaped and could not be found. The details of measurements also had been mislaid, but on showing the photographs recently to Dr. Stebbings, he stated that they showed sufficient detail for it to be positively identified as a Bechstein's Bat.

MARINE BIOLOGICAL RECORDERS REPORT 1986

Roger Herbert

Efforts this year have been primarily concerned with collating and collecting previous records from the Island's shores and updating marine biological nomenclature in Morey (1909). Contact has been made with research workers in centres of higher education who study the area and in some cases have obtained material from our shores for many years. Fieldwork this year has resulted in the following noteworthy records.

Coelenterata

Sagartia troglodytes (Price) (sea anemone)
Previously recorded at St. Helens (Morey 1909) though discovered this year in the Medina estuary adjacent to Medina Valley Centre attached to stones and weeds at MTL, and also at Newtown together with *Cereus pedunculatus* (Pennant). A colour transparency of a specimen was sent to Dick Manuel at Oxford University who confirmed without doubt the identity, though stated it as being an unusual form. This species was not listed by Withers (1979a) in his study of the macrofauna of the Medina estuary.

Velella velella (L.) (siphonophore)

Whilst walking along the south-west coast near Grange Chine during October, Mr. and Mrs.F. Sykes discovered two stranded specimens of the siphonophore *Velella velella* (L.) and another specimen was found at Chilton Chine. This is an oval disc-shaped free-floating hydrozoan with an upright "sail" giving it the common name By-the-wind-sailor. It is occasionally washed up on British shores after storms, though this is a new record for the Isle of Wight.

Mollusca

Elysia viridis (Montagu) (opisthobranch mollusc)
Found to be abundant at Bembridge on the green alga *Codium fragile* just south of Lifeboat Station. This dark green slug-like animal, which may reach 4cm when extended, stores the chloroplasts of *Codium* which continue to photosynthesize and provide the animal with carbohydrates and oxygen. This species was recorded by Morey (1909) at Horseledge.

Crustacea

The crabs *Pisa tetraodon* (Pennant) and *Macropodia rostrata* (L.) were abundant between MNTL and MLWS at Bembridge during September and October. *Pisa tetraodon* was recorded in the IOW marine fauna list (Anon., 1954) and *Macropodia rostrata* has been recorded at Bembridge by Withers (unpub.1979).

Echinodermata

Amphipholis squamata (Delle Chiaje) (brittle starfish)
This tiny echinoderm, reaching little more than 2.5cm across, has been found this year in high densities under rocks at Bembridge ledges between MLWN and MLWS, under boulders at Castle Haven and at Newtown, where it was found under stones within a fast-flowing channel under the footbridge. The species was confirmed by Prof. David Nichols of Exeter University who expressed interest in the record considering the relatively few echinoderms to be found in the area. Previously published records are St.Helens (as *Amphiura elegans* (Doubleday (1900)), IOW Marine fauna list (Anon., 1954) and at Ryde (Withers 1979b).

A sea urchin found by a diver in the Solent during the summer and originally thought to be the edible urchin *Echinus esculentus* (L.) was later identified as *Psammechinus miliaris* (Gmelin), common in the western Solent.

Fish

Other marine records include the capture of a Tadpole fish *Raniceps raninus* (L.) by a holidaymaker off the Needles. This is a new record for the Island's coastal waters of a fish which although found all round the British Isles is more common in northern Scandinavian waters. It is thought to be under-recorded rather than rare.

References

Anon.1954. *Isle of Wight Marine Fauna List 1947–1954*. Colwyn Bay.
Doubleday, H.A. 1900. *The Victorian history of the Counties of England; Hampshire and Isle of Wight*. Westminster.
Marine Biological Association. 1957. *Plymouth Marine Fauna* (3rd edn.) Plymouth.
Morey, F. (ed.) 1909. *A Guide to the Natural History of the Isle of Wight*. Newport.
Withers, R.G. 1979. Unpublished record cards, Portsmouth Polytechnic Marine laboratory, Hayling Island.
Withers, R.G. 1979a. The Marine macrofauna and flora of the Medina Estuary, *Proc. Isle Wight nat. Hist. archaeol. Soc.*, **7**(1) (for 1976): 19–30.
Withers, R.G. 1979b. Observations on the macrofauna of intertidal sands at Ryde and Bembridge, Isle of Wight, *Proc. Isle Wight nat. Hist. archaeol. Soc.* **7**(2) (for 1977): 81–89.

THE EXCAVATION OF THE FIRST PIPED-WATER SYSTEM AT NEWPORT, I.W. AND ITS ASSOCIATED URBAN PALYNOLOGY.

David Tomalin and Rob Scaife

Abstract:

An excavated portion of an elm water main system is attributed to the work of named Stuart contractors of the period 1618 to 1623. The excavation also revealed a medieval deposit including building materials which are tentatively attributed to the destruction of the borough of Newport in 1377. A spot sample of the medieval pollen spectra yields localised archaeo-environmental evidence which is compared with documentary evidence for traditional activities later recorded within the town.

Documentary evidence

On 16th October 1618 a lease was granted to Phillip Fleming *for the breaking of anie place or places in the Streets & Waies within [the] Towne & libertie [of Newport] for the convenient carryeing and conveying of wholesome spring water. . .* This project, recorded in the Newport Borough manuscripts (MSS 45/16a f 113), describes the first attempt to provide the principal town of the Isle of Wight with a piped water supply. The enterprise was funded at least partly by subscription and was intended to convey the wholesome spring water *into everye mans house that shall compound with the said Phillip for the same. A Cesterne or receptacle for the said water* was to be constructed *in any convenient place within this Towne* and the supply was to be available within three years.

Phillip apparently encountered difficulties in meeting the requirements of his contract and on 18th June 1623 a new licence was granted to Andrew James the younger *to dig and breake the streetes to bring water into and through [the] Burrough and to build Cisterns or Cisterne howses and other convenient Receptacles for the same water, under such provisions convenantes and agreements as was latelie graunted by the Maior and Burgesses of this Burrough to Phillip Flemminge Esquire,* (Newport Borough MSS 45/2 f 54v). This second attempt to convey piped water was probably successful although later the system had evidently been abandoned when the borough recorded on 12th December 1662: *that Mr Nicholas Chestle shall have the stones of the cisterne house in the beast market* (Newport Borough MSS 45/166 f 155)

The earliest plan of Newport dates from 1611 and shows a rectilinear medieval street grid (Speed 1611). The frontages on the main thoroughfares are well infilled with houses but the interior of the street blocks retain a patchwork of random orchards, gardens and plots as yet undivided into narrow burgage strips aligned on the individual houses. The streets and plots are bounded in places by walls which are represented on the map by double lines (fig.1). A recent survey of extant stone walls (Basford 1980) shows a high degree of conformity with those represented in 1611 and we may therefore assume considerable accuracy in John Speed's plan.

Speed conveys a growing town ripe for municipal improvement. The infilling of the street frontages may be reconciled with the expansion of the town's population which by

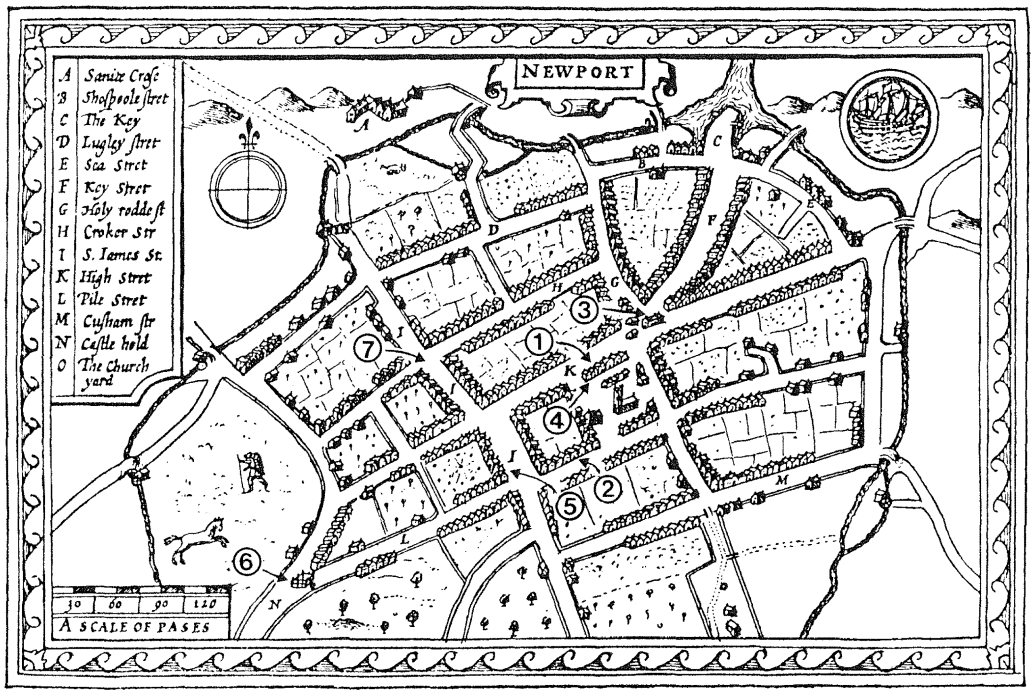


Figure 1. John Speed's map of Newport from *The Theatre of Empire of Great Britaine*, 1611.

Features cited in the text are:–

1. High Street pipe section, 1980.
2. Pyle Street pipe section, 1935.
3. The Fish Shambles.
4. The Flesh Shambles.
5. The Beast Market and site of the stone reservoir and well no. 4.
6. The Town Well (well no. 1).
7. Well no. 2

1641 had nearly trebled in less than a century to provide a total of *three Thousand soules* (Newport Borough MSS 45/16a f 406, February 1640/41; Jones 1977: 118). A further improvement of the Stuart period was the new Purbeck Stone town hall which replaced the old audit house in 1639.

The sources of water

Although the positions of public wells are not indicated on Speed's plan some may be located by reference to the town's terrar surveys of 1563 and 1651 and later records. Public wells appear to have been sunk at major street intersections. Their distribution suggests that they were primarily intended to serve the inhabitants of the south-west sector of the town who were ill-placed to make ready use of the Lukely Brook or the fresh water section of the Medina. Four wells are known and are indicated in fig.1.

1. The main town well is that still surviving under the pavement at the junction of Pyle Street, High Street and Carisbrooke Road. Apparently dug in 1818, it is too late to

have served the pipe system (Newport Paving Comm. 45/195; IW Records Office). In the 1563 terrar Survey the site is noted as the pound but the source of water for impounded animals not stated (Webster MS 5). It is included in a description of Deadmans Lane which is recorded as leading to the pound. A careful inspection of John Speed's map shows the pound surrounded by a rectangular arrangement of rails. Despite its low elevation the town well seems to have been constructed to obviate the effects of even the most severe drought. A total depth of 119 ft. was later recorded with 90 ft. of water observed. (Eldridge 1952).

2. The well at the crossroads of St. James Street and Lugley Street is cited in the Newport Terrar Book of 1563 (Webster MS 18). No trace survives.
3. A well also seems to have once been used *at the top of South Street* (Eldridge 1952). It is perhaps, like the town well, now preserved beneath the pavement.
4. The former existence of a well has also been cited in the 'beast market' in St. James Square. This may have been associated with the large reservoir which was apparently built of stone and was rediscovered here in the late 18th century '*whilst digging for stone for the purpose of paving the streets*' (Albin 1795:324–5).

Alternatives to well water were the Lukely and Medina streams. Their confluence with the tidal estuary presented problems of salt pollution which in the 16th century even permeated the town's beer (Jones 1978: 133).

The pipe system

The extent of the Stuart pipe system may be conjectured with the aid of documentary sources and archaeological observation. Two main routes of the pipe system are known.

Pyle Street

Some of the earliest finds were recovered in 1935 during drain laying for the premises of Upward and Rich. A number of short lengths seem to have been sawn from the wooden pipe on this occason and two examples have since found their way to Carisbrooke Castle Museum. A further sawn sample has also been preserved by Mr. A.J. Westmore and at least two others were discovered stored in the basement of a house in Pyle Street when the building was demolished in 1979 to make way for the new International Stores. The samples of the Pyle Street pipe average 30 cm. in diameter and show a bore of 10 cm. The boring along the trunk was made off-centre to avoid the heartwood.

High Street.

A substantial portion of the High Street pipe was uncovered by Southern Gas on the 29th March 1980. Southern Gas kindly permitted an investigation by the Isle of Wight Archaeological Committee which resulted in the first examination of a pipe junction and the preservation of 2.5 metres of pipe. The two pipes in the High Street section vary a little in their overall diameters. The preserved pipe is 30 cm. in overall diameter and has a bore of 13 cm. The west end of the pipe was tapered and shallowly inserted into a large elm pipe of 35 cm. overall diameter (fig. 2 and plate 1). The exposed junction was fitted with a flanged collar formed from a crimped lead sheet. The underside of the collar had completely disintegrated leaving only a lead oxide stain. No securing nails were found. The complete length of the individual pipes remains unknown. The thick pipe was penetrated with a sweep's rod for a distance of 3.7 m. where a blockage was

encountered. The course of the narrow pipe was uncovered for a distance of 4.7 m. but its eastern end was found to have been destroyed by an earlier road repair. In the repair backfill, particles of a destroyed lead collar suggested an overall length of some 3.5 metres. The different bores of the Pyle Street and High Street pipes may perhaps be attributed to the two respective attempts by Fleming and James at pipe laying in 1618 and 1623. The method of pipe coupling may also differ but we must await confirmation from future inspection of the Pyle Street pipe.

Pipe construction

Due to the marked contrast in overall diameters it appears that two types of complementary pipe were employed in the High Street main (fig. 2). Both ends of the thick pipes were probably fitted with female junctions while each end of the thin pipes were correspondingly tapered to form male ends. The pipes therefore appear to have been laid alternately along the street. This arrangement appears to contrast with the method used in 17th-century London where each pipe possessed both male and female ends. The London pipes appear in a contemporary illustration showing a trunk route of 4 pipelines crossing the Fleet (King & Staples 1949: 18). Such pipes seem to have been welcomed as an alternative to their short-reach interlocking ceramic predecessors which are known in thirteenth-century contexts at Brooklands, Weybridge and the Laverstock kilns (Hanworth and Tomalin 1977: 61, 66 and 72; Musty 1969: 141–142).

An illustration from John Evelyn's '*Sylva*' dated 1670 shows the construction of wooden pipes on a lathe bench. The craftsman has at his disposal a variety of iron augers which he is able to fit to a drive geared to a waterwheel.

The life of the pipes

Depending on the soil in which they were laid, the useful life of wooden pipes seems to have varied from under 4 years to 25 years (King & Staples 1949: 18). In Newport High Street the subsoil comprised stiff grey clay, a material conducive to pipe survival. If completed it seems unlikely that the pipe system functioned any longer than the optimum 25 years. The record of the demolition of the cistern house in the beast market in 1662 makes no reference to renewals and it seems that by this date the system was already defunct. By 1795 the entire system had not only been abondoned but completely forgotten. Albin comments *this town, it is discovered, was formerly supplied by water for which purpose there was a large reservoir in the beast market . . . It is greatly to be regretted that such work does not now exist.* (Albin 1795: 324–5). By this date the town appears to have reverted to the usual public and private wells and no mention is made either of the Lukely or Medina streams which by now were presumably polluted. Albin remarks that the town might be *supplied with the most excellent water from a spring at Carisbrooke, not half a mile from it, at easy expense.* The wells may have been supplemented at this time by private reservoirs such as the circular brick structure revealed during the demolition of the 18th-century Boots the Chemists building in the High Street in April 1980.

The Medieval and later stratigraphy

The pipes recovered in 1980 were entrenched through earlier deposits of medieval age containing much 'midden' material comprising shell, bone and substantial quantities of burnt slate (fig. 3). This material (level 2) was enclosed within black clay (5Y2.5/2) varying from 10 to 30 cm. in depth and resting directly on the natural clay of the neighbourhood (level 1). This midden material is tentatively ascribed to the late

Figure 2. The 17th century elm pipe at Newport High Street, 1980. The male tapered end is secured with a lead collar.

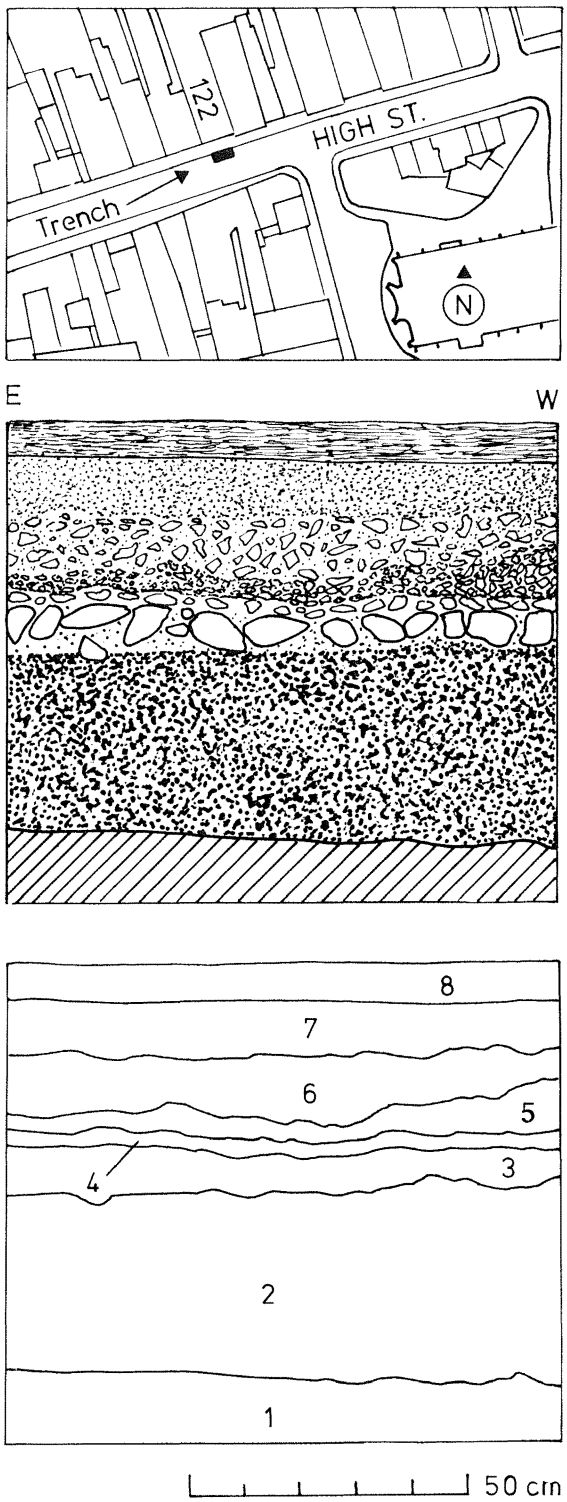


Figure 3. The Newport High Street section. The numbered levels refer to the text.

Plate 1. The first piped-water system at Newport, Isle of Wight. Section of the elm water main with lead collar junction, laid 1617–1623. (Newport High Street 1980) *Photographs Les Allan.*

fourteenth century. The midden deposit was overlain by a single layer of flint nodules (level 3) covered by a thin deposit of scattered chalk particles some 2 cm. deep (level 4).

Level 5 comprised a blackened gravel (2.5YN2) between 6 and 10 cm. thick which appeared to descend into the backfill of the Stuart pipe trench. It was overlain by a well-compacted dark brown gravel (10YR3/3) some 15 cm. thick supporting a road surface metalled with impacted chalky flint modules (level 6). This level post-dated the insertion of the Stuart pipes. The uppermost deposits comprised a modern cemented aggregate sealed with a tarmacadam surface.

It would appear that three old road surfaces are represented in the section, the earliest being the level 3 road which post-dates the midden. During this first attempt at metalling, flint nodules were probably obtained from the chalk downs immediately south of the town. This event seemingly post-dates the comments of Sir John Oglander (1585–1655) who describes the streets of Newport as unpaved *since my memory* although a View of Frank Pledge for 12 October 1573 records the presentment of William Kenneth for *taking up stones out of the high waie in Lugley St.* (Newport Borough MSS 45/21, f 155; Jones 1978: 131). There follow at least two further attempts at road metalling during which estuarine gravel was probably dredged from the nearly Medina. It is possible that further layers of periodic gravelling remain undifferentiated in levels 5 and 6.

Pollen Analysis

A single pollen sample was taken from the upper portion of level 2 where medieval midden deposits overlay a scatter of burnt roof slates. Standard pollen preparation techniques were used for the extraction of the pollen. A sum of 300 pollen grains excluding spores was counted and calculated as a sum of total pollen (TP). The total of 41 taxa recorded is listed in Appendix 2.

This pollen spectrum is dominated by high herbaceous totals (82% TP) and correspondingly low arboreal (13.7% TP) and shrub totals (4.3% TP).

a) *Arboreal pollen*: is dominated by *Quercus* (Oak) (4.3% TP) and *Pinus* (Pine) (6.7% TP). It was noted, however, that a dual preservation character was present. *Pinus, Picea* (Spruce) and *Tilia* (Lime) all exhibited badly degraded pollen exines, whereas *Quercus, Betula* (Birch) and *Alnus* (Alder) were more consistent with the remaining pollen taxa. The former group is undoubtedly of earlier date being derived from underlying but intermixed interglacial river terrace deposits (River Medina). This is substantiated by the presence of *Picea* pollen otherwise unexpected in such urban medieval contexts. The low frequencies of the contemporaneous group are dominated by *Quercus*. Whilst it is equivocal to discuss the origins of these elements it may be conjectured that these taxa are representative of forest growth on Palaeogene clay areas. There is substantial evidence (Scaife 1980) showing that by the thirteenth century, the only remaining areas of extensive woodland/forest in the Isle of Wight existed to the north of the chalk ridge from Parkhurst to Newtown Creek, and at Borthwood. In addition smaller areas of deciduous woodland existed in the eastern part of the Island, and much alder carr woodland remained in valley mire communities. It is likely, therefore, that the low *Quercus* and *Alnus* pollen totals reflect firstly the very local nature of the pollen input to the sample and secondly a more general trace of pollen from relatively distant arboreal communities.

b) *Shrubs*: Dwarf shrubs have been included in this category. Low pollen frequencies of *Corylus* type (Hazel) and an individual record of *Prunus* type may also be attributed to regional pollen 'fall out'. Ericaceous shrubs – *Calluna, Vaccinium* and Ericales spp. are, however, more enigmatic types. Although these genera may have derived from natural dispersion it seems plausible that they are the result of indirect anthropogenic introduction into the sample.

c) *Herbs:* These are represented by a diverse assemblage of herb pollen taxa amounting to 82% of total pollen. These are further divisible into a number of ecological and ethnobotanical categories:

i) The preponderant types are those of urban ruderals. While it is not possible to separate all pollen to lower taxonomic levels, it is evident that such groups as *Linaria*, *Taraxacum* type (including numerous genera) and *Plantago lanceolata* were common and may perhaps have been dispersed in much the same manner as those reprehensibly cast in the street by Robert Fuller in 1592 (Hillier 1860, II: 24).

ii) Arable pollen and associated types; Cereal type pollen (generally larger than 50 microns with large pore/annulus ratio) represent 8% TP and may be associated with Cruciferae (*Hornunqia* and *Sinapis* types), *Polygonum aviculare* and *Centaurea cyanus*. These pollen taxa are likely to be a secondary anthropogenic introduction to the sediments. Evidence of cereal pollen in urban contexts has been discussed (Greig 1981, 1982; Scaife, 1982, 1987a; Scaife *in* Macphail 1981) where relatively high totals appear to have derived from cesspits, animal feed and animal excreta. In the example presented here, it is fortunate that documentary evidence is available – albeit referring to a period a century or so later – showing that corn winnowing in the High Street and the wandering of pigs were common problems within the Elizabethan town. Pollen of this type was no doubt further dispersed by the likes of one Norton who in 1590 was presented to the Bailiffs for *making a mixon nere the churche dore* (Hillier *ibid*). These activities persisted to such an extent that by this time by-laws had been passed restricting them to the outer areas of the town (Jones 1979). It is likely, therefore, that the cereal and allied taxa may be the direct product of such activity. It has also been shown by Robinson and Hubbard 1975) that cereal pollen may be transported in the bracts of cereals. Two caryopses of *Hordeum* (Barley) are noted in Appendix 1 and it seems unlikely that these are similarly related to this discussion. In the latter case, carbonised barley may be a waste product inadvertantly or deliberately thrown onto the street.

iii) The dominant pollen taxon is that of Gramineae (grasses) (40% TP). This is the most enigmatic type due to the lack of taxonomic differentiation created by the generic and species similarity of pollen morphology. Its broad ecological amplitude also creates problems in the interpretation of such high individual percentages. Consequently, only broad inferences can be made, which are based on rather limited understanding of urban environmental and pollen depositional contexts. Gramineae being high pollen producers and of anemophilous nature result in widespread pollen dispersion and become easily incorporated into sediments. This factor may suggest that at least some, if not all, of the pollen may have derived from outside of the urban area from a wide range of grassland communities known to have been present at this time (Scaife 1980, 1987b). Similarly as with the ruderals discussed above, Gramineae spp. would undoubtedly form part of 'waste ground' and 'back garden' flora contributing to the pollen record. Secondary anthropogenic casual factors may be largely responsible for the high Gramineae totals from an almost unlimited range of possibilities. These might include the use of grasses gathered for thatch, production of daub, animal foodstuffs, or from animal dung and floor coverings thrown into the street.

The interpretation of pollen spectra from urban contexts present various problems relating to their mode of origin and to theoretical palynological questions. Interpretations have to be based on an understanding of both natural pollen productivity, the dispersal of urban plant taxa and on the archaeological/archaeoenvironmental connotations which can be placed on a large number of enigmatic pollen types encountered in

such studies. Here, this is clearly seen where cereal pollen can be functionally related to documentary records. This may not, however, be so evident where other cultural pollen types may be represented in the pollen record, e.g. *Linum* (Flax), *Cannabis* (Hemp), *Fagopyrum* (Buckwheat). This problem can become palynologically complicated where taxonomic separation of pollen types to species or even generic level is not at present possible. Further complications in the degree of representation of such a spectrum are increased by the lack of spatial and/or temporal limits which can be placed on an individual sample of this nature. Analysis of sediments from Newport High Street might be expected to provide some evidence for the character of localised 'back garden' crop cultivation in plots of land which we have noted from our study of John Speed's map (1611). The growing of peas, beans, flax or hemp could be expected to give the requisite pollen categories in this spectrum and their notable absence here deserves comment.

Two possible explanations may be that:

i) vegetable crops, flax and hemp were not cultivated during the period represented by this pollen spectrum.
ii) The pollen influx to such an area must be of an extremely local or specialised nature.

The latter viewpoint seems the most plausible, as Dimbleby (1969) has suggested that pollen input to soil pollen profiles is representative largely of an on-site growth. The effects of pollen dispersion must also be influenced by the proximity of the rows of houses shown by Speed along the street. A wider range of samples taken whenever possible should allow the formulation of a better picture of land use in the urban allotments.

Interpretation and conclusion

The archaeological evidence from the Newport High Street section may be assigned to two main periods.

1. The medieval deposits in level 2 (fig. 3) contained butchered beef and mutton bones and substantial quantities of oyster shells all of which are consistent with the close proximity of the fish and flesh shambles as later recorded in the town's terrar survey of 1563. Although no dateable artefacts were recovered from this level a notable quantity of intensely burnt slate from the basal part of this deposit appears to be of chronological significance. The slates closely resemble those of Delabole character which have been excavated in the early Medieval range of domestic buildings within the southern ward of Carisbrooke Castle. The importation of 10,000 slates from Cornwall is recorded in the Castle Accounts for the years 1327 to 1334 (Stone 1891, 1, 76). Further examples of this green roofing slate have also been recovered during fieldwork on the site of the first Nunwell House which was abandoned by the Oglander family after the French invasion of the Island in 1377. The later use of these slates in the Isle of Wight is unattested and there appears some reason to suspect that the Cornish imports may not perhaps have persisted after this date. At Carisbrooke Castle, later buildings are roofed with tiles of terra cotta and Stonesfield limestone and no further record of Cornish slate is evident. In the excavated section of Newport High Street the intense heating and discolouration of quantities of roofing slate seem compatible with the burning and collapse into the street of a large building roofed in the fourteenth-century manner. The survival of this debris in the main thoroughfare of the town might be credibly attributed to a major disaster followed by a period of civil disarray during which the street remained uncleared. The evidence suggests that the destruction level revealed in this section may be the first

archaeological record of the historic burning of the town during the French invasion of August 1377 after which it is recorded that *no tenants were there resident* for upwards of two years (Hillier 1860, 11: 5–6). A particular casualty of the French invasion may have been the owner of the three thousand Edward III and earlier silver pennies, the discovery of whose hoard in 1849 beneath premises in the High Street was noted by Hillier (*ibid*). Corroborative evidence concerning the French invasion should certainly be sought whenever further opportunities to examine the basal level of the High Street occur.

2. In addition to the localised urban environmental evidence attributed to the post-1377 period, the spot sample of arboreal pollen also offers some tentative corroboration of the historical evidence for the progressive loss of woodland habitat outside the margins of the town. For the encroachment of Newport interests on to Parkhurst Forest we may cite some significant documentary milestones. The town's charter given by Earl Richard de Redvers in the later twelfth century gave the burgesses of the borough *pasture in the lands of Parkhurst free of herbage* (Shepard 1984: 5). In c 1264 the Forest retained by the de Redvers family was capable of yielding annually 30 bucks and does, as well as pannage and pasture for 40 swine and pasture for 150 cattle (Hillier 1860, 1: 86). From these entries we may deduce that the pasture cited was still recognised as former woodland. It would also seem likely that at this time some deciduous woodland still abutted the northern boundary of the town at Forest Gate (or Town Gate as it is latterly known) for it is recalled in an Elizabethan document concerning *the auncient usags and olde customes of the Borowgh of Newport* that on *the ffirst Sonday aftor Maye daye . . . it wase an Auncient custome for the Baylie and all his Brethren to meete at the wood ovis in the fforest (a place now not knowne, but it wase the edge of the wood where the hill beginneth to ryse as soone as you ar on hoonye hill; and it was so thicke a wood that a man might goe from tree to tree almost 2 miles in length)* . . . (Hillier 1860, II: 21, quoting from Newport Borough MSS, 45/2).

The Hunny Hill boundary brings the former forest margin to within 500 metres of our excavation in Newport High Street, yet the arboreal pollen obtained from this site offers no significant evidence. From these observations we may suspect that the main incursion into the remants of the borough's adjoining woodland may have been initiated by timber felling to redresss the widespread destruction, by the French, of the town's timber buildings of 1377. After this date over-zealous foraging in Parkhurst no doubt promoted further tree loss so that by Elizabethan times *cuttynge greene bowes indureth for the holie daye, eves, and mornynge times only the May moneth; and people, of custome, owght to goe but once a daye, But sere and broke woode, the said inhabitants of the towne hathe ben accustomed, time owte of mynd, to fetche home att ther Backe wth their pickards from the woode aforesaid, all the yere longe, savinge only the seme moneth; and also to have, by estimaceon, 30 acres of firses and other fewell in the said lanndes wthowt the said woode, all tymes of the yere, wthowt excepcon.* (Hillier 1860, II: 21). With timber always in ready demand it is not surprising to find that in 1559 the townsfolk were honestly able to reply to Sir Francis Knollys' Commission that *we have noo woods, copsis nor tymber within ower lybertie.* (Hillier 1860, II: 15). It seems probable that by this time too, intrusion from the urban fringe had near but extinguished the former indigenous deer population, for William Camden (1637: 273) adds that the Island has *one little forest. . . . and two parkes* replenished *with deere, for game and hunting pleasure.*

3. The Stuart pipe system of Newport marks a period of civic improvement in the early 17th century which is probably commensurate with the expansion of the town's population. The Newport pipe system was laid by two successive contractors and the archaeological evidence suggests that water engineers of this period may have adopted their own individual methods of pipe construction and joining. No evidence for pipe maintenance is known and by 1662 the system was probably defunct.

Site archive

The artefacts and records concerning the Newport High Street water pipe excavation are retained in the Isle of Wight County Archaeological Collection under the primary record number IWCAC 1553.

Acknowledgements

The joint authors wish to thank members and friends of the Isle of Wight Archaeological Committee for their assistance in the rescue excavation. In particular we wish to express our thanks to Southern Gas and their employees David Phillips and Terry Stallard for invaluable assistance in uncovering a substantial section of this early water main, to Richard Griffiths and Bob Liddington for their help in the excavation and to Barry Price for providing transport and storage facilities. Record photographs were taken by Les Allan, Frank Taylor and Norman Davis, and drawings were prepared by Frank Basford. We are grateful to our colleagues Dr. Jack Jones and Mr. R.B. Reeve for historical advice and for analysis of the faunal remains and to David Motkin for editing the text.

Bibliography

Albin, J. 1795., *History of the Isle of Wight*, Newport.

Anon. 1935. An Ancient Wooden Water Main. *Isle of Wight County Press*, 2nd Feb. 1935.

Basford, H.V. 1980. *The Vectis Report. A survey of Isle of Wight Archaeology*. Newport.

Buckland, P.C. 1974. Archaeology and environment of York. *Journ. Archaeol. Science* **1**: 303–316.

Camden W. 1637. *Britannia, A chorographicall description of the most flourishing Kingdomes, England, Scotland and Ireland.*

Dimbleby, G.W. 1969. Pollen analysis. p.167–77 *in* Brothwell, D. & Higgs, E. (eds.) *Science in Archaeology* (2nd. edn.).

Eldridge, R.J. 1952. *Newport in Bygone Days.* Newport.

Evelyn, J. 1670. *Sylva; a discourse on Forest Trees* (2nd ed.). The Royal Society.

Greig. J.R.A. 1981. The investigation of a Medieval barrel-latrine from Worcester. *Journ. Arch. Science* **8**: 265–282.

Greig, J.R.A. 1982. The interpretation of pollen spectra from urban archaeological deposits. p.47–65 *in* Hall, A.R. & Kenward, H. (eds.) *Environmental archaeology in the urban context,* CBA Res. Report 43.

Jones, J.D. 1978. *Isle of Wight 1558–1642.* Unpub. Ph.D. thesis, University of Southampton.

Hanworth, R. and Tomalin, D.J. 1977. Brooklands, Weybridge; The excavation of an Iron Age and Medieval site. *Surrey Archaeol. Soc. Research Report 4.*

Hillier G. 1860. *The History and Antiquities of the Isle of Wight: Part I, General History; Part II, The Borough of Newport.* London.

King, P.S. and Staples 1949. *The Water Supply of London.* London.

Musty, S. 1969. The Medieval pottery kilns at Laverstock near Salisbury, Wilts. *Archaeologia* **102**; 83–150.

Newport Borough MSS. I.W. County Records Office.

45/2 The old Ligger Book, 1567

45/16a Convocation Book, 1609–1659

45/16b Convocation Book, 1659–1760

45/21 Borough Court Book, 1562–1588

Robinson, M. and Hubbard, R.N.L.R. 1975. The transport of pollen in the bract of hulled cereal. *Journ. Archaeol. Science,* **4**; 197–9.

Scaife, R.G. 1979. Pollen analyses of some Dark Earth samples. *Anc. Mon. Lab. Report* No. 3001. Historic Buildings and Monuments Commission for England.
Scaife, R.G. 1980. *Late Devensian and Flandrian Palaeoecological Studies in the Isle of Wight*. Unpub. Ph.D. thesis, University of London.
Scaife, R.G. in Mcphail, R.I. 1981. Soil and botanical studies in the 'Dark Earth'. p. 309–331 *in* Jones, M. & Dimbleby, G.W. *The Environment of Man, the Iron Age to the Anglo-Saxon Period*. B.A.R. British Series 87.
Scaife, R.G. 1982. Pollen report. *In* Mills, P., Excavations at Broad Sanctuary, Westminster. *Trans. London Middlesex Archaeol Soc.* **33**: 345–365.
Scaife, R.G. 1987a. The Late Devensian and Flandrian Vegetation of the Isle of Wight. pp. 156–180. *In* Barber, K.E. (ed.) *Wessex and the Isle of Wight*. Quaternary Research Association Field Guide, Cambridge 1987.
Scaife, R.G. 1987b. A review of later Quaternary plant microfossil and macrofossil research in Southern England; with special reference to environmental archaeological evidence, pp. 125–203 *in* Keeley, H.C.M. (ed.) *Environmental Archaeology: a regional review*. Historic Buildings and Monuments Commission for England. Occasional Paper No. 1.
Shepard, W. 1984. *Newport, Isle of Wight, Remembered*. Newport.
Speed, J. 1611. Wight Island described in *The Theatre of the Empire of Great Britaine*. London.
Webster, C.D. MSS. Abstract of the Newport terrar Book 1563.

Appendix 1

Newport High Street – Macroscopic Remains

a) Medieval

Agrostemma githago	seed	2
Chenopodium album	seed	6
Corylus avellana	nut fragments	4
Hordeum vulgare	caryopses (carbonised)	2
Juncus sp.	seed	1
Rubus sp.	thorns	2
Rubus sp.	seeds	3
Rumex (sp. indet.)	achene	2
Trifolium sp.	seed	1
Urtica	seeds	9
Crataequs	spike	1

It is apparent that the majority of types recovered are typical ruderal taxa (e.g. *Urtica*). The relatively low absolute frequencies obtained may reflect the poor incoporation of macro-plant remains into urban street deposits. *Hordeum vulgare* (barley), *Corylus avellana* (hazel) and *Agrostemma githago* are interesting and possibly derive from urban refuse.

b) Wooden water pipe
1 pipe section identified as *Ulmus*

c) Bones present in macro-extraction
Ovicaprid.
Fish (sp. indet.)

Appendix 2

Newport High Street, medieval levels – Pollen Data

	Count	% Total Pollen
Pollen:		
Betula	2	0.7
Pinus	20	6.7
Picea	3	1.0
Quercus	13	4.3
Tilia	3	1.0
Alnus	5	1.7
Corylus type	3	1.0
Prunus type	1	0.3
Calluna	4	1.3
Ericales	3	1.0
Vaccinium	2	0.7
Ranunculus type	1	0.3
Sinapis type	8	2.7
Hornungia type	2	0.7
Caryophyllaceae undiff.	1	0.3
Chenopodium type	1	0.3
Trifolium type	4	1.3
Papilionaceae undiff.	1	0.3
Rosaceae undiff.	1	0.3
Potentilla type	1	0.3
Umbelliferae	3	1.0
Polygonum aviculare	2	0.7
Rumex	3	1.0
Urtica type	1	0.3
Rhinanthus type	2	0.7
cf. Linaria	3	1.0
Scrophulariaceae undiff.	2	0.7
Lamium type	1	0.3
Plantago lanceolate	9	3.0
Rubiaceae	2	0.7
Bidens type	1	0.3
Anthemis type	9	3.0
Centaurea nigra type	2	0.7
C. cyanus	4	1.3
Taraxacum type	27	9.0
Cyperaceae	2	0.7
Gramineae	120	40.0
Cereal type	24	8.0
Unident. pollen	1	0.3
Total Pollen Count	300	
Pre-Quaternary taxa	2	0.7
Spores:		
Pteridium aquilinum	7	2.3
Dryopteris type	5	1.7
Polypodium	1	0.3
Nematodes:		
Trichuris sp.	1	

Appendix 3

Bones

A small sample of bones taken from the medieval deposit was identified by Mr. R.B. Reeve (Institute of Archaeology). This included:-

1 possible individual bovid having cut marks
1 equid tooth
7 fragments of ovid or caprivid having cut marks
1 fish vertebra

These results are consistent with the documentary evidence for the traditional presence of the Flesh Shambles (fig. 1) on the south side of Newport High Street (Jones 1978, 120) where the 'boochers' are cited in 1575 (Newport Borough MSS 45/21 f 191).

PAGES FROM AN ARCHITECT'S NOTEBOOK

John Nash; some minor buildings in the Isle of Wight. Part 1

Nigel Temple M.Litt., PhD., ATD, RWA.

The architect John Nash (1752–1835) entered into partnership with Humphry Repton (1752–1818), landscape gardener, in about 1796. Repton's two architect sons – John Adey Repton (1775–1860) and George Stanley Repton (1786–1858) – were assistants in the practice that ended acrimoniously in about 1802. As a result, John (who was deaf) joined his father (who had no formal architectural training), and George remained with Nash to become his chief assistant. He left Nash's office, not long after marriage in 1817, to set up an independent practice.

During his years with Nash, George Repton kept several notebooks. We are concerned here with only two of them. One is in the RIBA Drawings Collection. Undated, the contents suggest that it was used from about 1800 to 1805. Its pages are watermarked 1798. The second notebook, at the Art Gallery and Museums and Royal Pavilion, Brighton, is a companion volume, the inside top board of which is inscribed with George Repton's name and the date January 1805. There is no complete watermark, but fragments make up 1799. This note-book contains drawings of or for fifty subjects. The comments below are drawn from a catalogue raisonné of the notebook, made by the present writer. For convenience and differentiation, the notebook at the RIBA is referred to here as the RIBA Notebook (or RIBANB) and the one at Brighton as the Pavilion Notebook (or PNB). The former has been foliated; hence (e.g.) RIBANB ff.93r-93v. The latter has been paginated, hence (e.g.) PNB 30,31. Several references are made to Sir John Summerson's *The Life and Work of John Nash* (1980) – referred to here as Summerson, *Nash* (1980). Sir John earlier wrote the first biography of this architect.

Commentaries on four further buildings will appear in the next issue of this journal.

PNB 30, 31

The RIBA Notebook contains thirteen subjects that can readily be associated with the Isle of Wight, and the Pavilion Notebook includes seven more. Of these twenty, five are inscribed with the name Ward. This summerhouse-cum-gazebo (figs. 1, 2) is one, and PNB 112–113 the other design bearing his name in the Pavilion Notebook. Another cottage appears in the RIBA Notebook, as do what the RIBA *Catalogue* identifies as a 'chimney-piece' (in fact a covered seat), and an ingenious though tortuous arrangement of four cottages, each of triangular plan, contained within a rectangle.[1] These two subjects will be enlarged upon under PNB 112-113.

The Island and some of its leading residents must have become well known to George Repton. Several of his drawings in the RIBA Notebook are of local scenes. George wrote to his family from East Cowes Castle,[2] and Farington noted the frequency of his visits[3]. Nash appears to have enjoyed entertaining: one notable instance was in August 1817. The Prince Regent's cook had been at East Cowes Castle for several days, but Nash was to be disappointed in his expectation of the Royal guest, '*& the Turtle &c being*

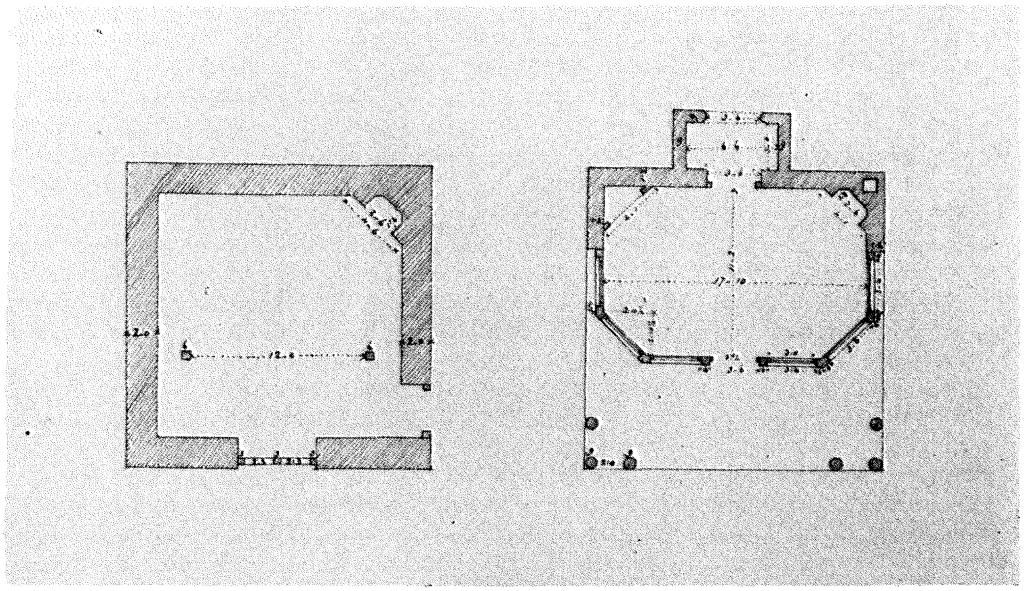


Figure 1. Ground plan and plan of upper floor of a gazebo or summer house for George Ward. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

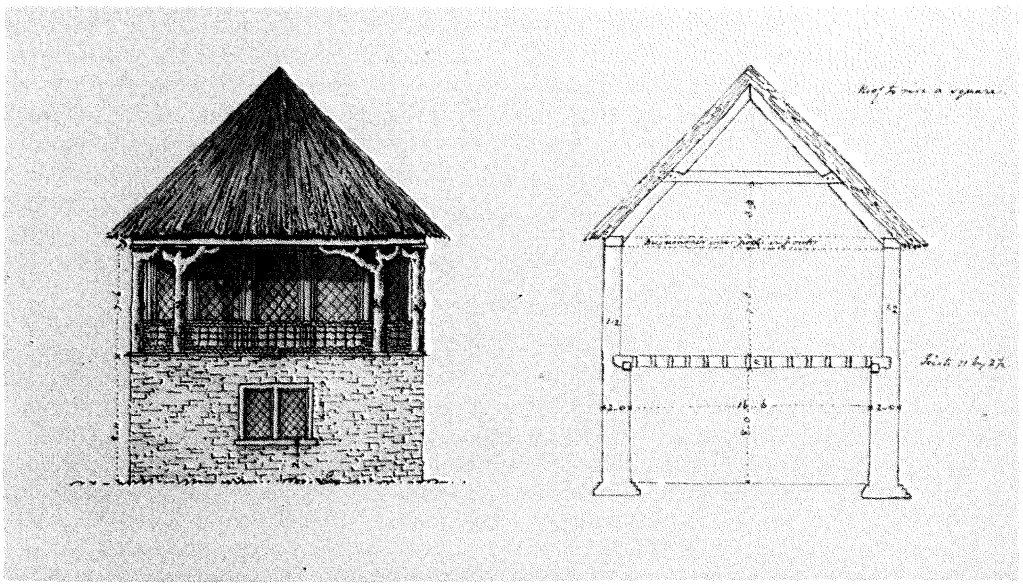


Figure 2. Elevation and cross section of a gazebo or summer house, inscribed 'Mr Geo Ward / I of Wight'. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

in a spoiling state, He yesterday sent invitations to the neighbour families to a Ball & Supper last night & 120 persons accepted His invitation.' And he was not averse to welcoming uninvited strangers even to view his house when he was already occupied: '*. . . on ringing the door bell a servant came & very civilly shewed us into the Dining room in which a table was very genteelly set for dinner for 7 persons . . . The servant then told us we might pass through the opposite room, "The Drawing room", in which was Mr Nash with company, all of whom were seated when we entered, and we only passed through the middle of the room to the Conservatory. Mr Nash bowed.*'[4]

Some of Nash's local clients were also his friends, and there would have been reciprocal visits for both social and professional reasons. As George Repton made drawings of some buildings for them and would almost certainly have managed work during Nash's absence (as he did at Blaise Hamlet), it is likely that he, too, came to know Nash's Island associates, if not socially in the full sense, at least professionally.

It might then be helpful to enlarge a little on social and topographical aspects of some clients and their possessions in order that George's drawings for Island subjects may be seen in a fuller local context. This will be done in the main under this present subject and under Ward's accompanying cottage design PNB 112, 113.

George Ward (1751/2–1829),' *an upstart financier of immense wealth who had built up a property empire in the island'*(Summerson 1980:150) was involved with Nash over many years. The two men were neighbours, Ward's Bellevue, which he renamed Northwood Park, commanding views over Cowes, Nash's Castle dominating the opposite heights little more than a mile across the Medina estuary. Their estates contained and overlooked the twin townships and waterfronts of this nearest Island harbour to mainland England. It provided a sheltered and convenient gateway to gently undulating interior landscapes and a point of departure for marine excursions around the coastline that defined their bounds. Such exclusive attractions had long encouraged men of means to build rather grand residences there and tempted seekers of the picturesque to describe and portray the scenic delights they discovered. Both Ward, '*a Merchant of great eminence in the City of London*',[5] and Nash, an ambitious architect already climbing to the top of his profession, were of the former class, unlike John Hassell, who appeared as an artist-topographer, to publish his *Tour of the Isle of Wight* in 1790. This substantial work of nearly five hundred pages in two volumes was illustrated with thirty aquatint plates very much in Gilpin's manner; and Gilpin himself had completed the text of a book that commented on the Island's scenic qualities seventeen years earlier still. As it happened, *Observations on the Western parts of England* (to which were added '*a few remarks on the picturesque beauties of the Isle of Wight*') did not appear in print until 1798 – the year that Nash started building East Cowes Castle.

Even before Queen Victoria demolished Georgian Osborne House in 1845 to build her own £200,000 residence in its place, the Island had become a most fashionable retreat '*for parties of pleasure*'. George IV had favoured it with his patronage (the King bought Debourne Lodge, Cowes, from Ward; later it was burnt down[6]) and Victoria's conspicuous and widely publicised extravagance accelerated the popular invasion that led to rapid decline towards the commercial holiday resort of today. Similarly, Hassell was followed by many other writers of less painterly vision who produced smaller but sometimes exceptionally well illustrated works. Albin, Barber, Brannon, Bullar and Cooke were prominent early contributors to what became a flood of readily portable and informative guide books.

In August 1843, one temporary resident from Bayswater was moved, when touring with her ailing husband and young daughter Agnes, to write *Glimpses of Nature. . .*, '*designed to assist and encourage young persons in forming habits of observation.*' (Loudon 1844). ' "*Your papa*," resumed Mrs. Merton, "*has been ordered to try change of air for the benefit of his health, and he has determined to go to the Isle of Wight for a week . . .taking no servant with him, . . .and as my time will be principally occupied in*

attending on him, you must contrive to take care of yourself' '[7] Agnes was about ten years of age: her mother, thirty-six.

'Mrs Merton' was Jane Wells Loudon, and papa none other than John Claudius Loudon. She finished writing her book on November 20th, and on December 14th 1843, John Claudius Loudon, one time critic of Humphry Repton, but later editor of all Repton's important works, was dead. So perhaps it was with some feeling that she noted passing East Cowes Castle, where great plans were in hand to build nearby one hundred and fifty new villas set in a gardenesque layout at East Cowes Park.[8]

The Pavilion Notebook provides the sole known reference to this first Isle of Wight design drawn by George Repton (figs. 1, 2). Close scrutiny of estate plans and the Tithe Map [9] has failed to identify the site of this gazebo, which is not surprising when it is of such simple plan, only twenty feet square and possibly never built. There are, however, clues to the architect's intentions. First, access to the octagonal upper chamber is only by way of the porch, built to the rear on that level. This either suggests that the shelter was to be constructed against a raised terrace or that it was to be built into a steep slope. The latter suggestion is supported by the two-foot thickness of the lower cell walls – greater than was normal for even a substantial two floor cottage. Here the vertical load is negligible. Second, orientation: given the 180° sweep of view from the elevated platform, it is likely that the building would be so placed as to take advantage of a remarkable prospect – perhaps towards the Hampshire mainland or across the estuary towards East Cowes and Norris Castles. Otherwise this might have been a garden shelter, placed for a view, but also as a decoration in the landscape; an occasionally useful retreat serving also as a permanent architectural embellishment in fashionable taste.

The tree trunk porch is a favourite Nash device and the instruction 'Roof to rise square' (the angle of the rafters at the ridge should be 90°) has, with very few exceptions, proved a good guide in spotting cottages associated with Nash, even if much mutilated or altered since building.

No chimney shaft is shown in the elevation (Nash's standard treatment was to show square-plan shafts to be set at 45° upon the sack: another aid to identification). Repton did sometimes forget to put chimneys in at all, yet it is known that (by 1810) Nash was very well aware of the importance of chimneys in picturesque cottage design: he might settle for the minimum or recommend the elaborate (as promoted by Uvedale Price in *Essays on the Picturesque*). Here the chimney shaft could have been the crowning feature, especially if seen against hanging woods from some middle-distant point, smoke being emitted from it by chance or arrangement on a still evening, to add movement to the scene and painterly quality to an atmospheric sylvan setting. This is just what Humphry Repton had advocated for Woodman's Cottage in Blaise Woods, [10] and Nash must have been well aware of such conceits both in theory and in practice.

PNB 112, 113

It has previously been recorded that Nash designed Cowes church tower and the Doric lodge alongside it for Ward, and there was a second classical lodge at the northern entrance ot Northwood Park. It will be shown that one other lodge, and possibly two, still standing, were to Nash's design, but before turning to these it will be timely to deal briefly with a number of buildings referable to Ward, though not directly relating to the Pavilion Notebook designs.

To take the three RIBA Notebook subjects first: the cottage (f. 27r) has not been found. It is known that there were decoratively designed dwellings around Northwood, notably nearby West Hill, '*the residence of the Misses Ward, a cottage in the English rustic style*' (Barber 1834:38) and Moor House, a Gothic villa belonging to Mrs James Ward (*idem*). These, clearly, were substantial residences compared with this minute thatched dwelling. It might well have served as a gardener's cottage in Ward's park, which Barber

Plate 1. Egypt Cottages, Cowes, March 1981. (*N. Temple*)

(*idem*) describes as being '*highly ornamental and tasteful, in situation much resembling those attached to the Parsonage, and to Mr. Fleming's seat, at Binstead; but they are less picturesque and romantic, as regards the descent towards the shore*,'[11] at which point Ward had provided for the benefit of the public a quay, so that passengers could disembark from the steam packets without recourse to small boats. Ward had been busy planting his grounds with trees as (even years after his death) Bellevue belied his renaming it Northwood Park. It is conceivable that the covered seat (RIBANB 30v, 31r) which Repton's detailing implies (despite its obviously ephemeral construction) was for an exposed situation backed by some judiciously grouped planting.

The last Ward-Nash RIBA Notebook design (ff. 93r, 93v) shows a cluster of four triangular cottages ingeniously contrived to fit within a rectangular plan: a novelty that would be expensive to build and which would prove to be of great inconvenience to its inhabitants. Such a distinctive configuration – a rectangular core with four minature 'pavilions' at its angles – one would expect to spot immediately on the Tithe Map, but no such information has been found there, or elsewhere, to reveal the site.

Presuming that a building was constructed to this design, unamended, and bearing in mind that a dozen persons might have lived in the complex, one would doubt if two generations, let alone nearly two hundred years, could pass without there being seen major improvements made to the cramped accommodation that it offers. Even if the pavilions were not demolished to facilitate enlargement, it is likely that the recesses between them would be utilised as living space. This, in turn, would necessitate reforming the roof. In either case, that singular plan would vanish, to comply with a norm, and would no longer stand out on a map.

The chimney formed a structural core, so alterations around it would leave this more or less intact. Technically very demanding to build, the shafts (which echo the overall plan of the building) would, even if not of great stature, have added an apt and conspicuous finishing touch.

To the north-west of Northwood Park is a locality called Egypt, where stand four brick-built cottages once owned by the Wards. It is said that they housed family retainers. Egypt Cottages (Plate 1) are about the same width as Repton's design, but markedly greater in length. It is though intriguing to discover that living-room fireplaces are set across the inner angle and rise through a common central stack which forms the core of the block. It is topped by an ornate brick shaft – normally hidden from view, being placed in the valley of two tiled gables; but the form of the shaft having once been seen (and surely it was built to be seen) one's suspicion of a relationship between Egypt Cottages and Nash deepens. The Tithe Map shows a block divided into four equal dwellings, as now.[12]

If there is indeed a connection here with Nash and the RIBA Notebook drawings, it appears either that Egypt Cottages were soon largely rebuilt or that drastic amendments were made before building began. It is immediately obvious that the place is much altered.[13] Alternatively, as in other such cases, it is possible that Nash's designs as such never left the drawing board; that they were submitted to a client and, although influential, were never acted upon, the client and his builder interpreting the drawings to suit situations and fancy when the occasion arose, perhaps at a different site.

We must now turn to the point of this excursion, to identify the subject of PNB 112–113 (fig. 3, 4), and in this we shall be disappointed, though (as with the four cottages) the issue is not cut and dried. Moreover the drawings will lead to a previously unrecorded building that may with assurance be attributed to Nash or an associate.

One of the most entertaining aspects of Nash's cottage designs as a body is the manner in which components of a very simple architectural vocabulary are assembled and re-assembled in various ways to give many different asymmetrical compositions. Thus they are all of a family changing from time to time in minor characteristics, though not always in their general profile (some designs are near-repeats). Then changes of scale, in materials for walls and roofing, the treatment of chimneys, and of course different situations, extend the variations further, even of similar designs.

This cottage for Ward is no exception, for the main elevation is composed of elements in common with Oak Cottage, Blaise Hamlet, Bristol (1810–11), the overall profile being reversed. A further striking resemblance to Wards's design is the cottage for Lord Vernon (RIBANB 40v, 41r). The garden front of Jasmine Cottage, Blaise Hamlet, embraces the same major features and we shall shortly add an eighth variation on this favourite theme, though no cottage complying precisely with the PNB 112–113 design has been found. Two recently discovered in Herefordshire are very close.

In 1801 – eight years after buying Bellevue – Ward had a map made of his estate.[14] His house and outbuildings are shown. 'Egypt' is named. To the west lie numerous fields, their boundaries firmly outlined, like some of the roads. Others are less confidently indicated, some tracks and footpaths being very tentatively shown. One dotted-in way meanders in a south-westerly direction from the mansion to cut across eight fields and emerge at that point on the Cowes-Gurnard road opposite a conspicuous round house (Place Road). This decorative cottage has a conical roof with festooning 'barge boards' and an ornate central brick chimney (Plate 2). Folklore has it that the Round House was designed by Nash, but documentary proof has yet to be found. Once known as Gurnard Lodge, it was owned by George Henry Ward and described in the Apportionment dated September 1846 as Turnpike House, in the occupation of the Commissioner for Roads. And to judge by appearance and siting it might well have been designed as a toll house, as distinct from a lodge.[15]

This survival is, of course, of great interest, but on looking diagonally (north-east) to the opposite corner of the junction with Baring Road we see a more substantial stone building which (though of no less importance) has been overlooked by historians and locals alike, probably because of its diverting neighbour. This, Debourne Lodge[16], was clearly built as a lodge at the entrance of that leisurely track that became the long drive to

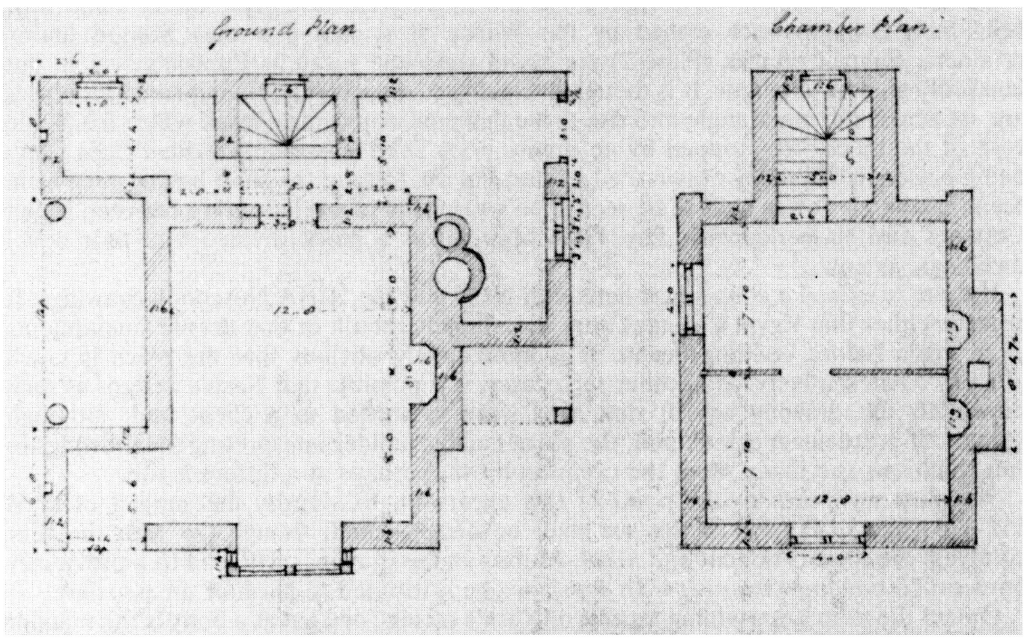


Figure 3. Ground plan and chamber plan for a thatched cottage for George Ward. George Repton. Museums, Art Gallery and Royal Pavilion. Brighton.

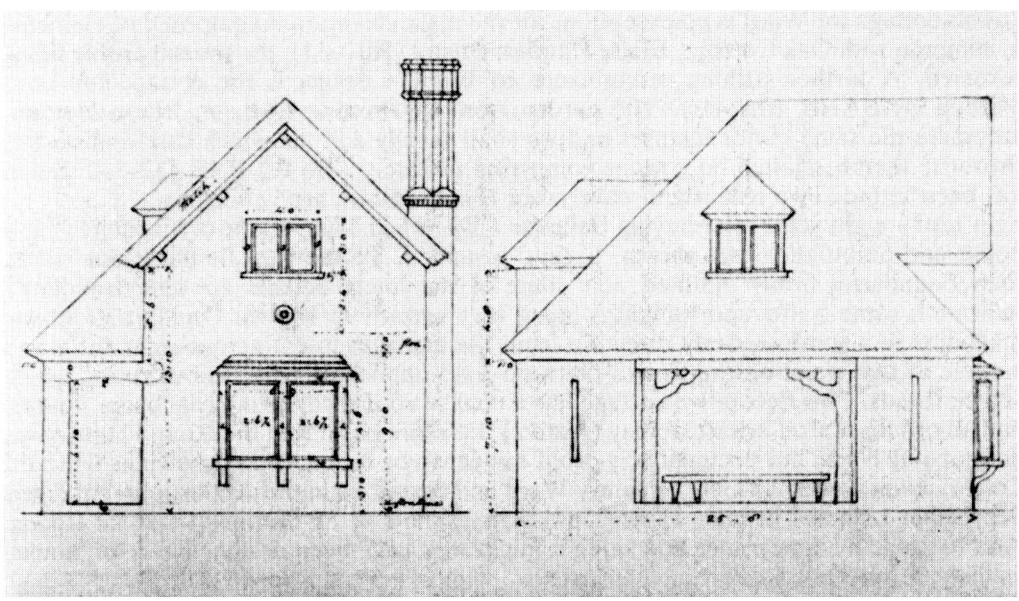


Figure 4. Two elevations of a thatched cottage, inscribed 'Mr G Ward'. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

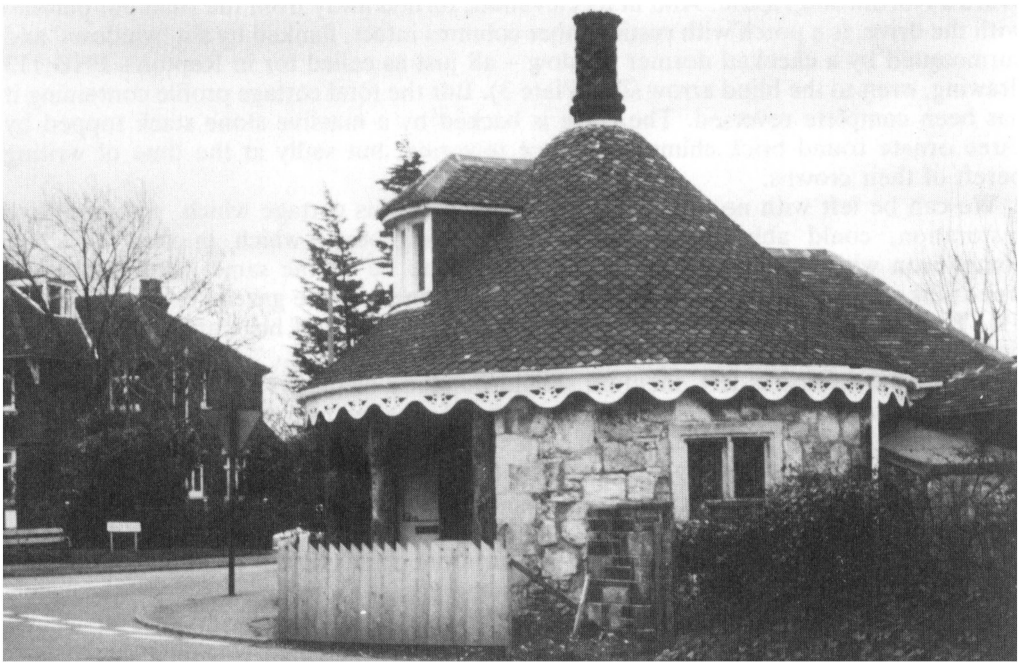


Plate 2. The Round House, at the corner of Place Road, Cowes, 1981. (*N. Temple*)

Plate 3. Debourne Lodge, at the corner of Baring Road, Cowes, March 1981. (*N. Temple*)

Ward's Northwood House. And in its elevation, turned away from the road but parallel with the drive, is a porch with rustic timber columns intact, flanked by slit 'windows' and surmounted by a cheeked dormer window – all just as called for in Repton's PNB 113 drawing, even to the blind arrow slits (Plate 3). But the total cottage profile containing it has been complete reversed. The ridge is backed by a massive stone stack topped by three ornate round brick chimneys – once towering, but sadly at the time of writing bereft of their crowns.

We can be left with no doubt about the origin of this cottage which, with sensitive restoration, could ably partner its attractive neighbour, which in turn on close comparison with Debourne Lodge would appear to be by the same hand. While the tree-trunk motif is common to both, it is also prominent in the gazebo design (PNB 30, 31). Ward had classical domestic lodges, while the outposts of his empire were decked out in the rustic style.

Before Northwood is left, mention should be made of papers in the British Library that came from the house, including a portfolio of architectural drawings that appear to be in part from Nash's office, as well as others bearing the name of G. J. J. Mair.[17] Those concerning Fort Thomas show an embattled and turreted mansion with a circular tower. Over a battlemented parapet, it looks out to sea. The plans include accommodation for 'Sr G & Lady Thomas' and bedrooms for the three Misses Thomas are shown as well. Pencilled calculations suggest that these were more than mere presentation drawings. While Nash's signature does not appear on the sheets (some of them clearly water-marked 1820) a note on one is of interest bearing in mind the subject of PNB 52, 53 (*q.v.*). There is no record of a residence for Sir George Thomas, Bt. in published lists of Nash's works, but Waverley House, East Cowes has features characteristic of Nash's work.[18]

PNB 52, 53

It is commonly understood that the Oglanders came to the Isle of Wight with the Normans. Since at least the twelfth century they have lived near Nunwell and did so continuously in Nunwell House from 1522 (Oglander 1971) until 1980. Even now, by conversion of the carriage house for domestic use, the Oglanders retain a living link with the estate. As the Pavilion Notebook is inscribed inside the front cover with the date 1805, it might well be hoped that the brewhouse drawings there inscribed 'Sir Wm Oglander' (figs. 5, 6) would give strength to the one known claim in print that Nash worked on the house during the first decade of the nineteenth century.[19]

Neither Colvin nor Davis, nor Summerson even in his 1980 biography of Nash, mention Nunwell at all. Pevsner does so, but connects only the stables with Nash's name. Positive evidence is called for to substantiate the claim and it is disappointing to find that the muniments room at Nunwell (formerly the brewhouse) bears no arithmetical relationship to Repton's drawings or recognisable resemblance to them. In no way do they fit. Yet the necessary proof has come to light elsewhere. Nash carried out extensive repairs to Nunwell and, what is more, prepared the plan for a grand new mansion for Sir William. The drawing, unsigned, but inscribed on the reverse side 'Mr. Nash's plan for a House at Nunwell',[20] delineates a building of ingenious arrangement displaying three quite different columned facades and an eleven-bay conservatory (fig. 7).

While this is not the place to examine in general the Oglander Papers, or specifically the plan in any detail, both warrant some attention in the context of Nash's recorded body of work; and of the eight documents directly concerning building at Nunwell, two have a bearing on Repton's drawing, indirect and negative as that bearing appears to be. Signed by Nash and dated February 1807 are the 'Particulars and Estimate of Repairs wanting at Nunwell', to a total estimated cost of £1954. As the paper reveals that a brewhouse already existed and that it was in need of no more than 'whitening' and one

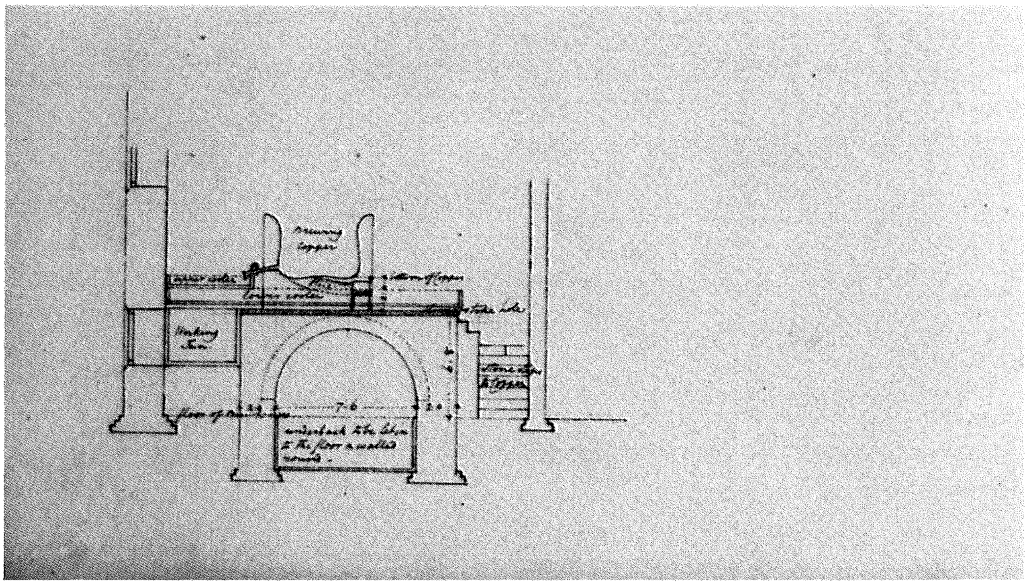


Figure 5. Section of a brewhouse for Sir William Oglander. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

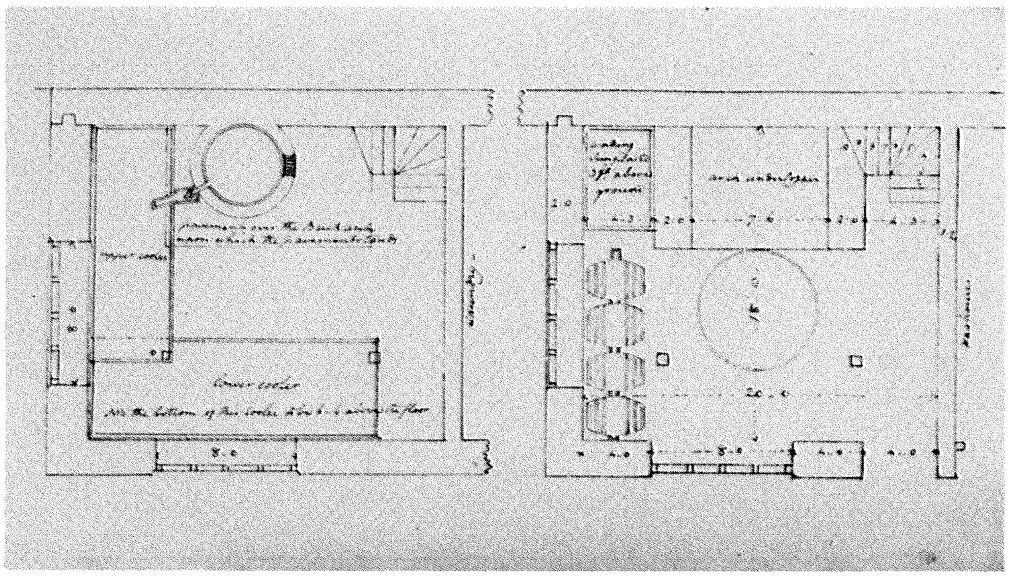


Figure 6. Plans of a brewhouse, inscribed 'Sir Wm Oglander'. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

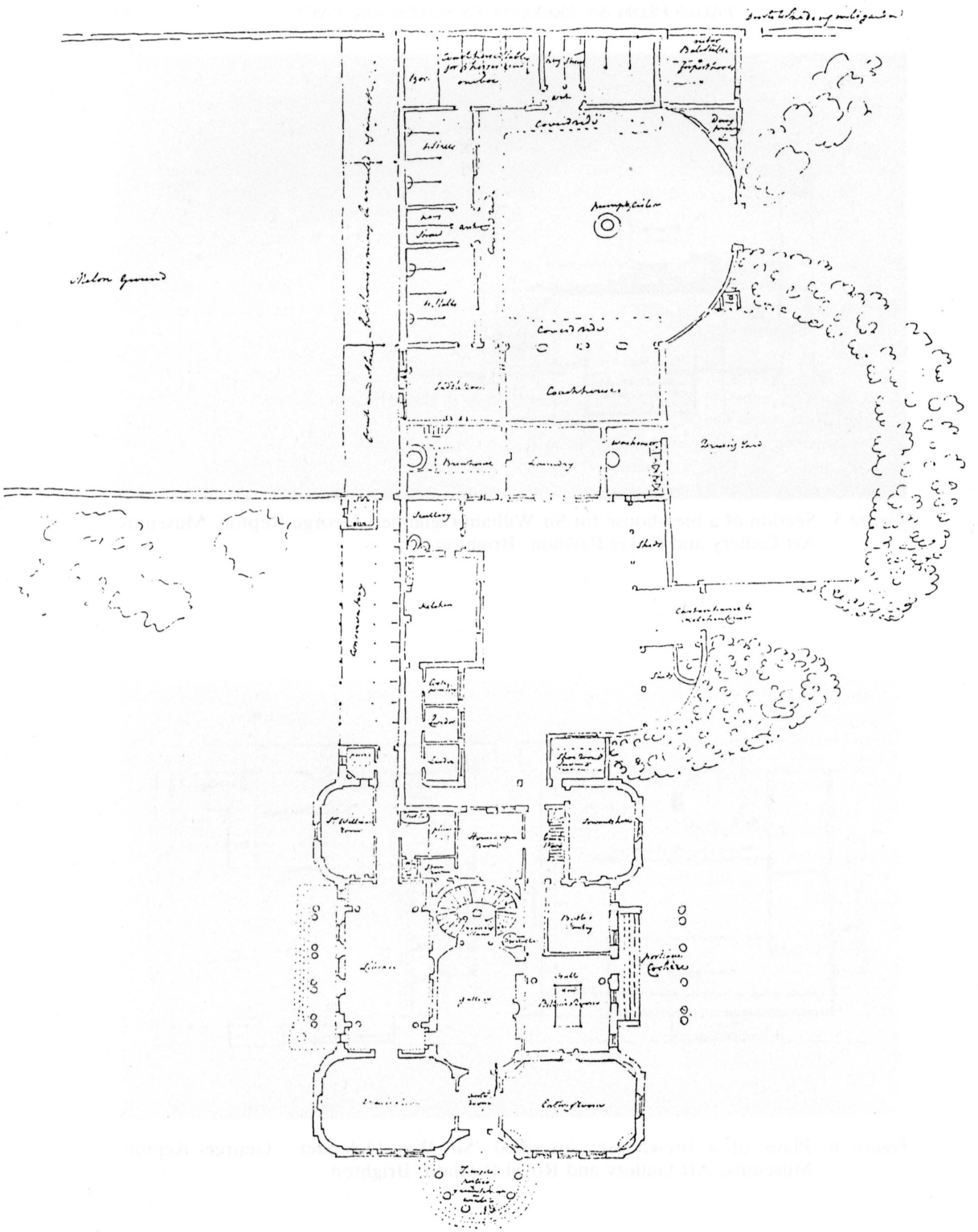


Figure 7. Plan for a large country house, inscribed 'Mr. Nash's plan for a House at Nunwell.–'. Isle of Wight Record Office OG87/21H.

minor repair, it would appear that any question of converting existing premises, re-equipping a brewhouse or of building anew did not formally arise at that time. It is, though, quite possible that George Repton's Pavilion Notebook drawings relate to an unadopted option: alternatively that work not detailed in the initial estimate was put in hand once operations had begun. While a bill for carting tens of thousands of bricks to Nunwell might support such a theory (Nash's estimate does not suggest building on this scale), the probability is diminished by inclusion of that same item and exact charge in Nash's account rendered to Sir William in 1808,[21] an account, incidentally, totalling almost precisely the original estimate submitted fourteen months earlier. It also follows that Nash's plan for a new house, if prepared before February 1807, was rejected in favour of refurbishing the old; also that Sir William, having by 1808 just spent £2000 on repairs, would have been unlikely to have commissioned plans for a complete new building to be erected in the immediate future.

What can be said of the new plan for Nunwell House is that it relates in some ways to several other large country house plans drawn up and built to Nash's design. For example, it is much like Aqualate, Staffordshire (1808) for which plans are in the Pavilion Notebook (PNB 32, 33). Then there were three castles – Caerhays (c.1808), Ravensworth (1808–c.1824) and Shanbally (Davis, c.1814, also c.1818 given: Summerson, 1818–19). All have a feature in common with the new Nunwell. Their ground floors contain a large gallery from which leads an impressive flight of stairs.[22]

In making here the convenient comparison with Aqualate Hall, it will be noted that both plans have a central axis longitudinally bisecting the gallery which is entered indirectly from the east. Major rooms are grouped broadly symmetrically about the gallery, at the north end of which the stairs rise. To the south is an ante-room between two large octagonal chambers. This ante-room also leads to the garden via a central concave bay – a feature, in the case of Nunwell, developed by external columns into a circular 'Temple portico & Greenhouse in Winter'.[23] Nunwell is also more animated and less angular, its wall junctions normally being turned by a radius inside and out. While no elevational drawings have been found, there is every indication of a classical exterior (which alone sets Nunwell apart from the other gallery houses named) with some influence from France in the handling of forms.

Perhaps Sir William Oglander (6th and penultimate baronet) laid aside Nash's plan on grounds of expense. Perhaps, though, his inheriting a mainland estate in Dorset brought new considerations to bear on his plans for the traditional family seat.

Sir Robert Strode built Parnham Hall, Dorset, in 1554. Having passed to the Oglanders by marriage, it became Sir William's, but apparently in a run-down state.[24] In 1807, with Nash again his architect, he not only undertook essential repairs, but set about reorganising, enlarging and embellishing the whole. Four years later the task was done, whereas work estimated at Nunwell had been completed in little more than one. It is then possible that Parnham became Sir William Oglander's new 'Nunwell'; or perhaps his new Nunwell only appeared on paper some years after Parnham was done, never to be built.

One range of domestic offices abutting the back of Parnham Hall is stone built, partly stripped out and now in use as a furniture-making workshop. Its very low, eight-foot-long windows with three mullions and segmental heads, its interior width, doorway, angled steps to the platform, and other features too, all comply either closely or exactly with Repton's brewhouse dimensions. Only the depth is significantly different from the measurements inscribed. Yet the number of coinciding features, the placing of windows on both floors, the brickwork supports and raised platform that remain combine to prove beyond reasonable doubt that this is the brewhouse Repton drew.[25]

A British Library folio of architectural drawings[26] details a building named Fort Thomas – a maritime residence that has every appearance of being by the hand of Nash. These unsigned and undated drawings are commented upon under PNB 112–113; but of

immediate interest is the following note on one of the drawings: *'This Brewhouse Washhouse Bakehouse and Laundry over to be fitted up in every respect like that of Mr. Nashs at East Cowes Castle'.*

PNB 56, 57

When, in 1808, William Cooke published the first edition of his *New Picture of the Isle of Wight*, he included an engraving depicting the 'Lodge or Cottage Entrance to St.John's', made after a sketch by 'J. Bonham, Esq.'. The plate is dated 1808. In the smaller second edition of 1813, the same view of two thatched cottages – one either side of a gated entrance – is shown again. Here, although the plate has been re-engraved, it has also been cut down (as have some others in the book) to fit the new format. Consequently the illustration (dated 1812) tells us rather less, as the right-hand cottage has been bisected vertically. The two texts, however, are to all intents the same.

Cooke observed of these inward-facing rustic buildings and their immediate environs: *'The taste of Mr. Repton has here been conspicuous, giving to this estate an ornament beyond what a more laboured and costly edifice would have conferred, and thus furnishing an additional gratification to the numerous annual visitors to the island, whose amusement and convenience it appears the liberal wish of Mr. Simeon to promote.'*

Cooke continues with his description: *'Within an handsome railing and gateway the avenue commences, between two charming cottages of stone, whose thatch is disposed in a pleasing manner, and in front thrown forward over a rustic porch, formed by natural trunks of trees.'* The author then tells of the jesamine, roses, clematis and virgin's bower that entwined the rustic columns. But the lodges were unique for a reason quite different from appearance alone. Cooke found the interiors *'not unworthy of remark . . . the one affording a comfortable residence for the cottager who attends the gate; the other an occasional retreat for company, where a few books, some neat suitable furniture, and the pleasing novelty of the situation, must give a charm that a fastidious taste can hardly fail to allow.'* In the porches were rustic seats – an additional and agreeable apartment.[27]

Between them, engraving and text describe exactly what George Repton drew with such care on PNB 56–57 (fig. 8,9), for it will be noticed that while only one cottage is shown the tip of thatch and one tree-trunk column on the margin of PNB 57 indicate that a companion was intended. Even so, the lodge drawn out might well have stood alone. The third, very slight perspective drawing (PNB 59) might be a visualisation, a sketch from memory, or a quick graphic note made on the spot: as will be seen, it is unlikely to have been the first of these possibilities. Not only does the perspective comply with an undated lithograph by J. Tayler, [28] with an amateur drawing, [29] and with an engraving made by Peltro from a Himphry Repton original for *Peacock's Polite Repository* for 1806, but Humphry himself describes the entrance in *Theory and Practice*, published three years earlier still. He wrote of the cottages that they *' . . . attract the notice of all who visit the island; and while one is a comfortable residence for a family, the other consists of a room near the road side, from whence the mind derives peculiar satisfaction in seeing the constant succession of visitors who leave their homes in search of happiness.'*[30] Without this first-hand inside information on the reason for the cottages having been paired, we might have questioned Repton's consistency when he wrote shortly afterwards: *'Ridiculous Park Lodges . . . the most common expedient is a pair of small square boxes on each side of the gate, making, together, one comfortless, smoky house of two rooms, separated by a gate into the park. It is the gate, and not the habitation of the man who keeps the key, which requires to be marked with importance. . .'*[31]

We have now established that the St. John's lodge must have existed by 1803, but no knowledge of the client (Edward Simeon) or of the location of the entrance lodges or of what other work might have been carried out by Nash or the Reptons has been intimated.

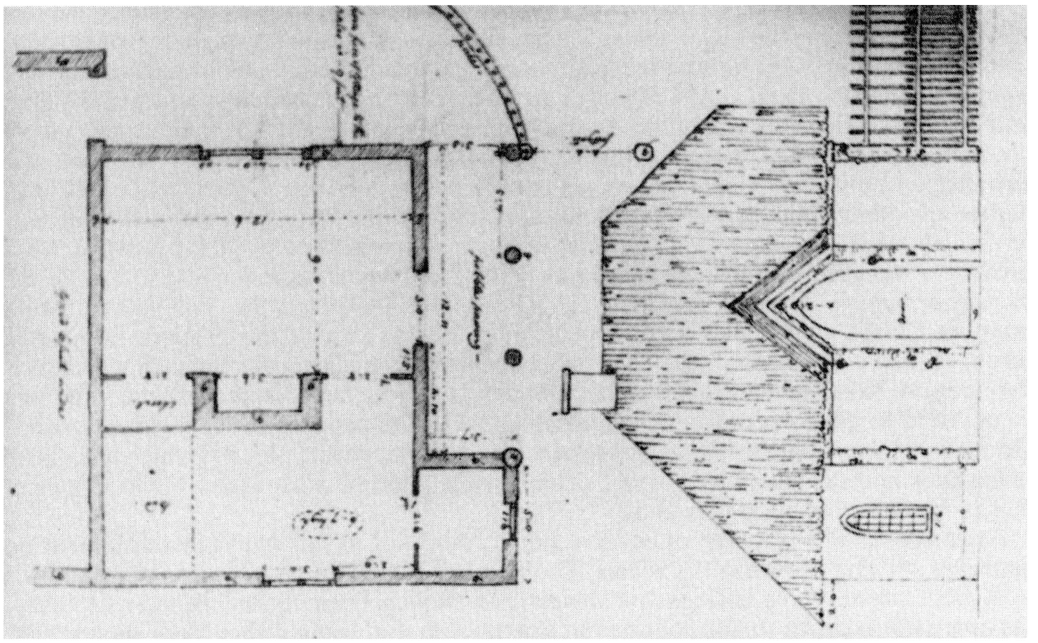


Figure 8. Part elevation and part plan for a gated entrance cottage. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

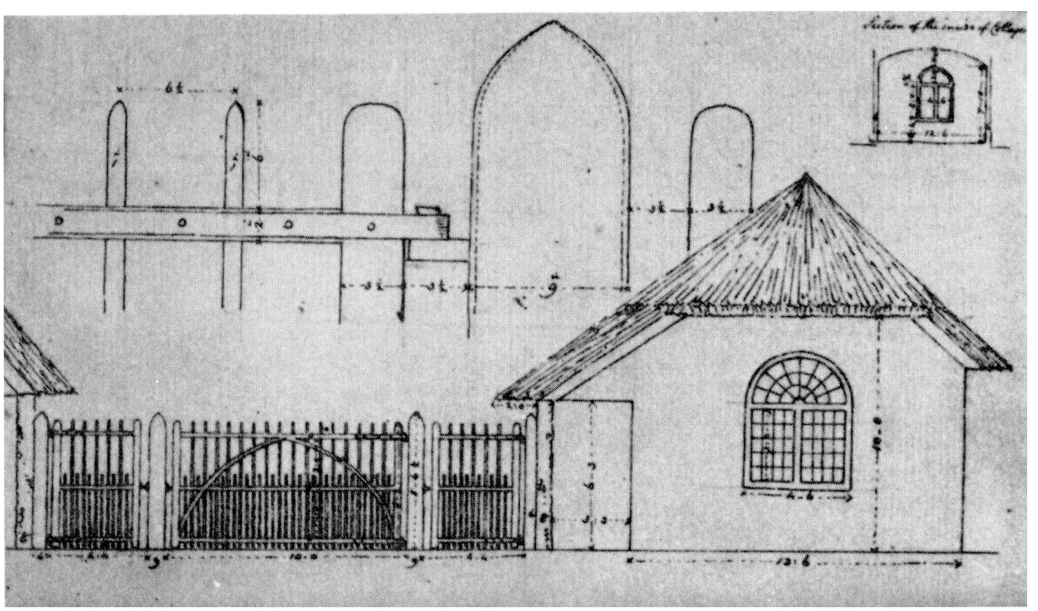


Figure 9. Elevation for a gated cottage – one of a pair – with details of gates and interior. George Repton. Museums, Art Gallery and Royal Pavilion, Brighton.

On May Day 1812 Tayler & Co. of Newport published a map of the Isle of Wight, surveyed by James Clarke. It shows clearly one building either side of the only drive leading to St.John's House and these are named 'Lodge'. Cooke (1808) tells us that the '*simply elegant approach to Mr. Simeon's grounds*' was on the road from Ryde to Brading and St.Helens, thus describing the 'Lodge' just as marked by Clarke, to the south of the house and only a short distance from it. No such lodges are there today; and while the entrance and drive are clearly shown on the Tithe Map of 1839,[32] no lodge, or for that matter any other building either, is shown at that point. *Barber's Picturesque Illustrations of the Isle of Wight* (undated in its first edition, but published in 1835) gives us what proves to be a fruitful lead when stating that '*Two pretty rustic lodges . . . mark the private or family entrance to St.John's*', (Barber 1835:20) for the Tithe Map, while omitting Clarke's lodge, shows a double lodge to the west of the grounds, almost in Ryde. A long winding drive that enters between the cottages passes through woodlands and avenues to arrive eventually at the house and outside the lodge is a circular widening in the road to give a presence and turning circle at the place of arrival and departure. Oddly the Apportionment of 1840 that describes the serpentine plot 94 (which links both lodge sites and contains most of the drive), while naming it Monkton Mead Coppice, makes no reference to lodges at all.[33]

Attractive as the entrance must have been, it did not in fact gain the whole-hearted approval of every visitor to the island. The Revd. William Norris, [34] is one who damned with faint praise these cottages of '*a new and singular description*' *(Cooke 1808:90).* Having paid sixpence to the boatman at Portsmouth and rubbed shoulders aboard with '*an assemblage of the lowest dregs of the People*', he was carted ashore at Ryde and proceeded to St.John's, about the grounds of which strangers were permitted to roam only by the express permission of the owner. But he did visit the lodge and his observations upon it are worth quoting at some length: '*At the entrance to the Avenue leading to the House are two Lodges in the Cottage stile supported by Gothic arches of the Oak Tree. There is too much ornament and Finery in these Cottages to render them pleasing or harmonious, tho' they are artificial Cottages they should still bear a close affinity to – natural ones and if such Consistency had been observed these would have had a much more pleasing effect.-*

'*Mr. S. has decorated one of these Buildings as a Tea Cottage and ornamented the inside with great propriety but I question whether he might not have chosen a more interesting spot in some corner of his Park or amidst some of his Pleasure Grounds, as this stands by the side of the Road exposed to the view of every passing Traveller – The old Woman who inhabited the Cottage said she preferred her own simple dwelling to such a splendid House, she was there her own mistress could invite her Friends, and go out a leasing, but now she was controuled by the will of another –* '[35]

The parson's tour was made as early as 1799. As Simeon bought the estate only in 1796 it is possible that both Repton and Nash were involved in planning the grounds and water-front Marina – in which a band played to entertain the public during their Sunday evening promenades. It was an embattled embellishment to the heavily wooded coastline when seen from the bay, and its tower provided a commendable viewing point of Portsmouth, Gosport and Spithead. Another engraving by Peltro, from Humphry Repton's original of the Marina, appeared in *Peacock's Polite Repository* for 1802, and Cooke used an engraving of his own as the frontispiece to the first edition of his *New Picture of the Isle of Wight.* This plate is dated 1808.

There is ample proof that some designs for cottages originating from Nash's hand were repeated (with modifications) at various places over a number of years; also that George Repton detailed some of the drawings and communicated them to the client. Shortly before Humphry is known to have been working for Simeon he had produced a Red Book for John Langston, at Sarsden, Oxfordshire. That was in March 1796 – a month after his Red Book of Blaise. George was responsible for a lot of building at Sarsden and

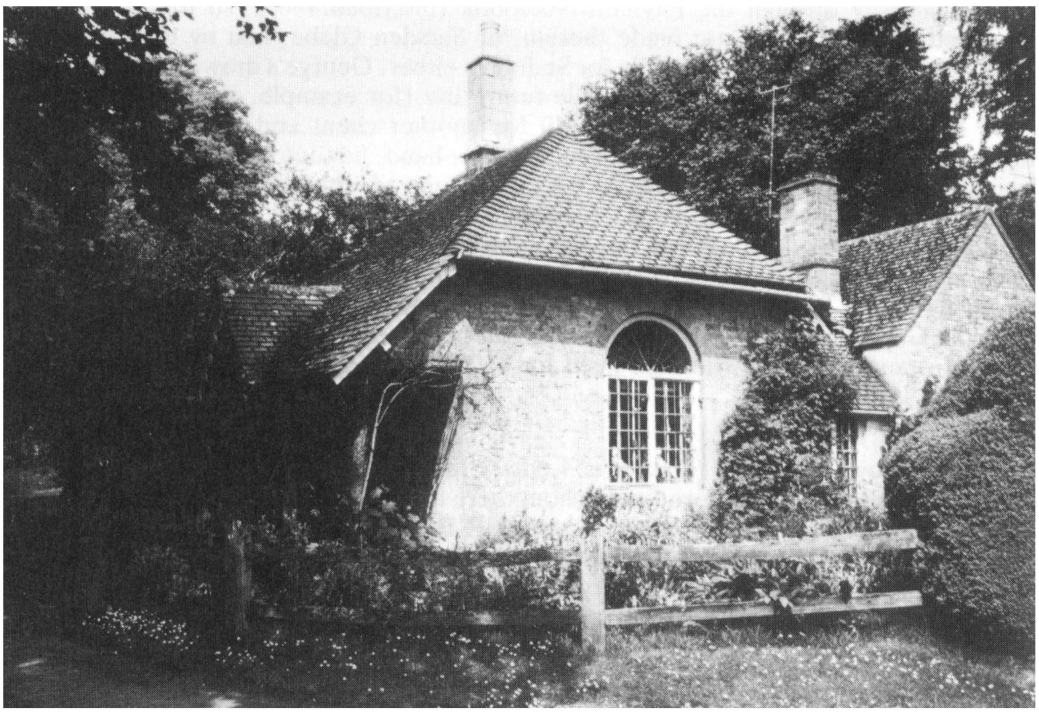


Plate 4. The Lodge, Sarsden Glebe, Oxfordshire. (*N. Temple*)

in the year of his father's death, in 1818, a deed of exchange of lands at Sarsden was drawn up between Langston (who was patron of the church and rectory) and the rector, Charles Barter, who had been married at Sarsden church to Elizabeth Langston in 1817. By July 1818 a house described as having been newly built was on one plot and it was to be known henceforth as The Glebe, or as the Parsonage House. That building is now called Sarsden Glebe and drawings for it made by George Repton are at the RIBA.[36] Subsequently, a storey was added to the house.

However, in the context of the Pavilion Notebook, it is not so much the house as a relatively minute building that first attracts our attention, for the main entrance is marked by a single lodge to the right of the gate (Plate 4). It complies in almost every way – inside and out – with George Repton's drawings. Even the interior segmental arch over the window (seen in Repton's miniature detail) and the tree trunks are alike. There is no thatch: Sarsden Glebe Lodge is under modern tile.[37] Apart from this unimportant replacement and there being no small Gothic window alongside the entrance door at Sarsden (one is shown on PNB 56 and in Peacock's illustration), there is no apparent difference between the Pavilion Notebook drawings and the lodge at Sarsden. Yet another variant was found by the present writer in Hampshire, in mid-1987. We are now faced with the problem of identifying the designer of the St. John's lodge. It would not have been George Repton. He was only a child in the mid-1790s, but Humphry, though not claiming to have designed it, writes possessively and with thinly-veiled pride. He also drew the entrance for Peacock to publish, but that is not necessarily proof of his authorship, though Cooke never even hints of a hand other than Repton's as having worked at St. John's.

The last design (PNB 119) in the Pavilion Notebook includes the only dated drawing – October 1818. Humphry died in March of that year. Sarsden Glebe was newly built and George had not yet severed his professional connection with Nash. The lodge drawings

appear half-way through the Pavilion Notebook (inscribed 1805), so it can safely be presumed that they were not made therein for Sarsden Glebe; and by that date they could not have been made especially for St.John's either. George's drawings could, then, have been made as a record for possible future use (for example, at Sarsden) or they could have been prepared in about 1810 for another client and situation at present unknown, conceivably in Hampshire. On the other hand, he could have been recording a design known to have been made by his father, one of which he was perhaps a little proud and within easy reach of East Cowes Castle.

Whatever its intended purpose, this set of drawings, when put into a context of known dates and buildings, demonstrates that one cannot take it for granted that designs appearing in the Pavilion Notebook necessarily originated in Nash's office during the years the George Repton was there. Such might be the assumption and this is but one of several instances that illustrate the need for a cautious approach.

Acknowledgements

Mr John Barrow, Mr Clarke (Debourne Lodge), Mr & Mrs John Makepeace, Mrs Denys Oglander, Mr Malcolm Pinhorn (with whom there have been exchanges of information), and Mr & Mrs Christopher Russell. Also Mr R.Brinton, Mr J. O'Donnell and Mr C. Webster; The British Architectural Library, British Library, Hampshire County Library, Hampshire County Record Office, City of Portsmouth Record Office, Winchester Public Library. Brighton Art Gallery, Museums and Royal Pavilion gave permission to research G. Repton's notebook, and for material in it to be reproduced. In the context of Sarsden, I am grateful to Miss Judy Hutchinson and the Oxfordshire County Record Office.

Notes

1. RIBANB ff. 93r–93v.
2. Huntington, HM 40915–20. RIBANB f. 5r, 5v, 6r, f. 13v, 19r, 19v, 20r.
3. Greig, J., *Farington Diary*, viii: 159.
4. Greig, J., *Farington Diary*, viii: 142–143, 6 Sept. 1817.
5. *Burke's Landed Gentry*, 1886: date of birth 31 Aug. 1751; but as 1752 elsewhere. He also had houses in Soho; see B.L. Add MS 18.159. D.N.B. see Ward, William.
6. See PNB 112–113.
7. Loudon (1844: 2–3). Gloag (1970: 182–219) reprints from *Self Instruction for Young Gardeners,* 1845, Jane's life of her husband.
8. Hampshire R.O.: Folio, Isle of Wight, with plan and three lithographic visualisations of the completed project – which includes examples of virtually every pattern-book villa style of the day. The scheme was unsuccessful. As late as 1874 we are told by A. Brannon, in his *Pleasure Visitors Companion in making the tour of the Isle of Wight:* 96–97 that '. . .*should the speculation of* the Park *ever take with the public to the extent of remunerating the vast expenditure which has been incurred in laying out the grounds and making the spacious roads, certainly this quarter will eclipse all the rest of the Island in the aggregate of elegant residences and beautiful villas, each enjoying the most interesting prospect which can possibly be imagined. Some large and very handsome houses have been built, but the speculation has not yet been carried out to the extent, which under all the circumstances, might have been expected.*'
9. Hampshire R.O.: Tithe Map, Northwood parish 1845. There are a number of separate Awards relating to the I.o.W., each being based on an ancient ecclesiastical parish. Those with which we will be concerned range 1839–1847 (Maps), 1840–1847 (Confirmation of Awards).
10. Bristol Art Gallery: Red Book of Blaise.
11. See also Barber 1834: 22–23.
12. Hampshire R.O.: Northwood Parish, 1845.
13. The writer has been into one cottage. A resident believed that the stairs had been moved (now parallel with the back wall) and that a floor had been added.
14. I.W.R.O., Ward MP2: 'Bellevue, the Seat of George Ward Esqr., Debourn Farm, and Church Bargain . . . ', 1801. Also, see Ward 1068, plan of roads and footpaths with distances and 'New house' at Bellevue. Robert Lugar's *Architectural Sketches for Cottages* . . . (1805) is dedicated to George Ward.
15. Occupied and in good condition, Spring 1981.
16. There was a larger dwelling of this same name at one time owned by Ward and sold by him to George IV in 1820. It stood by the Parade and was later burnt down (I.W.R.O. 1059–1067: 1061 includes a plan of the house). Mr. M. Pinhorn and the writer researched these papers independently (and, it transpired, concurrently).

17. BL, Add MSS 18, 159 (ff. a-U): folio bought at Northwood sale. Fort Thomas, a-h (some drawings missing). Also drawings present for additions to the Fountain Inn, Cowes, 1823; for proposed improvements to G. Ward's house in Soho Sq.; for Welcombe House, near Stratford-on-Avon, plan George Mair, 1838. Also at BL, Ward correspondence.
18. Waverley House, E. Cowes, has a Nash-like roof, dormers, rear windows and a Gothic porch much as at Double Cottage, Blaise Hamlet, and at a Moccas Lodge, Herefordshire. The BL material was independently researched. Mr. M. Pinhorn adds that there is no record that the Fort Thomas plans were executed, but that a house was built for Thomas. St. Thomas Villa, E. Cowes, now Waverley Park (I.W.R.O. Jerome Papers), may well be largely Nash's work and the house in question.
19. c.1808 Nash tore out the panelling (Aspinall-Oglander 1945: 175).
20. Isle of Wight R.O.: Oglander Papers.
21. I.W.R.O., Oglander Papers: To R. Read Taylor, July 1807, freight of 45,800 bricks £18.6.4. Carting 39,400 bricks from Brading Quay to Nunwell £14.15.6. Total £33.1.10. Bill approved and signed by Nash. Nash's account to Oglander 2 April 1808: abstract of bills of work done at Nunwell, to Read and Taylors Bricklayers, for cartage, £33.1.10.
22. Plans: RIBA; Shanbally (Co. Tipperary), for Viscount Lismore. G.S. Repton's RIBA Notebook, *Catalogue*, Nash [9] 1–8. Summerson (1980, pls. 18A,B) for reproductions of two elevations and annotated ground plan by GSR. For a commentary on PNB 32, 33, see Temple, N. (1986). 'Pages from an architect's notebook: John Nash – some new light on Aqualate Hall', *Staffordshire History*, **4**: 40–51.
23. Presumably Nash had removable glazed screens in mind. These could be taken out in summer to make an open pavilion. He recommended them at Barnsley Park, Gloucestershire, for Mr. Musgrave's conservatory.
24. 'Parnham House', *Country Life*, 29 August & 5 September, 1908. Makepeace, J., *Parnham*, n.d.
25. For far more detailed drawings for a contemporaneous country house brewery see Lugar, R., 1807, *The Country Gentleman's Architect*, pl. 21. In his text he is proud to mention that within a chamber measuring 18′ × 12′ (much smaller than Repton's) he has combined a brewhouse, washhouse and bakery. The 'Washouse' chamber indicated by Repton on his plans would have been in the room adjacent to the brewhouse. That also survives.
26. BL, Add MSS 18, 159.
27. Cooke (1808: 90–92); pp. 86–89 gives an account of St. Johns and the Marina and includes a plate showing Simeon's house.
28. Author's Collection: J. Taylor. Drawn from Nature. 'Lodges at St. John's.'
29. Winchester Public Library, Local Collection: inscribed 'Lodge entrance to St. Johns – seat of Sir Rd. Simeon Bart.' This would date the drawing 1824–1854.
30. Loudon, J. 1840. *The Landscape Gardening . . .of the late Humphry Repton*: 252–253.
31. *idem.*: 350.
32. Hampshire R.O.: by this date Sir Richard Simeon had extensive stabling etc. on the opposite side of the road from the formal (south) entrance to the house.
33. Mr. Roy Brinton of I.W.R.O. confirms (by independent research) that this was indeed the site of the lodge illustrated by Cooke.
34. Portsmouth R.O.: PCRO 11A/23/7. Norris Diary. I am grateful to Mr. Malcolm Pinhorn for bringing this item to my attention.
35. Portsmouth R.O.: Norris Diary.
36. RIBA *Catalogue*, p. 116, [29]; also Sarsden House and church [30], etc. See also Temple, N. 1979. *John Nash and the Village Picturesque*, and Temple, N. 'Sarsden, Oxfordshire'. *Journal of Garden History*, **6** (2): 89–111.
37. Temple, N. 'Reptoniana'. *Journal of Garden History*, **3**(1): 55–57, including illustrations from Cooke, and by Taylor. The father of the present owner of the Sarsden Glebe lodge, who bought the property early in the 20th century, said that at that the roof was of Cotswold tile.

Bibliography

Aspinall-Oglander, C. 1945. *Nunwell Symphony.* Hogarth Press.

Barber, T. [1834]. *Barber's Picturesque Illustrations of the Isle of Wight accompanied by historical and topographical descriptions.* Simpkin & Marshall.

Cooke, C. 1808. *A New Picture of the Isle of Wight.* Baker & Fletcher (2nd. edition 1813 Baker).

Gloag, J. 1970. *Mr. Loudon's England.* Oriel Press.

Loudon, J.W. 1844. *Glimpses of Nature and Objects of Interest described during a visit to the Isle of Wight.* Grant & Griffiths.

Oglander, D. [1971]. *Nunwell House and its treasures.* Nunwell.

Summerson, J. 1980. *The Life and Work of John Nash.* Allen & Unwin.

METEOROLOGICAL REPORT FOR 1986

Kenneth J. Hosking, F.R. Met. S.

The following account and summary of the weather during 1986 has been compiled from Ryde's records. The comparisons and averages now span 69 years since 1st January 1918.

The account is reproduced by kind permission of the *Isle of Wight County Press.*

Rainfall

The 1986 total of 35.48in. (901.2 millimetres) was above the 65-year annual average there of 30.45in. and compared with totals of 31.04in. in 1984 and 26.29in. in 1985.

In the wettest year at Ryde since 1974 monthly totals exceeded their long term averages during January (5.94in.), March (2.65in.), April (2.51in.), May (2.46in.) August (3.67in.), October (3.85in.), November (5.29in.), and December (4.61in.).

Monthly totals were below average in February (0.80in.), June (0.95in.), July (1.36in.) and September (1.39in).

Four 24-hour periods from 9 am GMT gave rainfall totals in excess of one inch during 1986 – 1.25in. on January 7th, 1.12in. on August 3rd, 1.49in. on August 25th (Bank Holiday Monday) and 1.14in. on November 18th.

On average a fall of one inch or more during this 24 hour period occurs about five times in two years – one inch of rain being the equivalent of 101 tons of water to the acre.

During 1986 Ryde had 173 'rain-days' compared with an annual average of 156 (A 'rain-day' is defined as a 24-hour period from 9 am GMT during which at least. 0.01in. of rain is recorded).

The first seven days of 1986 gave 3.64in. of rain at Ryde.

There were 26 days without rain from September 18th to October 13th.

There followed a very wet 11 weeks which added 13.75in. to the year's total by the end of December.

Sunshine

The 1986 sunshine total at Ryde of 1,731.5 hours was near to the 65-year average there of 1,739.1 hours and compared with totals of 1,764.2 hours in 1984 and 1,832.3 hours in 1985.

The monthly 1986 totals – all close to their long term averages, were January (72.1 hours), February (71.3), March (123.9), April (178.3), May (214.8), June (241.9), July (201.0), August (200.8), September (169.2), October (103.8), November (83.8) and December (70.6).

Of the 69 sunless days (annual average 63) 11 occurred during January, ten during November and nine in each of February, October and December.

The six months from April to September inclusive accounted for only 13 sunless days.

Two days provided sunshine durations in excess of 15 hours with 15.1 hours on June 12th and 15.2 hours on July 1st as the year's sunniest days.

Temperatures

The maximum shade temperature at Ryde Esplanade reached or exceeded 70°F on only 23 days during 1986 compared with an annual average of 39 such instances. Ten of these days came in June and 11 during July – none during May or September and only two in August.

The warmest day of 1986 gave a reading at Ryde of 79.7°F on June 27th.

During 1986 minimum air temperatures fell to 32° or below on 31 days – 23 of these during one of the coldest Februarys on record.

On average there are 23 air frosts annually at Ryde Esplanade with a record number of 69 during the year of the 'big freeze' in 1963.

The coldest day of 1986 was on February 21st with a maximum of 30.2°F.

The lowest minimum occurred on the morning following with a reading of 21.2°F – the lowest at Ryde since January 31st, 1972.

The year's highest daily minimum temperature of 65.3°F occurred on June 29th.

The 1986 mean maximum and mean minimum temperatures at Ryde of 55.4°F and 45.5°F compared with long term annual means of 57°F and 46°F respectively.

One of the coldest calendar years at Ryde since 1963 was the outcome of a severe February and a very cool April, May, August and September. By contrast November and December were mild, and November exceptionally so.

Snowfall

Precipitation fell as snow on eight days – all between February 5th and March 1st, although the only significant falls were on February 6th and 28th. The prolonged very cold and dry weather with air frosts on 27 consecutive days following the five inches of level snow on the earlier date caused snow cover to remain for four weeks until early March.

Thunder

Thunder was heard on ten days during 1986, although none of the storms were noted as being particularly severe or prolonged.

Gales

The year was not without its usual quota of gales – the most notable occurring on January 28th, March 23rd/24th, October 20th and November 18th, all from a south-westerly direction.

Fog

Fog was widespread and slow to clear on September 22nd and 23rd and again on November 29th and 30th.

This summary relates to Ryde's official meteorological records and, although some variations have naturally occurred at other Island resorts, the general weather pattern depicted broadly indicates that experienced throughout the Island and adjacent mainland coastal areas of Central Southern England. Differences would be most marked in regard to rainfall intensities during thundery activity even between weather stations only a few miles apart. With regard to temperatures, Ryde's long term averages and extremes closely accord with those of other Island coastal resorts although inland – around Newport and district – minima on the coldest night can be as much as 6°F lower than those on the coast. Maxima on the hottest days of summer might well exceed by 3 or 4°F the readings taken on Ryde Esplanade.

Summing Up

The most notable memories of 1986 must include the severely cold February, followed by a cold spring. A cool rainy August preceded a pleasant autumn dry spell to mid October before the prolonged mild and wet weather which lasted until the end of the year.

Correction

In the paper by Kenneth Hosking entitled 'Prolonged cold spells in the Isle of Wight since 1918' (*Proc. Isle Wight nat. Hist. archaeol. Soc.*, **8** (1): 51–52) the alignment of the dates for significant snowfalls in Table 1 was printed incorrectly. All dates from Jan. 1945 until Feb. 1985 were printed one line **below** the relevant cold spell.

Editor

MONTHLY SUMMARY OF WEATHER AT RYDE,
ISLE OF WIGHT 1986

Month	Hours of Sunshine	Rain	Screen Temperatures Mean Max °C	Mean Min °C	Mean Monthly °C	Extremes °C From	°C To
		mm					
January	72.1	150.8	7.9	3.3	5.6	12.0	-2.8
February	71.3	20.3	1.9	-1.3	0.3	4.8	-6.0
March	123.9	67.3	8.8	3.1	5.9	12.0	-2.4
April	178.3	63.6	10.1	4.1	7.1	15.7	0.1
May	214.8	62.5	14.1	8.5	11.3	18.0	3.6
June	241.9	24.2	19.6	12.2	15.9	26.5	6.8
July	201.0	34.5	20.6	14.0	17.3	26.2	11.1
August	200.8	93.2	18.5	12.9	15.7	21.8	8.5
September	169.2	35.4	16.3	9.8	13.0	19.6	6.6
October	103.8	97.9	15.4	10.6	13.0	20.1	5.8
November	83.8	134.5	12.5	7.1	9.8	15.8	2.0
December	70.6	117.0	10.2	5.2	7.7	14.3	1.2
Totals	1731.5	901.2mm (35.48″)	Annual Means			Highest Max	Lowest Min
			13.0°C	7.5°C	10.2°C	26.5°C	-6.0°C
		(25.4mm = 1″)	(55.4°F)	(45.5°F)	(50.5°F)	27th June	22nd Feb

NOTES FOR THE GUIDANCE OF AUTHORS

General: *Proceedings* are published annually and material submitted for publication must be in the hands of the Editor by July 1st each year. Papers are accepted on the understanding that they have not been submitted or published elsewhere and become the copyright of the Isle of Wight Natural History and Archaeological Society.

Papers on all topics within the range of interests of the Society are welcomed. Articles submitted for publication should not exceed 8,000 words in length. Longer articles may be published under special circumstances but it is advisable to consult the Editor before submission. Manuscripts must be typed, double spaced, on one side of A4 paper only with good margins. Typescripts must be accurate and in their final format because corrections at proof stage are expensive. Additions at proof stage will not be allowed. Papers should be arranged as follows:

Title: brief and specific
Abstract: an intelligible summary of the paper of not more than 200 words (this is not necessary for short notes and papers)
Main body of paper: subdivided into headed sections where appropriate.
References: see below.
Tables: each typed on a separate sheet.
Legends: for text-figure and/or photographic plates.

Measurements: All measurements should be given in metric units except where referring to measurements in older literature where imperial equivalents should be quoted.

Illustrations: Send only photocopies initially. Maximum size of illustrations published in the *Proceedings* is 190 × 150 mm.

References to other articles in the text should be represented by the author(s) name(s), followed by the date of publication and page numbers where appropriate. Where an article has two authors their names should be linked by an ampersand (&). If there are three or more authors the name of the first author should be followed by 'et al'. All references mentioned in the text should be listed by their author, arranged alphabetically at the end of the paper in the form used in the current part of the *Proceedings*. Journals should be abbreviated in accordance to the *World List of Scientific Periodicals* (4th edition 1963–5) where applicable. When in due course the author receives proofs of his article, these should be amended and returned to the Editor. Prompt attention to the proofs is essential since any delay at this stage will hold up publications.

Following publication of an article in the *Proceedings* the author(s) receives 10 reprints free of charge, except in the case of brief notes where reprints will not be supplied.

Authors should note that they are solely responsible for copyright clearance for any reproduced or partly reproduced material, particularly where Governmental organisations might be concerned.